Executive Officer's Report

To: Imperial LAFCo Commissioners

From: Tyler Salcido, Executive Officer TRS

Item #: 8b

Subject: EC 1-24 Willow Bend Subdivision Annexation at 09:30 a.m.

Date: February 27, 2025

Time: 09:30 a.m.

Location: El Centro City Council Chambers
1275 W. Main Street, El Centro, CA 92243

Project Data

Project ID:	EC 1-24
Project Name:	Willow Bend Subdivision Annexation
Applicant/Proponent:	Martin D. Coyne, Willow Bend Homes, LLC
Application Type:	Petition (Exhibit A)
Application Received:	June 10, 2024
Certificate of Filing:	June 20, 2024 (Exhibit B)
Parcel Size:	37.05 acres
Location:	Southwest Corner of HWY 86 and Countryside Drive in El Centro
Legal Description:	See Annexation Map and Geographic Description (Exhibit C)
Proposed Project:	Annexation to the City of El Centro
APN:	054-370-012

Report

1. **Project Description**

The project is the annexation of approximately 37.05 acres to the City of El Centro to bring 120 budget-friendly (not low-income) single-family residential homes to the community at the Willow Bend Subdivision. The community will also have a 1.37-acre park with a bus stop.

- Project Location Map (Exhibit D)
- Vicinity Map (Exhibit E)

Background:

In 2007, the El Centro City Council approved several entitlements for the Willow Bend Tentative Subdivision Map project. The proposal included a 131-lot single-family subdivision on approximately 37 acres of land adjacent to the southern city limits, within unincorporated county territory. However, due to market conditions and changes in property ownership, the project was never initiated, nor was the site annexed into the City of El Centro.

In 2022, Martin D. Coyne of Willow Bend Homes, LLC submitted an application to amend the existing Tentative Subdivision Map (TSM) and its associated conditions of approval. The proposed amendments include modifications to the subdivision layout, a reduction in the number of single-family lots from 131 to 120, and revisions to conditions related to roadway improvements near the project site. A summary of these changes is provided in Exhibit S - Conditions of Approval Changes. Many of the amended conditions pertain to the construction and funding of traffic improvements.

When the project was initially reviewed before 2007, several large developments were planned, which were expected to significantly impact the roadway network. However, those projects never materialized, and the anticipated demand did not occur. Additionally, the City and other agencies have since implemented various infrastructure improvements, including lane additions and restriping.

The project's Final Environmental Impact Report (SCH 2005101128), approved in 2007, requires an addendum to evaluate the proposed changes and ensure compliance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines (Exhibit P - EIR Addendum). RECON Environmental and Linscott, Law & Greenspan were commissioned to assist in preparing the EIR addendum and updating transportation impact studies. The addendum concluded that the proposed modifications would not result in any new significant environmental effects or substantially increase the severity of previously identified impacts.

On February 4, 2025, the project was presented to the El Centro City Council during a duly noticed public hearing. Following review, the City Council unanimously adopted a resolution recommending approval of the project.

2. **City Council Approvals**

- Resolution # 25-09 approving the annexation dated February 4, 2025 (Exhibit F)
- Resolution # 24-98 approving a master tax and fiscal impact agreement dated December 3, 2024 (Exhibit G)
- Resolution # 25-07 adopting an addendum to EIR dated February 4, 2025 (Exhibit H)
- Ordinance # 25-01 amending the zoning map dated February 4, 2025 (Exhibit I)
- Resolution # 25-08 revising and updating conditions (Exhibit J)

3. **Tax Agreement**
   - County Board of Supervisors Action
     - Minute Order # 26 approving a master tax sharing and fiscal impact agreement between the City of El Centro and the Imperial County dated December 3, 2024 (Exhibit K)
     - Resolution # 2024-148 approving a master tax sharing and fiscal impact agreement dated December 3, 2024 (Exhibit L)
     - Master Tax Sharing and Fiscal Impact agreement (Exhibit M)
   - Property Tax Revenue Determination Letter
     - County Auditor-Controller letter dated February 10, 2025 (Exhibit N)

4. **County Land Use**
   - County General Plan
     - Under the county's general plan, the area being proposed for annexation is shown to be Urban for the future expansion of the City of El Centro.
   - Surrounding Land Uses
     - The project is contiguous to the City of El Centro on the east side, and is bordered by a rural residential area to the north and agricultural farms to the south & west.

5. **Sphere of Influence**
   The proposed annexation area is within the sphere of influence of the City of El Centro.

6. **CEQA**

Lead Agency:	City of El Centro
Documentation:	Final EIR (Exhibit O)
	EIR Addendum (Exhibit P)

7. **State Law**
   In the Cortese Knox Hertzberg Reorganization Act of 2000, Government Code Section 56668 specifically requires that certain factors be considered in the review of any proposal, and shall include but not be limited to Items A through Q.

   A. Population and population density; land area and land use; assessed valuation; topography, natural boundaries, and drainage basins; proximity to other populated areas; the likelihood of significant growth in the area; and in adjacent incorporated and unincorporated areas, during the next 10 years.
   Comment: The City of El Centro currently has a population of approximately 44,000 residents, with projected growth to 58,800 by 2045. The Willow Bend project proposes the development of 120 single-family homes on a 37-acre site, contributing to the city's low-density residential expansion. This development aligns with the city's General Plan, ensuring controlled growth while maintaining an appropriate balance between residential density and available infrastructure.

   The project site is located north of McCabe Road and west of South 4th Street (Highway 86), approximately 630 feet south of Horne Road. The site is currently zoned for agricultural use but is designated for Low-Density Residential (R-1) under the General Plan. The project will serve as a transitional zone between existing residential neighborhoods to the north and east and agricultural lands to the west and south.

   The assessed valuation of the project area will increase following annexation due to its transition from agricultural use to residential development. The construction of 120 new single-family homes will generate increased property tax revenues, benefiting the city and supporting infrastructure improvements. Additionally, the project will

contribute to Development Impact Fees and other funding mechanisms for public services.

The site is relatively flat and currently in agricultural use, with no significant topographical or geological constraints. The Date Drain, a stormwater drainage channel, runs along the north and west of the project area, providing necessary water management infrastructure. The project will incorporate a 1.4-acre retention basin to manage runoff and comply with stormwater mitigation requirements.
The site is located adjacent to established residential subdivisions, including:
- *Countryside Subdivision (east)*
- *Buena Vista Subdivision (west)*

These communities provide existing infrastructure, including roadway connections, and water, and sewer services, making the annexation and integration of the Willow Bend project into El Centro feasible and efficient.

The City of El Centro has identified this area as part of its long-term residential growth strategy. The General Plan and the annexation proposal indicate that this region will experience sustained growth due to:
- *Proximity to major transportation corridors (Highway 86 and I-8)*
- *Availability of infrastructure improvements*
- *Increasing demand for single-family housing*
- *Planned urban expansion into adjacent unincorporated areas*

B. The need for organized community services; the present cost and adequacy of governmental services and controls in the area; probable future needs for those services and controls; and probable effect of the proposed incorporation, formation, annexation, or exclusion, and alternative courses of action on the cost and adequacy of services and controls in the area and adjacent areas. Services, as used in this subdivision, refers to governmental services whether or not the services are services which would be provided by local agencies subject to this division, and includes the public facilities necessary to provide those services.
Comment: The Willow Bend Project proposes 120 single-family homes on a 37-acre site, increasing the demand for essential community services, including:
- *Law enforcement and fire protection*
- *Water and sewer services*
- *Stormwater management and drainage*
- *Transportation infrastructure*
- *Parks and recreational facilities*

Since the project site is unincorporated agricultural land, Imperial County provides only minimal services.
- *Law Enforcement: The area is under the jurisdiction of the Imperial County Sheriff's Office.*
- *Fire Protection: Fire response is provided by Imperial County Fire Department.*
- *Water & Sewer: The project area does not currently receive municipal water and sewer services, relying on water from the Imperial Irrigation District (IID).*

*The annexation and development of Willow Bend*will increase the need for expanded governmental services, including:*
- *Law Enforcement & Fire Services: Additional patrol coverage from the El Centro Police Department and fire protection services from the El Centro Fire Department.*

- Water & Sewer Expansion: Connection to El Centro's municipal water and sewer system, ensuring reliable service and compliance with state environmental standards.
- Transportation & Road Maintenance: The project requires roadway expansions, including improvements to South 4th Street (Highway 86) and Countryside Drive for efficient traffic circulation.
- Parks & Recreation: A 1.37-acre park is included in the project plan, ensuring adequate green space for residents.

The City of El Centro would assume municipal service responsibilities for the affected territory and anticipated development thereafter and has indicated that it has the capacity and sufficient financial resources to provide services to the annexation area without adversely impacting existing ratepayers.

The annexation into El Centro will result in higher property tax revenues and development impact fees, funding enhanced public services. However, it will also require:
- Increased city expenditures for public safety, infrastructure maintenance, and utilities.
- Extension of water, sewer, and stormwater drainage systems to accommodate new development.
- Long-term maintenance of roadways, parks, and public facilities.

The net effect of annexation will be positive, as the project is anticipated to generate sufficient property tax revenue and development fees to offset service costs while ensuring adequate and sustainable infrastructure development.

If the site remains unincorporated, it would, for any potential future residential development:
- Lack access to municipal water and sewer services.
- Remain under county jurisdiction, limiting access to comprehensive fire and law enforcement services.

C. The effect of the proposed action and of alternative actions, on adjacent areas, on mutual social and economic interests, and on the local governmental structure of the county.
Comment: The annexation of the Willow Bend Project into the City of El Centro will have several direct and indirect effects on adjacent areas:
- Improved Infrastructure and Services:
- The extension of water, sewer, and road infrastructure will benefit not only the Willow Bend project but also surrounding areas, facilitating future growth and reducing service gaps.
- Countryside Drive and South 4th Street (Highway 86) improvements will enhance regional traffic circulation, benefiting neighboring communities.
- The 1.37-acre park within the development will provide additional recreational space, accessible to both new and existing residents.

The project's Low-Density Residential (R-1) designation aligns with surrounding developments, ensuring a seamless transition between existing residential areas and new growth.

Annexation will prevent piecemeal, uncoordinated development, ensuring that future expansion occurs in a structured manner consistent with the City of El Centro's General Plan.

The proposed annexation will strengthen economic and social ties between the annexed area and the greater City of El Centro by:

- Expanding Housing Opportunities:

- The 120 new homes will accommodate population growth, providing housing options for residents working in El Centro's commercial, industrial, and public service sectors.

- The development will contribute to local employment opportunities, generating jobs in construction, retail, and service industries.

- Property tax revenues from the project will support municipal services.

- Increased consumer base for El Centro businesses, strengthening the local economy through additional retail and service demand.

- Residents of the annexed area will benefit from El Centro's public schools, parks, libraries, and community programs, further integrating them into the city's social fabric.

- Improved public transportation access may be considered as part of the city's long-term transit planning, benefiting both new and existing residents.

The City of El Centro will assume responsibility for municipal services, reducing the service burden on Imperial County. The Imperial County Sheriff's Office and Fire Department will no longer serve the annexed area, allowing the county to reallocate resources to other unincorporated regions.

Alternative Actions and Their Implications:

1. No Annexation (Remain Under Imperial County Jurisdiction):

- Limited access to city services, leading to potential infrastructure deficiencies.

- Uncoordinated growth, with development occurring without clear urban planning integration.

- Reduced economic benefits for El Centro, as property taxes and development impact fees would not contribute to city services.

2. Delayed Annexation:

- Uncertainty for developers and residents regarding future service availability.

- Increased cost of future infrastructure expansion, as retrofitting services later is typically more expensive.

The annexation area lies within the City of El Centro's sphere of influence, and as such has established relevant economic and social ties with respect to other services provided by the city. Approving the annexation would recognize these existing ties and formally establish El Centro as the single governing body responsible for municipal services.

D. The conformity of both the proposal and its anticipated effects with both the adopted commission policies on providing planned, orderly, efficient patterns of urban development, and the policies and priorities in Section 56377.

Comment: The proposed project is consistent with the Commission policies on providing planned, orderly, and efficient patterns of urban development in several key ways:

1. Planned Growth and Infrastructure Expansion:

- Consistent with the General Plan – The project is designated Low-Density Residential (R-1) under El Centro's General Plan, ensuring that urban expansion occurs within planned growth boundaries rather than through uncoordinated sprawl.

- Efficient Public Service Delivery – The annexation allows the City of El Centro to extend municipal services (water, sewer, fire, police, and roads) cost-effectively, avoiding fragmented service areas.

- Transportation and Circulation Improvements – The project includes upgrades to South 4th Street (Highway 86) and Countryside Drive, supporting regional connectivity and mitigating potential traffic congestion.

2. Orderly Development and Avoidance of Leapfrog Growth:
- Encourages Compact Urban Expansion – The annexation fills a logical gap between existing developed areas and prevents leapfrog development, which would require excessive infrastructure costs.

Government Code Section 56377 emphasizes the protection of agricultural lands and the promotion of urban growth within designated boundaries. The Willow Bend annexation complies with these policies as follows:

1. Preservation of Agricultural Land and Open Space:
- Minimizes Loss of Prime Agricultural Land – While the project site is currently used for agriculture, it has already been designated for urban development in the General Plan. This ensures that growth occurs in areas planned for conversion rather than encroaching on more critical farmland.
- Mitigation Measures for Agricultural Impacts – The project includes stormwater management systems and a landscape buffer, minimizing negative environmental effects on remaining agricultural land.

2. Prioritization of Development Within Existing Urban Areas:
- Infill Development – The project site is adjacent to existing residential subdivisions, meaning it extends urban development in a contiguous manner rather than creating isolated urban pockets.
- Efficient Land Use – The site is located near major transportation corridors (Highway 86 and I-8), making it a strategic location for accommodating growth while avoiding unnecessary urban sprawl.

In conclusion, the proposed annexation fully complies with LAFCo's policies and Section 56377 by:
- Promoting planned, orderly, and efficient growth
- Ensuring infill development rather than leapfrog expansion
- Facilitating cost-effective public service extension
- Minimizing the impact on agricultural land while supporting smart growth principles

E. The effect of the proposal on maintaining the physical and economic integrity of agricultural lands, as defined by Section 56016.
Comment: The annexation of the Willow Bend Project into the City of El Centro involves the conversion of approximately 37 acres of agricultural land into residential development. Under Government Code Section 56016, agricultural land is defined as land currently used for the purpose of producing an agricultural commodity for commercial purposes, land left fallow under a crop rotational program, or land enrolled in an agricultural subsidy or set-aside program; the effects of the proposal on agricultural integrity must be assessed:

1. Physical Integrity of Agricultural Lands:
- Proximity to Urban Development – The project site is adjacent to existing residential subdivisions, making it a logical transition area from agricultural to urban use.
- Minimal Impact on Regional Agricultural Production – The site represents a small portion of available farmland in Imperial County, which remains a dominant agricultural region.

- Mitigation Measures – The project includes stormwater drainage systems and retention basins to prevent runoff contamination of adjacent agricultural lands.

2. Economic Integrity of Agricultural Lands:

- Higher Land Value and Tax Revenue – The conversion of farmland into low-density residential housing will generate higher property tax revenues, supporting local infrastructure and public services.

- Reduced Viability of Farming in the Area – The site is already adjacent to urbanized land, limiting its long-term viability as a sustainable agricultural operation due to land use conflicts, increased property values, and infrastructure expansion.

- Job Creation and Economic Growth – While farming activity will cease on the project site, the residential development will contribute to local employment, supporting construction, retail, and public services.

The proposed annexation will result in the loss of agricultural use on 37 acres but does not significantly threaten the overall physical or economic integrity of agricultural lands in Imperial County. Instead, it:

- Utilizes land already designated for urban development, reducing pressure on other agricultural lands.

- Mitigates environmental and infrastructure impacts, maintaining regional land use balance.

- Supports economic diversification, contributing to long-term community growth.

F. The definiteness and certainty of the boundaries of the territory, the nonconformance of proposed boundaries with lines of assessment or ownership, the creation of islands or corridors of unincorporated territory, and other similar matters affecting the proposed boundaries.

Comment: The proposed annexation of the Willow Bend Project into the City of El Centro has been evaluated based on the definiteness, certainty, and conformance of its boundaries with established legal and administrative frameworks.

1. Definiteness and Certainty of the Boundaries:

- Well-Defined Geographic Boundaries – The Willow Bend Project site consists of approximately 37 acres, located north of McCabe Road, west of South 4th Street (Highway 86), and 630 feet south of Horne Road. The boundaries are clearly delineated on parcel maps and conform to established geographic and land use planning boundaries.

- Consistent with the City's Sphere of Influence (SOI) – The annexation aligns with El Centro's Sphere of Influence, ensuring that service expansion and land use decisions remain within the city's jurisdiction rather than creating fragmented governance.

2. Conformance with Lines of Assessment and Ownership:

- Follows Existing Parcel Boundaries – The proposed annexation area is a single contiguous parcel (APN 054-370-012) and conforms to lines of ownership and assessment, preventing unnecessary jurisdictional complexity.

- Avoids Boundary Overlaps – The proposal does not create discrepancies between city and county tax assessment zones, ensuring smooth tax administration and service delivery.

3. Avoidance of the Creation of Islands or Corridors of Unincorporated Territory:

- No Unincorporated Islands Created – The annexation will not leave behind isolated pockets of unincorporated land.

- Ensures a Logical Extension of City Limits – The proposed area is adjacent to existing city boundaries and fits within El Centro's long-term urban expansion plans, ensuring efficient service continuity and administrative oversight.

4. Other Matters Affecting the Proposed Boundaries:
- Logical Roadway and Infrastructure Connections – The annexation includes planned roadway expansions along South 4th Street (Highway 86) and Countryside Drive, ensuring connectivity to existing municipal infrastructure.
- Compliance with Local Agency Formation Commission (LAFCo) Standards – The proposed boundaries meet LAFCo criteria for annexation feasibility and efficiency, preventing jurisdictional fragmentation.

LAFCo is in receipt of a draft map and geographic description of the annexation area that details metes and bounds consistent with the standard of the State Board of Equalization. LAFCo approval would be conditioned on the submittal of a final map and description conforming to the referenced standards and addressing any proposal area modifications enacted by the Commission. The final map shall be reviewed by the Surveyor of the County of Imperial and the Public Works Director of the City of El Centro to ensure that the map complies with the correct boundary and surveying requirements, as well as legal descriptions. The project shall not be recorded until both County and City Public Works Directors have provided a letter of compliance.

G. A regional transportation plan was adopted according to Section 65080.
Comment: The project in and of itself is considered consistent with the Imperial County General Plan and General Plan by the City.

H. The proposal's consistency with city or county general and specific plans.
Comment: The project is considered consistent with the Imperial County General Plan and the City's General Plan.

I. The sphere of influence of any local agency that may be applicable to the proposal being reviewed.
Comment: The annexation is within the sphere of influence of the City of El Centro.

J. The comments of any affected local agency or other public agency.
Comment: No significant adverse comments have been received for this project by any responsible agency.

K. The ability of the newly formed or receiving entity to provide the services that are the subject of the application to the area, including the sufficiency of revenues for those services following the proposed boundary change.
Comment: The City of El Centro would assume municipal service responsibilities for the affected territory and the anticipated development thereafter. It has indicated that it has the capacity and sufficient resources to provide services to the annexation area without adversely impacting existing ratepayers.

L. Timely availability of water supplies adequate for projected needs as specified in Section 65352.5.
Comment: The project as analyzed by the City of El Centro indicates that the city does have adequate and available water for the project.

M. The extent to which the proposal will affect a city or cities and the county in achieving their respective fair shares of the regional housing needs as determined by the appropriate council of governments consistent with Article 10.6 (commencing with Section 65580) of Chapter 3 of Division 1 of Title 7.

Comment: The Willow Bend Project annexation into the City of El Centro contributes to meeting regional housing needs in line with Section 65580 of the California Government Code.

Key Contributions:

- 120 Single-Family Homes addressing moderate and above-moderate income RHNA targets.

- Infill Development within the city's growth boundary, reducing urban sprawl and preserving agricultural land.

- Infrastructure-Ready Site, ensuring cost-effective housing delivery and paving the way for future affordable housing projects.

Regional and Economic Impacts:

- Supports Regional Growth Goals by enhancing housing-to-job accessibility near employment centers.

- Reduces County Service Burden by transferring responsibilities from Imperial County to the City of El Centro.

- Aligns with Sustainable Community Strategies, promoting transit-oriented development and balanced urban growth.

The Willow Bend Project ensures RHNA compliance, promotes balanced growth, and lays a foundation for future mixed-income developments, supporting the region's long-term housing and sustainability goals.

N. Any information or comments from the landowner or landowners, voters, or residents in the affected territory.

Comment: No comments received as of the writing of this report.

O. Any information relating to existing land use designations.

Comment: The Willow Bend Project site (37 acres) is designated Low-Density Residential (LDR) in the City of El Centro's General Plan, supporting single-family residential development. Additionally, the Imperial County General Plan designates the area as Urban, reinforcing its suitability for residential growth. The proposed R-1 zoning aligns with both city and county land use plans.

Surrounding Land Use:

- North/East: Established residential neighborhoods (R-1).

- West/South: Agricultural land, serving as a transitional zone for future urban expansion.

- Proximity to Key Corridors: Near South 4th Street (Highway 86), enhancing connectivity.

The proposal aligns with both city and county land use designations, promoting compatible residential development and supporting sustainable urban growth in El Centro.

P. The extent to which the proposal will promote environmental justice. As used in this subdivision "environmental justice" means the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins with respect to the location of public facilities and the provision of public services, to ensure a healthy environment for all people such that the effects of pollution are not disproportionately borne by any particular populations or communities.

Comment: The Willow Bend Project annexation into El Centro promotes environmental justice by ensuring fair treatment and equal access to public services and a healthy environment for all community members.

Key Contributions:

- Equitable access to services: All residents will have access to municipal water, sewer, fire protection, law enforcement, and a 1.37-acre public park, enhancing community well-being.

- Pollution mitigation: A 1.4-acre retention basin will manage stormwater runoff, while planned transportation improvements will reduce vehicular emissions and protect air quality.

- Community involvement: The project underwent public hearings, ensuring transparency and community participation in planning decisions.

- No disproportionate impacts: The Environmental Impact Report (EIR) confirmed that no vulnerable communities would bear disproportionate environmental burdens.

The Willow Bend Project supports environmental justice by providing equitable public services, implementing effective pollution controls, encouraging inclusive community engagement, and fostering sustainable, balanced growth for all populations.

Q. Information contained in a local hazard mitigation plan, information contained in a safety element of a general plan, and any maps that identify land as a very high fire hazard zone pursuant to Section 51178 or maps that identify land determined to be in a state responsibility area pursuant to Section 4102 of the Public Resources Code, if it is determined that such information is relevant to the area that is subject of the proposal.

Comment: The Willow Bend Project site has been reviewed for potential hazards using local hazard mitigation plans, the general plan's safety element, and relevant fire hazard maps.

Key Findings:

- The City of El Centro's hazard mitigation plan identifies no major seismic risks at the site, and a planned 1.4-acre retention basin mitigates flood risks.

- The safety element confirms the area is outside major flood zones and has adequate emergency response coverage.

- State fire hazard maps show the site is not in a very high fire hazard zone or state responsibility area, with nearby municipal fire services further reducing fire risks.

The site presents no significant hazard risks, aligning with local and state safety guidelines and supporting its suitability for residential development.

8. **Public Notice**

Public notice for the proposed annexation hearing before the LAFCo commission has been given in accordance with sections 56660 and 56661. The notice was issued at least 21 days before said hearing by publication in the Imperial Valley Press; and posted outside the LAFCo office and on our webpage. In addition, mailed notices were sent to all property owners within a half-mile radius of the property that is the subject of the hearing. See the Notice of Public Hearing (Exhibit Q)

9. **Report**

In accordance with Section 56665, the Executive Officer has prepared a report and presented the report to your commission, the applicant, and all affected agencies within five days before said hearing.

10. **Conflict of Interest Statement**
At the writing of this report, it is unknown if any commissioner has any conflict of interest concerning this project. The Executive Officer does not have a known conflict of interest and does not own any property within the project area.

Options

OPTION #1: Approve the proposed annexation as presented by the Executive Officer.

OPTION #2: Approve the proposed annexation as requested with modifications, following the hearing by the commission.

OPTION #3: Continue the hearing for a period not to exceed 70 days.

OPTION #4: Deny the annexation.

Recommendation by the Executive Officer

The Executive Officer recommends that LAFCo conduct a public hearing and consider all information presented in both written and oral form concerning this project. The Executive Officer then recommends, assuming no significant public input warrants to the contrary, that LAFCo take the following action:

OPTION #1: Approve the proposed annexation as presented by the Executive Officer.

1. Certify the CEQA document as prepared and certified by the City of El Centro.

2. Make the finding that this project with the conditions imposed herein (or as modified) complies with the provisions of the Cortese-Knox-Hertzberg Reorganization Act of 2000 and the Imperial LAFCo policy and procedures.

3. Make the findings pursuant to Government Code Section 56375 that:
   A. The project has been pre-zoned under the City of El Centro's current zoning ordinance.

   B. The project is prohibited from being "re-zoned" for two years following annexation recordation.

   C. The project is contiguous to the City of El Centro, does not create an island, and is a logical extension of the city within the sphere of influence, and an urban plan area.

4. The annexation is approved subject to the following conditions:
   A. The petitioner(s) shall provide LAFCo with the following items to complete the processing of the annexation:
      i. One (1) Mylar annexation map prepared and signed by a California-licensed surveyor, size 18x26 inches, approved by the Imperial County Surveyor & the City Public Works Director.
      ii. One (1) copy of the Mylar annexation map and a PDF copy.
      iii. A check made payable to the State Board of Equalization as required by statute.

iv. A check made payable to LAFCo as determined by the Executive Officer to fully offset the cost of processing the application, including all costs incurred by the county or city departments charged with the responsibility to review any portion of this project.
v. A letter from the applicant (petitioner) agreeing to the terms and conditions of the LAFCo approval and waiving all rights to an appeal and rights to seek reconsideration of the approval decision, unless the petitioner can show that a technical error occurred that would have or could have altered the decision of the LAFCo.

B. The City of El Centro shall provide LAFCo with the following items to complete the processing of the annexation:
   i. A letter agreeing to the terms and conditions of the LAFCo approval and waving all rights to an appeal and rights to seek reconsideration of the approval decision, unless the city can show that a technical error occurred that would have or could have altered the decision of the LAFCo.
   ii. A city boundary map & legal description prepared and signed by a California-licensed surveyor, size 18x26 inches, depicting the new annexation as part of the overall city boundary within 90 days of the LAFCo approval, as well as a PDF copy.
   iii. A letter from the City Public Works Director approving the Mylar annexation map.

C. The Imperial County shall provide LAFCo with the following items to complete the processing of the annexation:
   i. A letter from the Imperial County Surveyor approving the Mylar annexation map.

D. The City of El Centro shall notify LAFCo and the county of any proposed change of zone within the boundary area at least 90 days before any such council hearing if such is requested prior to the termination of 24 months from the annexation recordation. If the city does change the zone or the envisioned land use analyzed within this land use process in the future, and it affects any tax split agreements with other agencies, then the city shall be required to make the appropriate adjustments with the county.

E. The city shall not enter this property into any type of "redevelopment" program or such other program that would adversely change the fiscal impacts or in any way affect the fiscal impacts or tax-sharing agreements with other agencies. If the city following the annexation and after recordation does change the project to change the fiscal information/outcome upon which LAFCo and/or other agencies relied, the city shall be required to fund any deficit that may occur as a result of their change.

LAFCo Policy

The proposed annexation appears to be consistent with the Cortese-Knox-Hertzberg Reorganization Act of 2000, the Imperial LAFCo policies and procedures, and the Imperial County general plan. Furthermore, the city has according to its service area plan dated December 2024 the ability to supply the necessary public services and has assured LAFCo that it has the capacity to service the area.

EXHIBIT A: Application
EXHIBIT B: Certificate of Filing Letter
EXHIBIT C: Annexation Map and Geographic Description

EXHIBIT D: Project Location Map
EXHIBIT E: Vicinity Map
EXHIBIT F: City Resolution # 25-09
EXHIBIT G: City Resolution # 24-98
EXHIBIT H: City Resolution # 25-07
EXHIBIT I: City Resolution # 25-01
EXHIBIT J: City Resolution # 25-08
EXHIBIT K: County Minute Order # 26
EXHIBIT L: County Resolution # 2024-148
EXHIBIT M: Tax Sharing and Fiscal Impact Agreement
EXHIBIT N: County Auditor-Controller Letter
EXHIBIT O: Final EIR
EXHIBIT P: EIR Addendum
EXHIBIT Q: Notice of Public Hearing
EXHIBIT R: Draft LAFCo Resolution 2025-XX
EXHIBIT S: Conditions of Approval Changes

EXHIBIT A

Application

Imperial LAFCO
LOCAL AGENCY FORMATION COMMISSION

RECEIVED
JUN 10 2024
Imperial County LAFCO

APPLICATION

PETITION FOR PROCEEDINGS PURSUANT TO THE CORTESE-KNOX-HERTZBERG LOCAL GOVERNMENT REORGANIZATION ACT OF 2000

The undersigned hereby petition(s) the Local Agency Formation Commission of Imperial County for approval of a proposed change of organization, and stipulate(s) as follows:

OWNER INFORMATION	
NAME Martin D. Coyne	COMPANY Willow Bend Homes, LLC
MAILING ADDRESS 2351 SOUTH 4TH STREET	TELEPHONE NUMBER 760-353-2110 760-554-6404
CITY, STATE, ZIP EL CENTRO, CA 92243	EMAIL ADDRESS martycoyne@hotmail.com, cortneyEcoyne@gmail.com
APPLICANT INFORMATION (*IF DIFFERENT FROM THE OWNER*)	
NAME Same	COMPANY
MAILING ADDRESS	TELEPHONE NUMBER
CITY, STATE, ZIP	EMAIL ADDRESS
PROJECT INFORMATION	
NAME OF PROPOSAL Willow Bend Subdivision	DATE 06/06/2024
PROJECT ADDRESS Southwest Corner of Hwy86 & Countryside Drive	APN(S) 054-370-012
CITY, STATE, ZIP El Centro, CA 92243	TOTAL LAND AREA (ACRES) 37.05

THIS PROPOSAL IS MADE PURSUANT TO CALIFORNIA GOVERNMENT CODE (COMMENCING WITH SECTION 56000, CORTESE-KNOX-HERTZBERG LOCAL GOVERNMENT REORGANIZATION ACT OF 2000).

1	PROPOSED CHANGE(S) OF ORGANIZATION:					
	☒	ANNEXATION	☐	SPHERE OF INFLUENCE	☐	OTHER
	☐	DETACHMENT	☐	CONSOLIDATION	☐	EXTENSION OF SERVICES
	☐	INCORPORATION	☐	FORMATION OF _____		
2	NAME OF THE CITY/SPECIAL DISTRICT BEING AFFECTED City of El Centro					

3	THE PROPOSED BOUNDARIES OF THE TERRITORY(IES) INCLUDED IN THE PROPOSAL ARE AS DESCRIBED IN THE EXHIBIT(S) ATTACHED HERETO AND BY THIS REFERENCE INCORPORATED HEREIN. ☒ YES, BOUNDARY EXHIBITS ARE ATTACHED
4	PLEASE LIST ANY OTHER DOCUMENTS BEING SUBMITTED WITH THE APPLICATION (*EXCEPT THOSE ALREADY REQUIRED BY LAFCO*). _____ _____
5	THE TERRITORY(IES) INCLUDED IN THE PROPOSAL IS/ARE: ☒ UNINHABITED ☐ INHABITED (12 OR MORE REGISTERED VOTERS)
6	CURRENTLY, THE TERRITORY(IES) INCLUDED IN THE PROPOSAL IS/ARE: ☐ DEVELOPED ☒ UNDEVELOPED
7	IS THIS PROPOSAL CONSISTENT WITH THE SPHERE OF INFLUENCE OF THE AFFECTED CITY AND/OR DISTRICT? ☒ YES ☐ NO
8	PLEASE DESCRIBE IN DETAIL THE REASONS FOR THE PROPOSED CHANGE OF ORGANIZATION (ANNEXATION, DETACHMENT, ETC.). USE ATTACHED SHEET IF NECESSARY. This parcel is already an approved tentative map. It is contigious to the East of the City of El Centro residential area. We are planning to bring 120 new homes to the community at the Willow Bend Subdivision as part of the City of El Centro. The City of El Centro is 100% supportive of this project.

9	THE PROPOSED CHANGE OF ORGANIZATION IS REQUESTED, SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS: The City of El Centro Conditions of Approval are attched.
10	WOULD THIS PROPOSAL CREATE AN ISLAND OF UNINCORPORATED TERRITORY? ☐ YES ☒ NO IF YES, PLEASE EXPLAIN. This Annexation would not create an island due to it being contiguous to Countryside Estates to the East.

11	IS THERE A GOOD LIKELIHOOD OF A SIGNIFICANT INCREASE IN POPULATION IN THE SUBJECT AREA WITHIN THE NEXT TEN YEARS? IN UNINCORPORATED AREAS? ☐ YES ☒ NO IN INCORPORATED AREAS? ☐ YES ☒ NO ESTIMATED ADDITIONAL POPULATION: 360
12	WHAT IS THE EXISTING ZONING? A-2 WHAT IS THE PROPOSED ZONING? R-1 Residential
13	HAS OR IS THE AREA BEEN/BEING PRE-ZONED? ☐ YES ☒ NO WHAT IS THE PRE-ZONING CLASSIFICATION? WHAT DATE WAS THIS PRE-ZONED?
14	WHAT IS THE PLANNED GENERAL PLAN DESIGNATION OF THE AREA BY THE AFFECTED CITY? Low density residential
15	DESCRIBE ANY SPECIAL LAND USE CONCERNS EXPRESSED IN THE ABOVE PLANS. None
16	SPECIFY ANY AND ALL EXISTING LAND USES. Unused and unimproved land, previously agriculture. WHAT ARE THE PROPOSED LAND USES? Low density residential DESCRIBE YOUR PROJECT IN DETAIL: 120 Budget-friendy (not low income) single family residential homes. The Community will also have a 1.37 acre park with a bus stop.
17	DOES THE APPLICATION CONTAIN 100% WRITTEN CONSENT OF EACH PROPERTY OWNER IN THE SUBJECT TERRITORY? ☒ YES ☐ NO

18	WILL THE ANNEXED TERRITORY BE LIABLE FOR ITS SHARE OF EXISTING BONDED INDEBTEDNESS?	☐ YES ☒ NO
19	WILL THE ANNEXED TERRITORY BE INCLUDED WITHIN ANY PARTICULAR TAX DIVISION OR ZONE OF THE ANNEXING TERRITORY? PLEASE SPECIFY. As agreed with the City of El Centro and County of Imperial	
20	IF THE PROPOSAL INCLUDES THE CONSOLIDATION OF SPECIAL DISTRICTS, THE PROPOSED NAME OF THE CONSOLIDATED DISTRICT IS: N/A	
21	IF AN INCORPORATION IS INCLUDED IN THE PROPOSAL: (A) THE NAME PROPOSED FOR THE NEW CITY IS: N/A (B) PROVISIONS ARE REQUESTED FOR APPOINTMENT OF: (I) CITY MANAGER ☐ YES ☒ NO (II) THE CITY CLERK AND CITY TREASURER ☐ YES ☒ NO	
22	IF THE FORMATION OF A NEW DISTRICT(S) IS INCLUDED IN THE PROPOSAL: (A) THE PRINCIPAL ACT(S) UNDER WHICH SAID DISTRICT(S) IS/ARE PROPOSED TO BE FORMED IS/ARE: N/A (B) THE PROPOSED NAME(S) OF THE NEW DISTRICT(S) IS/ARE: (C) THE BOUNDARIES OF THE PROPOSED NEW DISTRICT(S) ARE AS DESCRIBED IN EXHIBITS _____ INCORPORATED HEREIN.	
23	THE PERSON(S) SIGNING THIS PETITION HAVE SIGNED AS:	(*CHECK ONLY ONE*) ☐ REGISTERED VOTERS ☒ OWNERS OF LAND
24	AS REQUIRED, THE FOLLOWING ITEMS ARE ENCLOSED WITH THIS APPLICATION: ☒ DEPOSIT ☒ INDEMNIFICATION AGREEMENT ☒ LEGAL DESCRIPTION ☒ ANNEXATION MAP (10 COPIES)	

APPLICANT SIGNATURE

06/06/24
DATE

*Please complete the names and addresses of **additional** persons (**not including** the owner/applicant previously listed at the beginning of the application) who are requesting to have furnished copies of the agenda and Executive Officer's Report and/or mailed notices of the hearing of this proposal. Please attach additional pages if necessary.*

PERSON 1	REQUESTS:	☑ AGENDA COPIES ☑ HEARING PACKAGE HARD COPY	☑ PUBLIC NOTICE OF HEARING ☐ HEARING PACKAGE ON CD
NAME Cortney Coyne			COMPANY Coyne Companies, LLC
MAILING ADDRESS 2351 SOUTH 4TH STREET			TELEPHONE NUMBER 760-554-6404
CITY, STATE, ZIP El Centro, CA 92243			EMAIL ADDRESS cortneyEcoyne@gmail.com

PERSON 2	REQUESTS:	☐ AGENDA COPIES ☐ HEARING PACKAGE HARD COPY	☐ PUBLIC NOTICE OF HEARING ☐ HEARING PACKAGE ON CD
NAME			COMPANY
MAILING ADDRESS			TELEPHONE NUMBER
CITY, STATE, ZIP			EMAIL ADDRESS

NOTICE:

Prior to the effective date of any jurisdictional change (i.e., annexation, detachment, etc.) the governing bodies of all agencies whose service areas or service responsibilities would be altered by such change shall meet to determine the amount of property tax revenues to be exchanged between and among such affected agencies. Notwithstanding any other provisions of law, no such jurisdictional change shall become effective until each county and city included in such negotiation agrees, BY RESOLUTION, to accept the negotiated exchange of property tax revenues.

NOTE:

The resolutions referred to above shall be attached to this application prior to filing with the Local Agency Formation Commission. The Executive Officer of the Local Agency Formation Commission shall not issue a Certificate of Completion (COC) until such resolution is filed with LAFCO.

Wherefore, petitioner(s) request(s) that proceedings be taken in accordance with the provisions of Section 56000, et seq. of the Government Code and herewith affix signature(s) as follows:

*Chief Petitioners (**not to exceed three**):*

PRINT NAME _____ DATE _____

SIGNATURE _____ RESIDENCE ADDRESS _____

PRINT NAME _____ DATE _____

SIGNATURE _____ RESIDENCE ADDRESS _____

PRINT NAME _____ DATE _____

SIGNATURE _____ RESIDENCE ADDRESS _____

FOR LAFCO USE ONLY

Lori Zinn
APPLICATION RECEIVED BY

6/10/2024
DATE RECEIVED

CHECK THE DOCUMENTS SUBMITTED WITH THE APPLICATION:

- ☑ DEPOSIT
- ☑ INDEMNIFICATION AGREEMENT
- ☑ LEGAL DESCRIPTION
- ☑ ANNEXATION MAP (10 COPIES)

EC 1-24
PROJECT NO. ASSIGNED

6/18/2024
DATE ACCEPTED

S:\LAFCO\Forms\2023 Forms\Application

Updated 12/21/2023

Imperial LAFCO
LOCAL AGENCY FORMATION COMMISSION

RECEIVED
JUN 10 2024
Imperial County LAFCO

INDEMNIFICATION AGREEMENT

As part of this application, applicant and real party in interest, if different, agree to defend, indemnify, hold harmless, and release the Imperial County Local Agency Formation Commission, its agents, officers, attorneys, and employees (including consultants) from any claim, action, or proceeding brought against any of them, the purpose of which is to attack, set aside, void, or annul the approval of this application or adoption of the environmental document which accompanies it. This indemnification obligation shall include, but not be limited to, damages, costs, expenses, attorney fees, or expert witness fees that may be asserted by any person or entity, including the applicant, arising out of or in connection with the approval of this application, whether or not there is concurrent negligence on the part of the Imperial County Local Agency Formation Commission, its agents, officers, attorneys, or employees (including consultants).

If any claim, action, or proceeding is brought against Imperial County Local Agency Formation Commission, its agents, officers, attorneys, or employees, to attack, set aside, void, or annul the approval of the application or adoption of the environmental document which accompanies it, then the following procedures shall apply:

1. The Executive Officer shall promptly notify the Commission of any claim, action or proceeding brought by an applicant challenging the Commission's action. The Commission, its agents, attorneys, and employees (including consultants) shall fully cooperate in the defense of that action.

2. The Commission shall have final determination on how to best defend the case and may defend it with in-house counsel, or by retaining outside counsel. In either case the applicant shall be fully responsible for all costs incurred. The applicant may request to provide his or her own counsel to defend the case, however prior written approval of the Commission shall be obtained. Said independent counsel shall work with LAFCO counsel to provide a joint defense and shall include a complete defense of LAFCO to the satisfaction of the Commission.

EXECUTED IN El Centro (CITY), CALIFORNIA ON June (MONTH) 06 (DAY), 20 24 (YEAR)

APPLICANT

NAME (PRINT): MARTIN D. COYNE
WILLOW BEND HOMES, LLC

TITLE: SOLE MEMBER

SIGNATURE: _____

MAILING ADDRESS:

2351 SOUTH 4TH STREET

EL CENTRO, CA 92243

REAL PARTY IN INTEREST / PROPERTY OWNER
(IF DIFFERENT FROM APPLICANT)

NAME (PRINT): _____

TITLE: _____

SIGNATURE: _____

MAILING ADDRESS:

_____

_____

FOR LAFCO USE ONLY

RECEIVED BY: Lori Zinn **DATE RECEIVED:** 6/10/2024

PROJECT NO. EC 1-24

S:\LAFCO\Forms\2023 Forms\Indemnification

Updated 12/21/2023

EXHIBIT B

Certificate of Filing Letter

CERTIFICATE OF FILING

(Government Code 56658 (g) Cortese-Knox-Hertzberg Reorganization Act of 2000)
CONDITIONAL

I, PAULA GRAF, as the Executive Officer to the Local Agency Formation Commission of the County of Imperial (LAFCO), do hereby certify that:

1. The APPLICATION referenced and described below has been submitted to me and is substantially in compliance with the form prescribed by the Local Agency Formation Commission of Imperial County and in substantial conformity with the Act.

2. The APPLICATION contains the information data and signatures as required by this Commission and applicable provisions of State law and has been accepted for filing.

EFFECTIVE DATE: June 20, 2024

APPLICATION TITLE: Willow Bend Subdivision Annexation
LAFCO File No. EC 1-24

APPLICANT(S): Martin D. Coyne
(By Petition)

LEGAL DESCRIPTION: APN: 054-370-012
(See map and legal description)

GENERAL LOCATION: The project is the Southwest Corner of HWY 86 & Countryside Drive in El Centro, CA, which is approximately 37.05 acres.

PROJECT DESCRIPTION: The project is the annexation of approximately 37.05 acres to the City of El Centro to bring 120 budget-friendly (not low-income) single-family residential homes to the Community at the Willow Bend Subdivision. The Community will also have a 1.37-acre park with a bus stop.

DATE OF HEARING: Tentative

AFFECTED AGENCIES: (See list at the end of the notice)

CEQA LEAD AGENCY: The City of El Centro and LAFCO are Co-Lead agencies for CEQA.

This certificate of filing is issued according to Section 56658 of the Government Code, State of California. All time requirements and limitations for processing and consideration of this application specified by State law and/or rules and the regulations of the Imperial County Local Agency Formation Commission shall become effective on the date of issuance of this certificate.

NOTICE TO READER & EACH SUBJECT AGENCY & RESPONSIBLE AGENCY:

Under the provisions of the CORTESE-KNOX-HERTZBERG REORGANIZATION ACT OF 2000 (Gov. Code 56000 et. seq.) you have certain responsibilities as well as opportunities to respond to this application. Please respond to the Executive Officer promptly for your concerns or comments to be addressed.

SPECIAL NOTE:

The Executive Officer has determined that the information contained within the application is substantially complete for purposes of evaluation by LAFCO staff. In addition, this project is subject to a tax exchange, which likewise must be processed through the County Agencies, and a report from the County must be available to the LAFCO and the public before any hearing.

The timelines listed herein are general and may not be adhered to unless all documentation is received.

For legal reasons, the processing time limits imposed on LAFCO do not start until the CEQA documentation and the Tax Exchange resolution are in the possession of LAFCO.

Date 6/20/2024

Paula Graf
Executive Officer to LAFCO

AFFECTED AGENCIES

- ☒ Applicant
- ☒ California Fish & Game Commission
- ☒ California Highway Patrol
- ☒ CALTRANS
- ☒ City Clerk
- ☒ City Manager
- ☒ City Community Development Director
- ☒ City Public Works Director
- ☒ County Agricultural Commissioner
- ☒ County Air Pollution Control
- ☒ County Assessor
- ☒ County Auditor
- ☒ County Clerk to the Board
- ☒ County Clerk/Recorder
- ☒ County Counsel
- ☒ County Executive Officer
- ☒ County Fire Department
- ☒ County Planning Commission
- ☒ County Planning Director
- ☒ County Public Works Director
- ☒ County Sheriff
- ☒ County Special Accounting Manager
- ☒ ICOE Superintendent
- ☒ IID Clerk to the Board
- ☒ IID General Manager
- ☒ IID Vicky Dee Bradshaw
- ☒ LAFCO Files
- ☒ Regional Water Quality Control Board
- ☒ Southern CA. Gas Co.

Attachments:

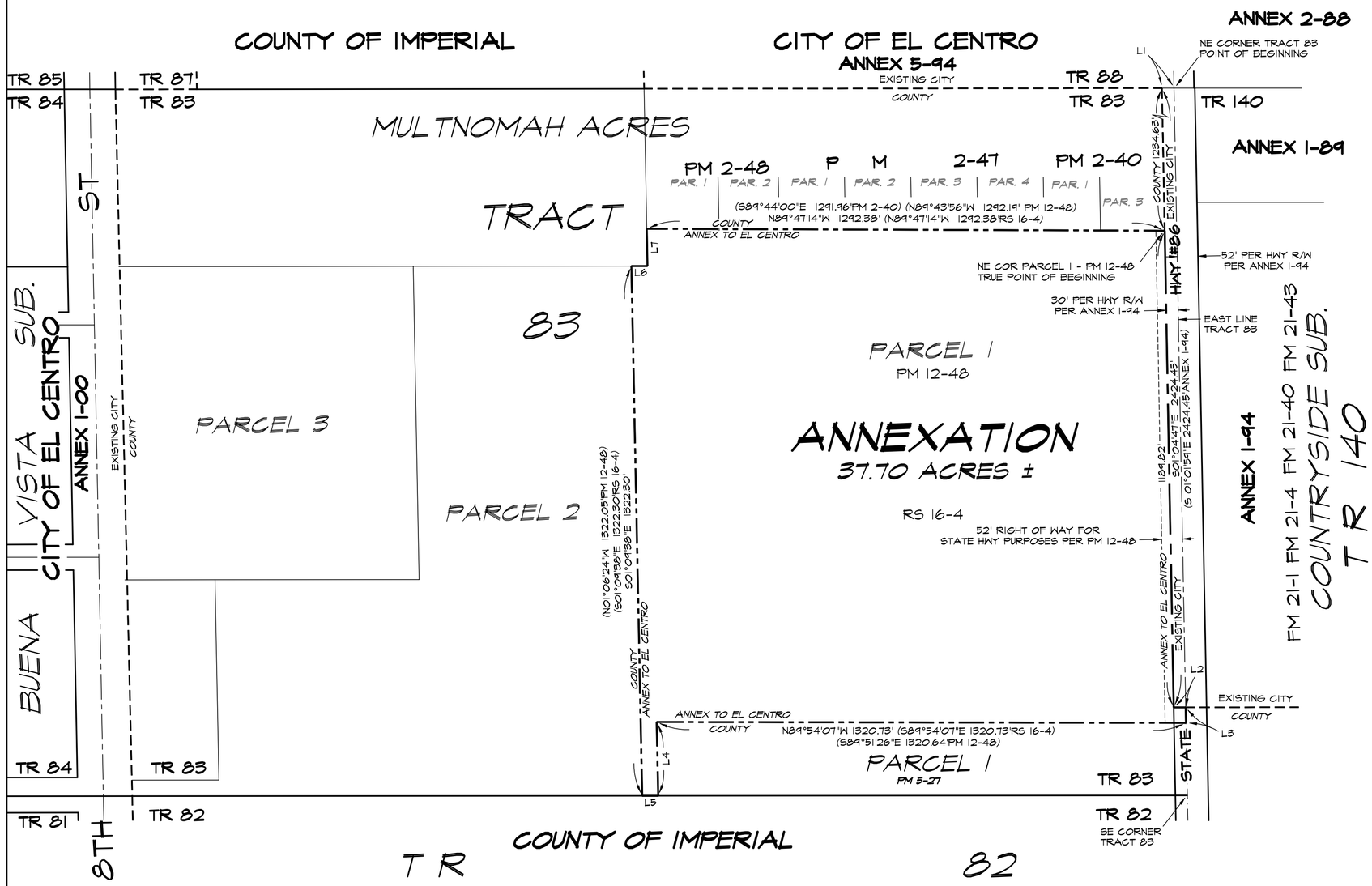
Application
Annexation Map

EXHIBIT C

Annexation Map and Geographic Description

ANNEXATION NO. EC 1-24

TO THE CITY OF EL CENTRO, COUNTY OF IMPERIAL, STATE OF CALIFORNIA



LINE TABLE			
LINE	LENGTH	BEARING	REFERENCE
L1	30.01'	N 89°55'58" W	
	30.00'	S 89°53'00" E	ANNEX 1-94
L2	30.01'	S 89°58'36" E	
	30.00'	N 89°55'48" W	ANNEX 1-94
L3	38.80'	S 01°04'47" E	
L4	184.11'	S 01°09'38" E	
	184.11'	S 01°09'38" E	RS 16-4
	184.14'	N 01°06'24" W	PM 12-48
L5	40.01'	S 89°57'32" W	
	40.01'	S 89°57'32" W	RS 16-4
	40.01'	S 89°59'48" E	PM 12-48
L6	40.01'	N 89°55'18" E	
	40.01'	N 89°55'18" E	RS 16-4
	40.01'	S 89°58'35" E	PM 12-48
L7	93.00'	N 01°04'42" W	
	93.00'	N 01°04'42" W	RS 16-4
	93.00'	S 89°55'54" W	PM 6-12 & PM 12-48

SCALE 1" = 200'

200' 0' 200' 400' 600'

GRAPHIC SCALE

LEGAL DESCRIPTION :

THAT PORTION OF TRACT 83, T16S, R14E, S.B.M., IN THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID TRACT 83 WITH SAID POINT BEING ALSO BEING THE NORTHWEST CORNER OF TRACT 140;

THENCE NORTH 89°55'48" WEST A DISTANCE OF 30.01 FEET TO NORTHWEST CORNER OF ANNEXATION NO. 1-94 ON A LINE LYING 30.00 FEET WEST OF AND PARALLEL WITH THE EAST LINE OF SAID TRACT 83;

THENCE SOUTH 01°04'47" EAST A DISTANCE, ALONG LAST SAID PARALLEL LINE AND THE WEST LINE OF SAID ANNEXATION NO. 1-94, A DISTANCE OF 1234.63 FEET TO THE NORTHEAST CORNER OF PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4 AND THE TRUE POINT OF BEGINNING;

THENCE CONTINUING SOUTH 01°04'46" EAST, ALONG LAST SAID PARALLEL LINE, A DISTANCE OF 1189.82 FEET TO THE SOUTHWEST CORNER OF ANNEXATION NO. 1-94;

THENCE SOUTH 89°58'36" EAST, ALONG THE SOUTH LINE OF SAID ANNEXATION NO. 1-94 A DISTANCE OF 30.01 FEET TO A POINT ON THE EAST LINE OF SAID TRACT 83;

THENCE SOUTH 01°04'47" EAST, ALONG SAID EAST LINE OF TRACT 83, A DISTANCE OF 38.80 FEET TO THE SOUTHEAST CORNER PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4;

THENCE NORTH 89°54'07" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 1320.73 FEET;

THENCE SOUTH 01°09'38" EAST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 184.11 FEET;

THENCE SOUTH 89°57'32" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 40.01 FEET;

THENCE NORTH 01°09'38" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 1322.30 FEET;

THENCE NORTH 89°55'18" EAST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 40.01 FEET;

THENCE NORTH 01°04'42" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 93.00 FEET;

THENCE SOUTH 89°47'14" EAST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 1292.38 FEET TO THE TRUE POINT OF BEGINNING.

SAID AREA CONTAINING 37.70 ACRES, MORE OR LESS.

OWNER:

WILLOW BEND HOMES, LLC
2351 S. 4TH STREET
EL CENTRO, CA 92243

ASSESSORS PARCEL NUMBER:

A.P.N. 054-370-012

SURVEYOR'S NOTE:

THIS MAP IS BASED ON FIELD SURVEY AND WAS PREPARED BY ME OR UNDER MY DIRECTION AT THE REQUEST OF WILLOW BEND HOMES, LLC ON MAY 02, 2024.

PROFESSIONAL LAND SURVEYOR
GORDON O OLSON
No. 7107
STATE OF CALIFORNIA

GORDON O. OLSON, L.S. 7,107

LEGEND:

ANNEX TO EL CENTRO / COUNTY	LIMITS OF PARCEL TO BE ANNEXED.
EXISTING CITY / ANNEX TO EL CENTRO	EXISTING CITY LIMITS WITHIN THE PARCEL TO BE ANNEXED.
EXISTING CITY / COUNTY	EXISTING CITY LIMITS
	PROPERTY LINE
(PM)	RECORD DATA PER PARCEL MAP OF BOOK & PAGE AS SPECIFIED
(ROS)	RECORD DATA PER RECORD OF SURVEY OF BOOK & PAGE AS SPECIFIED

Desert Surveying & Engineering
Arizona, California and New Mexico Land Surveyors and Civil Engineers
670 East 32nd Street - Suite #2 - Yuma, Az 85364
Email: DSE@desertsurveying.com
Yuma Phone: 928-318-2043

ANNEXATION NO. EC 1-24		SHEET 1 OF 1
A PORTION OF TR. 83 T.16. S., R.14.E., S.B.M		
LOCATION: EL CENTRO, CA	DATE: 06-02-24	BY: S.O.
CLIENT: DUBOSE DESIGN GROUP	FILE NAME: 24001.02 Annex (01-27-25).dwg	JOB NUMBER: 24001.02

ANNEXATION NO. EC 1-24
TO
THE CITY OF EL CENTRO, CA

GEOGRAPHIC DESCRIPTION:

THAT PORTION OF TRACT 83, T16S, R14E, S.B.M., IN THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID TRACT 83 WITH SAID POINT BEING ALSO BEING THE NORTHWEST CORNER OF TRACT 140;

THENCE NORTH 89°55'48" WEST A DISTANCE OF 30.01 FEET TO NORTHWEST CORNER OF ANNEXATION NO. 1-94 ON A LINE LYING 30.00 FEET WEST OF AND PARALLEL WITH THE EAST LINE OF SAID TRACT 83;

THENCE SOUTH 01°04'47" EAST A DISTANCE, ALONG LAST SAID PARALLEL LINE AND THE WEST LINE OF SAID ANNEXATION NO. 1-94, A DISTANCE OF 1234.63 FEET TO THE NORTHEAST CORNER OF PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4 AND **THE TRUE POINT OF BEGINNING;**

THENCE CONTINUING SOUTH 01°04'46" EAST, ALONG LAST SAID PARALLEL LINE, A DISTANCE OF 1189.82 FEET TO THE SOUTHWEST CORNER OF ANNEXATION NO. 1-94;

THENCE SOUTH 89°58'36" EAST, ALONG THE SOUTH LINE OF SAID ANNEXATION NO. 1-94 A DISTANCE OF 30.01 FEET TO A POINT ON THE EAST LINE OF SAID TRACT 83;

THENCE SOUTH 01°04'47" EAST, ALONG SAID EAST LINE OF TRACT 83, A DISTANCE OF 38.80 FEET TO THE SOUTHEAST CORNER PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4;

THENCE NORTH 89°54'07" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 1320.73 FEET;

THENCE SOUTH 01°09'38" EAST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 184.11 FEET;

THENCE SOUTH 89°57'32" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 40.01 FEET;

THENCE NORTH 01°09'38" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 1322.30 FEET;

THENCE NORTH 89°55'18" EAST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 40.01 FEET;

THENCE NORTH 01°04'42" WEST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 93.00 FEET;

THENCE SOUTH 89°47'14" EAST, ALONG THE BOUNDARY OF SAID PARCEL 1 OF PARCEL MAP NO. 12-48 ACCORDING TO RECORD OF SURVEY 16-4, A DISTANCE OF 1292.38 FEET **TO THE TRUE POINT OF BEGINNING.**

SAID AREA CONTAINING 37.70 ACRES, MORE OR LESS.

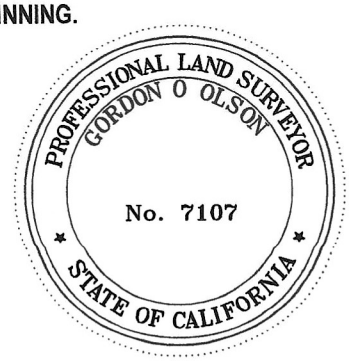


EXHIBIT D

Project Location Map

EC 1-24 Willow Bend Subdivision Annexation
Project Location Map

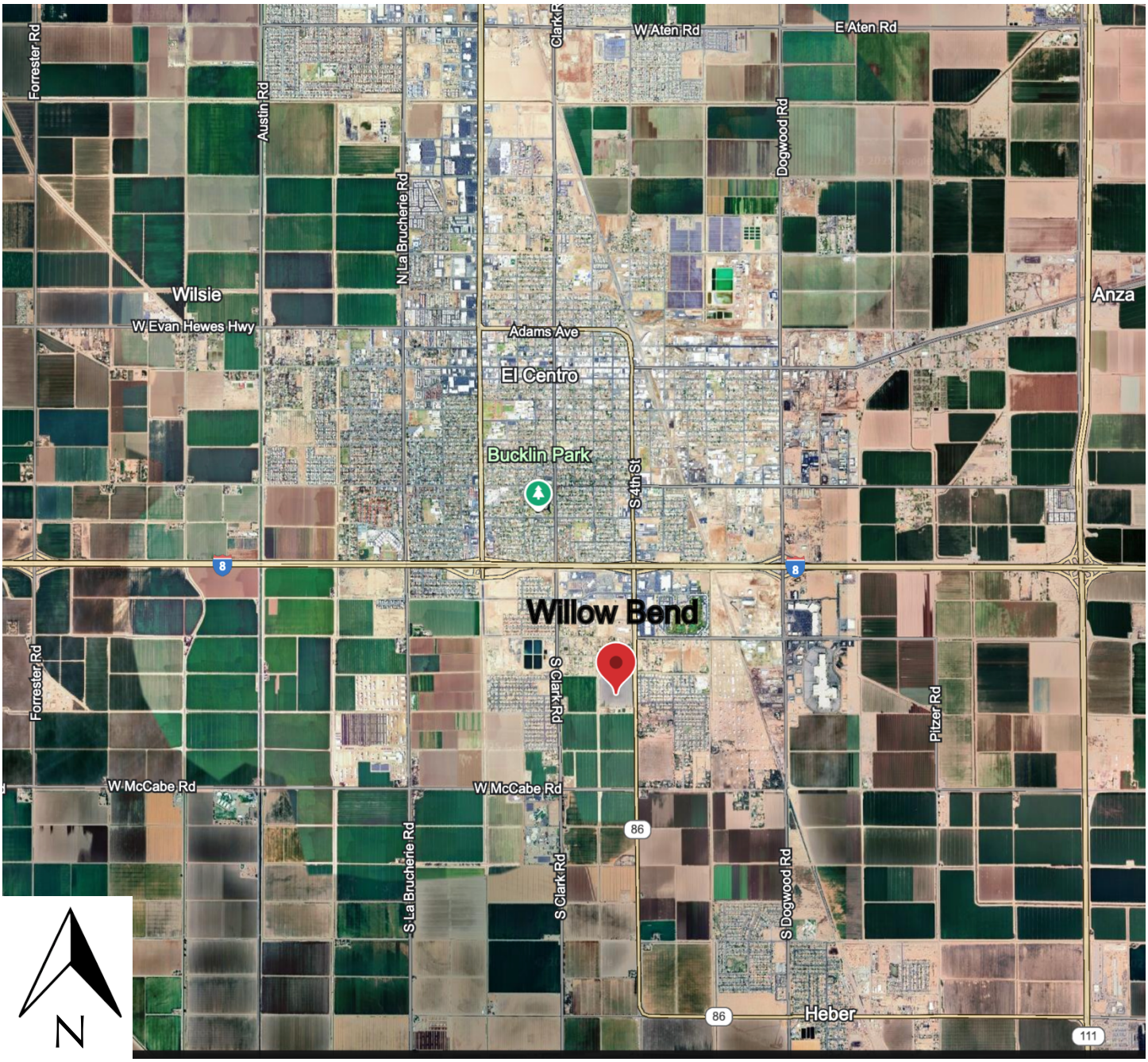


Prepared by Applicant
01/29/25

EXHIBIT E

Vicinity Map

EC 1-24 Willow Bend Subdivision Annexation
Vicinity Map



Prepared by Applicant
01/29/25

EXHIBIT F

City Resolution # 25-09

RESOLUTION NO. 25- 09

A RESOLUTION OF THE CITY COUNCIL OF THE
CITY OF EL CENTRO APPROVING ANNEXATION
EC 1-24 (WILLOW BEND SUBDIVISION ANNEXATION)

WHEREAS, the property owner of approximately 38+ acres of property, known as the Willow Bend Subdivision, has petitioned for the annexation of the property, as described in Exhibit "A", which is attached hereto and made a part hereof; and

WHEREAS, the Local Agency Formation Commission for the County of Imperial (hereinafter referred to as "LAFCO") has requested that the City conduct its proceedings prior to LAFCO conducting its proceedings regarding said application and has designated the territory proposed to be annexed as Annexation EC 1-24 (Willow Bend Subdivision Annexation); and

WHEREAS, the City Council finds based upon its review of EC 1-24 (Willow Bend Subdivision Annexation) that the territory to be annexed is adjacent to the City, is developing, is located in land designated as Farmland of Statewide Importance but meets criteria to be converted to urban use, is designate and /pre-zoned for urban growth by the City's General Plan and is not within the sphere of influence of another City.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EL CENTRO, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. That the foregoing is true, correct and adopted.
2. That the City Council does hereby approve EC 1-24 (Willow Bend Subdivision Annexation).

PASSED AND ADOPTED at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February 2025.

CITY OF EL CENTRO

By _____
Tomás Oliva, Mayor

ATTEST:

By _____
Norma Wyles, City Clerk

APPROVED AS TO FORM:
Office of the City Attorney

By _____
Elizabeth L. Martyn, City Attorney

STATE OF CALIFORNIA)
COUNTY OF IMPERIAL) ss
CITY OF EL CENTRO)

I, Norma Wyles, City Clerk of the City of El Centro, California, do hereby certify that the foregoing Resolution No. 25- 09 was duly and regularly adopted at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February 2025, by the following vote:

AYES: Ellett, Carter, Oliva, Marroquin, Camarena
NOES: None
ABSENT: None
ABSTAINED: None

By Norma Wyles
Norma Wyles, City Clerk

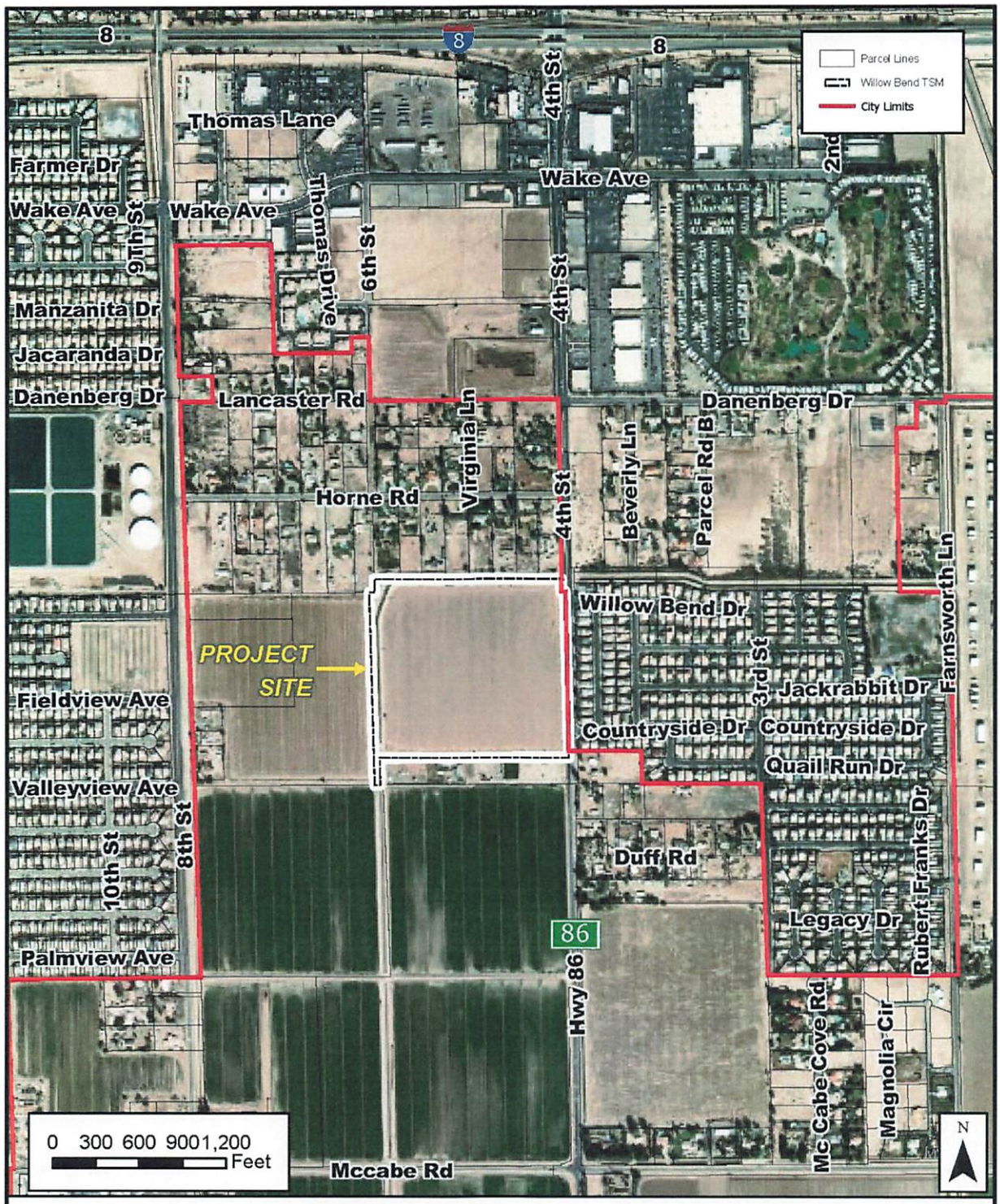


Exhibit "A"
Willow Bend TSM

Project Location Map

EXHIBIT G

City Resolution # 24-98

RESOLUTION NO. 24-98

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL CENTRO APPROVING A MASTER TAX AND FISCAL IMPACT AGREEMENT WITH THE COUNTY OF IMPERIAL FOR THE EXCHANGE OF PROPERTY TAX REVENUES UPON ANNEXATION OF TERRITORY TO THE CITY

WHEREAS, it is necessary for the City Council of the City of El Centro, California (hereinafter referred to as "City Council") to approve a Master Tax and Fiscal Impact Agreement (hereinafter referred to as "the Agreement") for exchange of property tax revenues upon annexation of territory to the City; and

WHEREAS, this Agreement shall become effective upon execution by both the City and the County of Imperial and remain in effect for a term of one year; and

WHEREAS, the City Council finds that its approval of the Agreement will be in the best interest of the City.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EL CENTRO DOES HEREBY RESOLVE THAT:

1. That the foregoing is true, correct and adopted hereby.
2. That the City Council does hereby approve the Agreement with the County of Imperial for the exchange of property tax revenue due to annexation to the City.
3. That the Mayor of the City of El Centro, California, is hereby authorized to sign said Agreement, a copy of which is on file in the Office of the City Clerk, on behalf of the City of El Centro, California.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of El Centro, California, held on the 3rd day of December, 2024.

CITY OF EL CENTRO

By: Sylvia Marroquin

Sylvia Marroquin, Mayor

ATTEST:

By: Norma Wyles

Norma Wyles, City Clerk

APPROVED AS TO FORM:
Office of the City Attorney

By: Elizabeth L. Martyn
Elizabeth L. Martyn, City Attorney

STATE OF CALIFORNIA)
COUNTY OF IMPERIAL) ss
CITY OF EL CENTRO)

I, Norma Wyles, City Clerk of the City of El Centro, California, do hereby certify that the foregoing Resolution No. 24-98 was duly and regularly adopted at a regular meeting of the City Council of the City of El Centro, California, held on the 3rd day of December, 2024, by the following vote:

AYES:	Cardenas-Singh, Oliva, Marroquin, Garcia, Carter
NOES:	None
ABSENT:	None
ABSTAINED:	None

By Norma Wyles
Norma Wyles, City Clerk

MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT

THIS MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT ("Agreement"), made and entered into by and between the COUNTY OF IMPERIAL, a political subdivision of the state of California ("County"), and the CITY OF EL CENTRO, a municipal corporation of the state of California ("City") (individually, "Party;" collectively, "Parties") shall be as follows:

WHEREAS, Section 99 of the California Revenue and Taxation Code provides that in case of a jurisdictional change, the governmental bodies of all agencies whose service areas or responsibilities would be altered by such jurisdictional change must agree, by resolution, to accept the negotiated exchange of property tax revenues; and

WHEREAS, Section 56668 of the California Government Code requires that certain factors be considered in reviewing any Proposal before the Local Agency Formation Commission ("LAFCO"), including the, "effect of the proposed action and of alternative actions on adjacent areas, on mutual social and economic interests and on the local government structure of the county;" and

WHEREAS, Section 56069 of the California Government Code defines "Proposal" as a request or statement of intention made by petition, or by resolution of application of a legislative body, proposing proceedings for the Change of Organization or reorganization described in the request or statement of intention; and

WHEREAS, Section 56021 of the California Government Code defines "Change of Organization" to mean any of the following: (a) a city incorporation; (b) a district formation; (c) an annexation to, or detachment from, a city or district; (d) a disincorporation of a city; (e) a district dissolution; (f) a consolidation of cities or special districts; or (g) a merger or establishment of a subsidiary district; and

WHEREAS, LAFCO requires a written agreement regarding the exchange of property tax between the affected governmental bodies prior to the approval of any annexation; and

WHEREAS, in order to offset the negative fiscal impacts to County, to facilitate annexations to the City, and to comply with LAFCO requirements, the Parties are entering into this Agreement, in which City agrees to exchange property tax revenues and make certain payments to County, as further detailed below.

NOW, THEREFORE, the Parties agree as follows:

1. DEFINITIONS.

1.1. "Base year revenues" means property tax revenues accruing to each agency in the current fiscal year, being defined as the fiscal year in which the annexation is accepted by the State Board of Equalization.

1.2. "Tax increment" means that the amount of property tax revenues in excess of base year revenues accruing to each agency (by Tax Rate Area) and resulting from the increase in assessed valuation from one year to the next.

2. TAX APPORTIONMENT.

2.1. Special Districts. When a special district, including County Fire and Library Districts, gives up its service responsibility in a territory, upon annexation of such territory to a City, the affected special districts shall transfer to the City all of its base year revenues and tax increment attributable to the annexed territory, effective in the fiscal year following the calendar year in which annexation is completed. Cemetery Districts are expressly excluded from this paragraph, such that any changes in assessments and tax revenues would need to be negotiated directly with the Cemetery Districts.

2.2. Substantially Developed Areas. For jurisdictional changes where the proposed area is agreed to by County and City to be already substantially developed at the time of annexation, revenue shall be distributed as follows:

2.2.1. Base year revenues. No transfer of the base year revenues is required.

2.2.2. Tax increment. The aggregate amount of the tax increment that would accrue to County, as a result of the aforestated base year revenue apportionment, shall be distributed in the amount of fifty percent (50%) of the increment to the City and fifty percent (50%) of the increment to the County.

2.3. Not Substantially Developed Areas. For jurisdictional changes where the proposed area is agreed to by County and City to be not substantially developed at the time of annexation, revenue shall be distributed as follows:

2.3.1. Base year revenues. The County shall transfer to the City forty percent (40%) of the base year revenues.

2.3.2. Tax increment. The aggregate amount of the tax increment that would accrue to County and City, as a result of the aforementioned base year revenue apportionment, shall be distributed in the amounts as follows:

(a) Annexations of territory where the proposed area is agreed by the Parties to be for residential development, the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

(b) Annexations of territory where the proposed area is agreed by the Parties to be for non-residential development, the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

(c) Annexations of territory where the proposed area is agreed by the Parties to be a combination of residential and non-residential development (mixed development), the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

2.3.3. Property owned by a tax-exempt entity. For annexations of territory of property owned by a tax-exempt entity, the base year revenue shall be zero dollars ($0.00). Additionally, a tax increment shall only be generated if the property, or a portion thereof, is developed by an entity subject to property taxation. In that specific instance, tax increment shall be distributed in accordance to Section 2.3.1 or Section 2.3.2 of this Agreement as applicable.

2.3.4. The table below summarizes the preceding items under Section 2 of this Agreement for reference:

Category	County of Imperial	City of El Centro
Special Districts	0%	100%
Base Year Allocation		
Substantially Developed Areas	100%	0%
Not Substantially Developed Areas	60%	40%
Increment Allocation		
Substantially Developed Areas	50%	50%
Not Substantially Developed Areas: Residential, Non-Residential and Mixed Development	40%	60%

3. **APPLICATION**

The provisions of this Agreement shall apply to the apportionment of all secured and unsecured property tax revenues, due to annexation to the City which have not heretofore been negotiated and agreed to by the parties to the effective date of this Agreement.

4. **COUNTY DEVELOPMENT IMPACT FEES**

4.1. To offset the negative impacts to County of any annexation approved during the term of this Agreement, City shall require developer, as compensation for the discounted negative impacts for the first twenty (20) years of project development, to pay the County certain Impact fees pursuant to the *Schedule of Fiscal Impact Fees Per Unit (residential) and per Square Foot (nonresidential) – Countywide* attached hereto as **Exhibit "A"** ("Fee Schedule"). Said Fee Schedule is pursuant to the Impact Fee Study prepared for the County of Imperial, California by Tischler Bise dated August 17, 2006. A copy of said Impact Fee Study is available upon request.

4.2. In the event that the developer fails to pay the County the applicable County Impact Fees required to be paid in respect of any building permits related to any annexation approved during the term of this agreement for which the developer is making application to the City, City shall deny the application for the said building permits until such time as the developer pays the required County Impact Fees applicable to such building permits as provided for pursuant to the Fee Schedule.

4.3. Said payment of County Impact Fees shall be made by the developer to the County in the appropriate and applicable amount depending upon the number of building permits for which the developer is making application to the City at any given time. Upon payment by the developer of the County Impact Fees applicable to any building permits for which the developer is making application to the City as provided for above, the County shall issue a receipt and/or other form of documentation evidencing that the developer has made the required payment and the City shall be entitled to rely upon such receipt and/or other documentation issued by the County that the required County Impact Fees in respect of such building permits have been paid for the purposes of this Agreement.

4.4. In the event that 1) the developer fails to pay the County the applicable County Impact Fees required to be paid in respect of any building permits related to any annexation approved during the term of this agreement for which the developer is making application to the City and 2) the City approves the application for the said building permits despite the failure of developer to pay the applicable County Impact Fees, then City shall pay County the applicable County Impact Fees. Such payment shall be due within thirty (30) days of the approval of the application for building permits.

5. **TERM OF AGREEMENT**

5.1. This Agreement shall become effective upon execution by both Parties and remain in effect for a term of one (1) year from the date of signing. The terms and conditions shall remain in full force and effect until each term or condition is completely and fully satisfied or a subsequent agreement is negotiated and approved by both Parties.

5.2. Not less than ninety (90) days prior to the expiration of this Agreement, the County and City shall commence negotiation for continuance of this Agreement or formation of new Agreement including fee review and related studies to support any new or revised agreement.

6. REDEVELOPMENT

Prior to the City including any portion of any annexations covered by this Agreement into any program which adversely fiscally impacts County, such as former "Redevelopment Agencies / Zones" ("RDA's") where any successor Agencies are formed that are similar to RDA's and property tax revenues could be affected, City and County shall renegotiate and enter into a new and separate agreement which addresses said negative fiscal impacts.

7. INTENT OF AGREEMENT

By entering into this Agreement, the parties mutually assume the continuation of a statutory scheme for the distribution of tax revenues that is compatible with the provisions contained herein, and such assumption is a basic intent of this Agreement.

8. MEMORANDUM OF ANNEXATION

Following approval of each individual annexation project by LAFCO falling under the terms of this Master Tax Sharing Agreement, a Memorandum of Annexation memorializing the subject annexation shall be entered into by the parties, signed by the City and agendized before the Board of Supervisors for approval, so that a public record is created for the Imperial County Auditor-Controller's Office to utilize as a tool for processing annual property tax distributions going forward. The form of Memorandum is attached hereto as **Exhibit "B"**.

9. SEVERABILITY

If any term or provision of this Agreement is held by a court of competent jurisdiction to be void, invalid or otherwise unenforceable, the remaining terms and provisions shall continue in full force and effect.

10. GOVERNING LAW

This Agreement is made and entered into in Imperial County, California. This agreement shall be construed and enforced in accordance with the laws of the State of California, except that the Parties agree

that any action brought by either Party regarding this Agreement shall be brought in a court of competent jurisdiction in Imperial County, or if appropriate, in the Federal District Court serving Imperial County.

11. GOOD FAITH

The Parties hereto agree to act in good faith and deal fairly with the other Party in the performance of this Agreement.

12. NOTICES.

Notices required hereunder shall be in writing and may be given either personally or by registered or certified mail, postage prepaid, return receipt requested. If given by registered or certified mail, such notice shall be addressed as indicated below, and shall be deemed given and received upon the earlier of actual receipt by the Party to whom the notice was sent, or return of the requested receipt to the Party giving notice. Notice personally given shall be deemed given when delivered to the Party to whom the notice is addressed. Any party may upon ten (10) days written notice to the other Party, change the address where notices are to be sent.

Notice to County

County of Imperial
County Executive Office
Attention: County Executive Officer
940 Main Street, Suite #208
El Centro, CA 92243

With Copies To

Imperial County LAFCO
Attention: Executive Officer
1122 State St., Suite D
El Centro, CA 92243

Notice to City

City of El Centro
Attention: City Manager
1275 W. Main Street
El Centro, CA 92243

13. COUNTERPARTS.

The Parties herein agree that this Agreement may be executed in counterparts.

14. AUTHORITY.

The Parties herein each warrant and represent that they are authorized to execute this Agreement and bind City or County to the terms and conditions of this Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed the day and year written below.

COUNTY OF IMPERIAL:

By: _____
Luis A. Plancarte, Chairman
Imperial County Board of Supervisors

Date: _____

ATTEST:

By: _____
Blanca Acosta, Clerk
of the Board of Supervisors

Approved as to Form:

By: _____
Eric R. Havens
County Counsel

CITY OF EL CENTRO

By: Sylvia Marroquin
Sylvia Marroquin, Mayor
El Centro City Council

Date: 12/17/24

ATTEST:

By: Norma Wyles
Norma Wyles, Clerk
of the City of El Centro

Approved as to Form

By: Elizabeth L. Martyn
Elizabeth L. Martyn
City Attorney

COUNTY OF IMPERIAL
FISCAL IMPACT FEES
EFFECTIVE JANUARY 20, 2007

Exhibit A

Units	Total Impact Fee Per Unit	Per Fiscal Impact Studies	Surcharge for Developable Land	Total
Residential		Per Housing Unit		
Single Family	$2,420	$225	$72.60	$2,718
Multi Family	$1,895	$276	$56.85	$2,228
Mobile Home	$1,624		$48.72	$1,673
Non-Residential	Countywide Impact Fee Per 1,000 Square Foot			
Com/Shop Ctr (50,000 or less sq ft)	$671.00	$80.00	$20.00	$771
Com/Shop Ctr (50,001-100,000 sq ft)	$587.00	$80.00	$17.00	$684
Com/Shop Ctr (100,001-200,000 sq ft)	$513.00	$80.00	$15.00	$608
Com/Shop Ctr over (200,000 sq ft)	$449.00	$80.00	$13.00	$542
Office/Inst (25,000 or less sq ft)	$549.00	$80.00	$16.00	$645
Office/Inst (25,000-50,000 sq ft)	$502.00	$80.00	$15.00	$597
Office/Inst (50,001-100,000 sq ft)	$461.00	$80.00	$13.00	$554
Medical-Dental Office	$700.00	$80.00	$21.00	$801
Hospital	$470.00	$80.00	$14.00	$564
Business Park	$407.00	$80.00	$12.00	$499
Light Industrial	$276.00	$80.00	$8.00	$364
Manufacturing	$199.00	$80.00	$5.00	$284
Warehousing	$162.00	$80.00	$4.00	$246
Elementary School	$216.00	$80.00	$6.00	$302
Other Non-Residential				
Lodging (per room)	$91.00		$2.00	$93
Day Care (per student)	$55.00		$2.00	$57
Nursing Home (per bed)	$54.00		$1.00	$55

Prepared 11/14/2006
Based on TischlerBise Fiscal Impact Fee Study dated August 17, 2006 &
Proposed Fiscal Impact Fee Ordinance

EXHIBIT "B"

MEMORANDUM OF ANNEXATION

This Memorandum of Annexation is made and entered into by and between the **CITY OF EL CENTRO**, a municipal corporation of the state of California ("**City**"), and the **COUNTY OF IMPERIAL**, a political subdivision of State of California ("**County**"), with respect to that certain Master Tax Sharing Agreement dated _____, 2024 ("**Agreement**"), for the annexation located at _____, also identified as a portion of APN _____ ("Annexation Property"):

1. Parties: County of Imperial & City of El Centro
2. Reference to the 2024 Master Tax Sharing Agreement approval date (not known yet)
3. Name of Annexation (ex: "EC __-__")
4. Annexation date of approval by LAFCO
5. Assessor's Parcel Numbers for the affected properties

IT IS SO AGREED.

COUNTY:

County of Imperial

By: _____
, Chairperson
Imperial County Board of Supervisors

Date: _____

CITY:

City of El Centro

By: _____
, Mayor

Date: _____

EXHIBIT H

City Resolution # 25-07

RESOLUTION NO. 25-07

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL CENTRO ADOPTING AN ADDENDUM TO EIR 05-05

PROJECT: Willow Bend Tentative Subdivision Map, consisting of approximately 38-acre site north of McCabe Road, generally located west of South 4th Street (Highway 86) and 630 feet south of Horne Road.

WHEREAS, on or about February 7, 2007, the City Council certified EIR 05-05 for the Willow Bend Subdivision project; and

WHEREAS pursuant to the California Environmental Quality Act ("CEQA") and the CEQA Guidelines of 1970, as amended, an addendum to Environmental Impact Report 05-05 is appropriate for a project when changes to the project do not raise any environmental issues already addressed in the EIR; and

WHEREAS, on the basis of the whole record, including the Environmental Impact Report for the above- named project and comments received, the City Council has considered the Addendum along with the final EIR and determines that finds that there is no substantial evidence that the project as amended will have a significant effect on the environment, and that the Addendum to the original Environmental Impact Report along with that EIR reflect the City of El Centro, California's independent judgment and analysis; and

WHEREAS, the City Clerk and the Director of Community Development, both located at 1275 West Main Street, El Centro, California, are the custodians of the records of material which constitute the record of proceedings upon which the City Council's decision is based in this matter.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EL CENTRO, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. That the foregoing is true, correct and adopted.
2. That EIR 05-05 along with Addendum to Environmental Impact Report 05-05, a copy of which is on file at the Office of the City Clerk, on the above-named project is hereby adopted.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February.

CITY OF EL CENTRO

By _____

Tomás Oliva, Mayor

ATTEST:

By Norma Wyles
Norma Wyles, City Clerk

APPROVED AS TO FORM
Office of the City Attorney

By Elizabeth L. Martyn
Elizabeth L. Martyn, City Attorney

STATE OF CALIFORNIA)
COUNTY OF IMPERIAL) ss
CITY OF EL CENTRO)

I, Norma Wyles, City Clerk of the City of El Centro, California, do hereby certify that the foregoing Resolution No. 25-07 was duly and regularly adopted at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February 2025, by the following vote:

AYES: Ellett, Carter, Oliva, Marroquin, Camarena
NOES: None
ABSENT: None
ABSTAINED: None

By Norma Wyles
Norma Wyles, City Clerk

EXHIBIT I

City Resolution # 25-01

ORDINANCE NO. 25- 01

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF EL CENTRO AMENDING THE ZONING MAP OF THE CITY OF EL CENTRO PERTAINING TO EC 1-24 (WILLOW BEND SUBDIVISION ANNEXATION)

THE CITY COUNCIL OF THE CITY OF EL CENTRO, CALIFORNIA DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. The Zoning Map of the City of El Centro, California is hereby amended to provide as follows:

"The following property which consists of an approximate 38+ is hereby pre-zoned to R1-Single Family Residential on property generally located west of South 4th Street (Highway 86) and about 630 feet south of Horne Road, further described as APN 054-370-011."

Section 2. This Amendment shall be given appropriate enumeration in the files of the City Clerk regarding the Zoning Map.

Section 3. This Ordinance shall take effect thirty (30) days from and after its adoption. Within fifteen (15) days after adoption, it shall be published once in a newspaper, published and circulated within the City of El Centro, California.

INTRODUCED at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February 2025.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of El Centro, California, held on the 18th day of Feb., 2025.

CITY OF EL CENTRO

By _____
Tomás Oliva, Mayor

ATTEST:

By _____
Norma Wyles, City Clerk

APPROVED AS TO FORM:
Office of the City Attorney

By _____
Elizabeth L. Martyn, City Attorney

STATE OF CALIFORNIA)
COUNTY OF IMPERIAL) ss
CITY OF EL CENTRO)

I, Norma Wyles, City Clerk of the City of El Centro, California, do hereby certify that the foregoing Ordinance No. 25-01 , had its first reading on February 4, 2025, and its second reading on February 18, 2025 and was passed by the following vote:

AYES: Ellett, Carter, Oliva, Marroquin, Camarena
NOES: None
ABSENT: None
ABSTAINED: None

AYES: Ellett, Carter, Oliva, Marroquin, Camarena
NOES: None
ABSENT: None
ABSTAINED: None

By Norma Wyles
Norma Wyles, City Clerk

EXHIBIT J

City Resolution # 25-08

RESOLUTION NO. 25- 08

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL CENTRO AMENDING RESOLUTION 07-17 REVISING AND UPDATING CONDITIONS FOR THE WILLOW BEND SUBDIVISION

WHEREAS, on February 7, 2007 the City Council of the City of El Centro via Resolution No. 07-17 approved the Willow Bend Tentative Subdivision Map, (hereinafter referred to as "the Project") which proposed a subdivision of 38+ acres of land in order to create one hundred and thirty-four (134) single family residential lots on property generally located west of South 4th Street (Highway 86) and about 630 feet south of Horne Road, further described as APN 054-370-011; and

WHEREAS, since that time, the property has been sold and the new property owner and applicant has requested amendments to the original conditions set out in Resolution No. 17-17; and

WHEREAS, an addendum to the 2007 Environmental Impact Report was prepared and considered for the proposal pursuant to California Environmental Quality Act (CEQA) and the CEQA Guidelines of 1970, as amended; and

WHEREAS, on December 10, 2024, the Planning Commission of the City of El Centro recommended for approval the proposed amendments as found in Exhibit A which includes a reduction to 120 lots; and

WHEREAS, a public hearing notice before the City Council was scheduled for February 4, 2025 and was mailed to property owners within 500-feet of the subject property as well as published on January 15, 2025 in the *Imperial Valley Press*, a newspaper of general circulation; and

WHEREAS, at that public hearing, the staff made a presentation regarding the revisions to the project, and any testimony for or against the revised resolution was heard; and

WHEREAS, based upon the information at the public hearing and in the file for the project, the City Council resoles as follows:

The Addendum is appropriate and has been approved by separate resolution; and

The proposed revised map is consistent with the City's General Plan; and

The design or improvement of the proposed subdivision is consistent with the General Plan; and

The site is physically suitable for the type of development; and

The site is physically suitable for the proposed density of development; and

The design of the subdivision or type of improvements is not likely to cause serious public health problems; and

The design of the subdivision or the type of improvements will not conflict with easements, acquired by the public at large, for access through or use of property within the proposed subdivision; and

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EL CENTRO, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. That the foregoing is true, correct and adopted.
2. Resolution No. 07-017 is repealed and readopted.
3. Resolution No. 25-08 is approved and adopted effective immediately upon its adoption.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February 2025.

CITY OF EL CENTRO

By _____
Tomás Oliva, Mayor

ATTEST:

By _____
Norma Wyles, City Clerk

APPROVED AS TO FORM: Office of the City Attorney

By _____
Elizabeth L. Martyn, City Attorney

STATE OF CALIFORNIA)
COUNTY OF IMPERIAL) ss
CITY OF EL CENTRO)

I, Norma Wyles, City Clerk of the City of El Centro, California, do hereby certify that the foregoing Resolution No. 25- 8 was duly and regularly adopted at a regular meeting of the City Council of the City of El Centro, California, held on the 4th day of February 2025, by the following vote:

AYES: Ellett, Carter, Oliva, Marroquiin, Camarena
NOES: None
ABSENT: None
ABSTAINED: None

By Norma Wyles
Norma Wyles, City Clerk

EXHIBIT A

1. The project shall include the development of a maximum of 120 single-family residential lots with an average minimum lot size of 6,000 square feet.

2. Building permits shall not be issued for any construction related to the project until verification from the elementary and high school districts is received, certifying that the State mandated school impact mitigation fees have been paid or addressed as otherwise provided or authorized by law.

3. Removed

4. Removed

5. Removed

6. Removed

7. Removed

8. Removed

9. Removed

10. Prior to the recording of the first final map, the applicant shall complete or provide security for the widening of Highway 86 (4th Street) to a four-lane right-of-way width along the project frontage prior to recording of the first final map.

    The widening, including any required deceleration and acceleration lanes north and south of the development frontage, shall be completed prior to the issuance of the 60th certificate of occupancy, as determined by the approved Caltrans transportation study or other Caltrans requirements.

    The No. 2 southbound lane shall merge into the No. 1 southbound lane such that the Countryside Drive and Highway 86 intersection transitions to a single southbound lane at the intersection.

11. Removed

12. Prior to the issuance of the 1st certificate of occupancy, and contingent upon approval by Caltrans, the applicant shall complete improvements to the intersection at Highway 86(4th Street) and Countryside Drive to provide full directional access to the development. Final intersection improvements shall be designed and constructed in accordance with the results of the Caltrans transportation study and shall be completed

no later than the issuance of the 60th certificate of occupancy, or as determined by the approved Caltrans Transportation Study.

13. Prior to the issuance of a grading permit, the applicant shall provide construction contracts to the Community Development Director that specify that all construction equipment shall be equipped with mufflers and other suitable noise attenuation devices.

14. Prior to the issuance of a grading permit, the applicant shall notify residents within 100 feet of the project's site regarding the construction schedule of the proposed project. All notices shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.

15. Prior to issuance of a grading permit, the applicant shall erect a sign, legible at a distance of 50 feet, posted at the construction site. The sign shall indicate the dates and durations of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.

16. The applicant agrees to pay standard Police and Fire Impact fees as part of building permit issuance unless deferred as approved by the City of El Centro.

17. Access to the Date Drain by the public shall be secured with a four-foot high three rail wood fence along the western project site boundary. Fencing shall be installed prior to the completion of Grass Street/6th Street. The applicant shall coordinate with the Imperial Irrigation District for maintenance access requirements.

18. Prior to the issuance of the first certificate of occupancy, a trunk sewer line shall be installed on Carl Street to connect to the existing lift station at Highway 86 (4th Street) and Willow Bend Drive. The trunk sewer line may be constructed within the right-of-way within the development (Carl Street) or adjacent to Highway 86 (4th Street). The Countryside Drive sewer line shall be sized and placed to allow connection from the development at the west. The developer shall be reimbursed for any additional costs incurred due to upsizing by the development to the west.

19. A six (6) foot high solid decorative block/masonry wall shall be provided along the western Highway 86 right-of-way line (eastern boundary of lots 1-14) and along the property lines abutting the park (eastern boundary of lots 81 and 72 and western boundary of lots 82 and 71). A vinyl or composite fencing shall be installed along the southern project boundary (southern boundary of lots 14-32 and western boundary of lot 32).

20. The proposed stormwater retention basin for the project site shall be developed in accordance with the City's design standard for retention basins. This requires a wrought

iron fence with pilasters along the perimeter of the basin abutting and visible from the public right of way.

21. Prior to the issuance of the thirteenth certificate of occupancy, the applicant shall establish a Lighting and Landscape Maintenance District (LLMD) for the project. The LLMD shall pay for the maintenance of any lighting, landscaping, park, and recreation facilities, including graffiti abatement, within the public right-of-way, IID easement, retention basin and the park.

22. Prior to the grading permit, the applicant and the City of El Centro shall be required to conduct a preconstruction survey no more than 30 days prior to ground disturbing activity to ensure that owl burrows have not become established within the impact area. Should a burrowing owl move into the area prior to construction then mitigation should consist of passive relocation within a one-way door to avoid direct impacts to any burrowing owl on site. Passive relocation should be conducted during the non-breeding season (Sep.1-Jan.31) to ensure active nests are not lost as results of owl exclusion. The methodology for owl relocation should follow the guidelines set forth in the CDFG Staff Report on Burrowing Owl Mitigation.

23. In the event of the discovery of buried cultural resources, project activities in the vicinity of the resources shall be temporarily halted. A qualified archaeologist shall be consulted to access the significance of the resource and to provide proper management recommendations (e.g., resource avoidance or data recovery excavation).

24. Prior to issuance of building permit and during construction, if human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resource Code Section 5097.98. The County Coroner shall be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner shall notify the NAHC, which determine and notify and Most Likely Descendent (MLD). With the permission of the landowner of his/her authorized representative, the MLD may inspect the site of the discovery. The MLD may recommend scientific removal and nondestructive analysis of human and items associated with Native American burials.

25. The project shall be required to comply with regional rules, including the ICAPCD Rule VIII - Fugitive Dust Rules as well as ICAPCD CEQA Handbook Measures for Construction equipment and Fugitive PM10 control, that assist in reducing short-term air pollutant emissions. Applicable dust suppression techniques are summarized below. Implementation of these dust suppression technique will reduce the fugitive dust generation (and thus the PM 10 component).

26. The applicant shall be responsible for any costs associated with right-of-way acquisition for the purposes of ingress or egress to the project site along Willow Bend Drive and Countryside Drive, if necessary to accommodate required off-site improvements.

27. Prior to the approval of the final subdivision map, grading plan, or permit issuance, a site-specific retention basin design shall be conducted by a registered civil engineer and submitted for review and approval by the City.

28. The construction of Countryside Drive crossing over the IID Date Drain must be completed prior to the issuance of the 80th certificate of occupancy. The threshold for this condition may be extended prior to the issuance of the 100th certificate of occupancy if circumstances beyond the applicant's control occur that delay this improvement, as approved by the City Engineer and the Community Development Director.

    The road crossing shall consist of two travel lanes, with no parking lanes, and shall include curb, gutter, and sidewalks on each side. City participation on all costs related to the IID drain construction and Countryside Drive improvements will be three hundred twenty-five thousand dollars, through a reimbursement agreement between City and applicant.

29. The applicant shall construct or provide security for a 1.3-acre improved park. The park shall include a multi-use grass field, park lighting, hard surface court, multi-use path, picnic, and playground area. The park is to be completed prior to 50% of the certificates of occupancy are issued. The developer shall provide park renderings and construction plans and cost estimates to the City of El Centro for review prior to filing of the first final map. Park development impact fees shall be waived by the City if park costs are higher than the subdivisions' park development impact fees to the satisfaction of the Community Development Director.

30. The project shall provide the minimum building setbacks in accordance with the R1-Single Family Residential Zone development standards.

31. Prior to the issuance of the first certificate of occupancy of each phase of development, all street dedications and off-site improvements (curb, gutter, sidewalk, and paving) for each phase shall be provided in accordance with the City's Subdivision Ordinance.

32. Utilities shall be provided in accordance with the City's Master Water/Sewer Plan. The applicant may enter into reimbursement agreement with the City for any oversizing of water or sewer lines that may be required.

33. Prior to the issuance of the certificate of occupancy of each residence, the applicant shall provide a minimum of one tree within the parkway strip on Countryside Drive only and one tree within the front yard landscaped area per lot. Said trees shall be selected from

the City's list and consist of variety of trees. The remaining lots shall provide two trees in the front yard.

34. Prior to the issuance of each building permit, the applicant shall pay the appropriate development impact and sewer and water capacity fees unless deferred to prior to the issuance of a certificate of occupancy in compliance with Ordinance 21-03 and subject to the approval of the City Manager. Payment must clear prior to the issuance of a certificate of occupancy.

35. Fire hydrants markers and water mains shall be provided in accordance with the Fire Department's specifications. Fire hydrants shall be on a looped water system. Any combustible construction shall not begin until a fire hydrant is in service within 150 feet of construction activity. Applicant shall provide a phasing plan to the Engineering Division showing compliance with this condition prior to the issuance of the certificate of compliance.

36. Grading and drainage plans shall be submitted to the City for review and approval prior to the approval of the final map.

37. The project shall comply with all applicable provisions of the California Code of Regulations Title 24 (ADA).

38. The developer shall work directly with IID to obtain an encroachment permit for project related improvements on IID system facilities.

39. Pursuant to Section 66474.9 of the California Government Code, the applicant shall defend, indemnify, and hold harmless the City of El Centro, its agents, officers and employees to attack, set aside, void, or annul, the approval of the Planning Commission concerning the tentative subdivision map, which action is brought within the time period provided for in California Government Code Section 66499.37. However, the City of El Centro shall promptly notify the applicant/subdivider of any claim, action or proceeding and that the City shall cooperate fully in defense.

40. Except as specified herein, all conditions applicable to a final map phase, as determined by the City Engineer, shall be met before its last certificate of occupancy is issued unless otherwise noted.

41. Applicable offsite improvements shall be completed or secured to the satisfaction of the City Engineer prior to the recordation of each final map.

42. Removed

43. Removed

44. Public landscaping improvements shall be installed along the northern side of Willow Bend Drive, West side of Carl Street, South of lot 13, North side of Lot 1, and West and East side of Grass (6^{th}) Street in the side yards of the noted locations and homes. Public landscaping improvements shall be included in the lighting and landscape maintenance district.

45. A school bus loading area shall be installed in front of the park area, unless otherwise determined by the school districts that the location would be unfeasible for a school bus loading area.

EXHIBIT K

County Minute Order # 26

MINUTE ORDER
OF
IMPERIAL COUNTY
BOARD OF SUPERVISORS

Date: December 03, 2024	Book: 460	Page: 105	File #: 225.1	M.O.#: 26
Department: EXECUTIVE OFFICE			**2nd Page:**	

THE BOARD OF SUPERVISORS OF THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, on a motio
by Supervisor : M. KELLEY , second by Supervisor : ESCOBAR
and approved by the following roll call vote;

AYES : ESCOBAR, PLANCARTE, M. KELLEY, R. KELLEY

NAYES : NONE

ABSTAINED : NONE

EXCUSED OR ABSENT : HAWK

Adopted Resolution No. 2024-148 of the Board of Supervisors of the County of Imperial approving the Master Tax Sharing and Fiscal Impact Agreement with the City of El Centro.

Topic: Resolution No. 2024-148 **X-Topic:** Master Tax Sharing & Fiscal Impact Agreement

CC:

☒ File	☐ Behavioral Health	☐ District Attorney	☐ Info/Tech	☐ Public Health	☐ Other...
☐ Ag. Comm	☒ CEO	☐ Facilities Manag.	☐ OET	☐ Public Works	
☐ Assessor	☐ County Clerk	☐ Fire/OES	☐ Planning	☐ Sheriff-Coroner	
☒ Auditor	☐ County Counsel	☐ HR - Risk	☐ Probation	☐ Social Services	

EXHIBIT L

County Resolution # 2024-148

BOS ADOPTED: 12-03-24
M.O. #26

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF IMPERIAL APPROVING THE MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT

RESOLUTION NO. 2024-148

WHEREAS, section 99 of the California Revenue and Taxation Code provides that in case of a jurisdictional change, the governmental bodies of all agencies whose service areas or responsibilities would be altered by such jurisdictional change must agree, by resolution, to accept the negotiated exchange of property tax revenues; and

WHEREAS, section 56668 of the California Government Code requires that certain factors be considered in reviewing any Proposal before the Local Agency Formation Commission ("LAFCO"), including the, "effect of the proposed action and of alternative actions on adjacent areas, on mutual social and economic interests and on the local government structure of the county;" and;

WHEREAS, section 56069 of the California Government Code defines "Proposal" as a request or statement of intention made by petition, or by resolution of application of a legislative body, proposing proceedings for the Change of Organization or reorganization described in the request or statement of intention; and

WHEREAS, section 56021 of the California Government Code defines "Change of Organization" to mean any of the following: (a) a city incorporation; (b) a district formation; (c) an annexation to, or detachment from, a city or district; (d) a disincorporation of a city; (e) a district dissolution; (f) a consolidation of cities or special districts; or (g) a merger or establishment of a subsidiary district; and

WHEREAS, LAFCO requires a written agreement regarding the exchange of property tax between the affected governmental bodies prior to the approval of any annexation; and

WHEREAS, in order to facilitate annexations with all cities Countywide while complying with pertinent LAFCO requirements, a Master Tax Sharing and Fiscal Impact Agreement between the County and cities will be the most efficacious and collaborative solution going forward; and

WHEREAS, to fulfill the foregoing requirements, achieve the above aims, and to maximize benefit to the County and citizens, the Board of Supervisors now desires that the Master Tax Sharing and Fiscal Impact Agreement, as attached hereto as **Exhibit "A"**, be approved in its entirety; and

WHEREAS, following approval of each individual annexation project by LAFCO falling under the terms of the Master Tax Sharing and Fiscal Impact Agreement, a Memorandum of Annexation, the form of which is attached hereto as **Exhibit "B"**, memorializing the subject annexation shall be entered into by the parties—signed by the city and agendized before the Board of Supervisors (and / or the County Executive Officer) for approval (or ratification) —so that a

public record is created for the Imperial County Auditor-Controller's Office to utilize as a tool for processing annual property tax distributions going forward.

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of the County of Imperial, State of California, that:

1. The Master Tax Sharing and Fiscal Impact Agreement is approved.
2. The CEO is authorized to enter into all individual Memorandums of Annexation, as required.

PASSED AND ADOPTED by the Imperial County Board of Supervisors, this 3rd day of December, 2024 by the following roll call vote:

Escobar, Plancarte, M. Kelley, R. Kelley

Luis A. Plancarte
Chairman of the Board

ATTEST:

Blanca Acosta
Clerk of the Board

Resolution
No. 2024-148
Exhibit “A”

MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT

THIS MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT ("Agreement"), made and entered into by and between the COUNTY OF IMPERIAL, a political subdivision of the state of California ("County"), and the CITY OF EL CENTRO, a municipal corporation of the state of California ("City") (individually, "Party;" collectively, "Parties") shall be as follows:

WHEREAS, Section 99 of the California Revenue and Taxation Code provides that in case of a jurisdictional change, the governmental bodies of all agencies whose service areas or responsibilities would be altered by such jurisdictional change must agree, by resolution, to accept the negotiated exchange of property tax revenues; and

WHEREAS, Section 56668 of the California Government Code requires that certain factors be considered in reviewing any Proposal before the Local Agency Formation Commission ("LAFCO"), including the, "effect of the proposed action and of alternative actions on adjacent areas, on mutual social and economic interests and on the local government structure of the county;" and

WHEREAS, Section 56069 of the California Government Code defines "Proposal" as a request or statement of intention made by petition, or by resolution of application of a legislative body, proposing proceedings for the Change of Organization or reorganization described in the request or statement of intention; and

WHEREAS, Section 56021 of the California Government Code defines "Change of Organization" to mean any of the following: (a) a city incorporation; (b) a district formation; (c) an annexation to, or detachment from, a city or district; (d) a disincorporation of a city; (e) a district dissolution; (f) a consolidation of cities or special districts; or (g) a merger or establishment of a subsidiary district; and

WHEREAS, LAFCO requires a written agreement regarding the exchange of property tax between the affected governmental bodies prior to the approval of any annexation; and

WHEREAS, in order to offset the negative fiscal impacts to County, to facilitate annexations to the City, and to comply with LAFCO requirements, the Parties are entering into this Agreement, in which City agrees to exchange property tax revenues and make certain payments to County, as further detailed below.

NOW, THEREFORE, the Parties agree as follows:

1. **DEFINITIONS.**

1.1. "Base year revenues" means property tax revenues accruing to each agency in the current fiscal year, being defined as the fiscal year in which the annexation is accepted by the State Board of Equalization.

1.2. "Tax increment" means that the amount of property tax revenues in excess of base year revenues accruing to each agency (by Tax Rate Area) and resulting from the increase in assessed valuation from one year to the next.

2. **TAX APPORTIONMENT.**

2.1. Special Districts. When a special district, including County Fire and Library Districts, gives up its service responsibility in a territory, upon annexation of such territory to a City, the affected special districts shall transfer to the City all of its base year revenues and tax increment attributable to the annexed territory, effective in the fiscal year following the calendar year in which annexation is completed. Cemetery Districts are expressly excluded from this paragraph, such that any changes in assessments and tax revenues would need to be negotiated directly with the Cemetery Districts.

2.2. Substantially Developed Areas. For jurisdictional changes where the proposed area is agreed to by County and City to be already substantially developed at the time of annexation, revenue shall be distributed as follows:

2.2.1. Base year revenues. No transfer of the base year revenues is required.

2.2.2. Tax increment. The aggregate amount of the tax increment that would accrue to County, as a result of the aforestated base year revenue apportionment, shall be distributed in the amount of fifty percent (50%) of the increment to the City and fifty percent (50%) of the increment to the County.

2.3. Not Substantially Developed Areas. For jurisdictional changes where the proposed area is agreed to by County and City to be not substantially developed at the time of annexation, revenue shall be distributed as follows:

2.3.1. Base year revenues. The County shall transfer to the City forty percent (40%) of the base year revenues.

2.3.2. Tax increment. The aggregate amount of the tax increment that would accrue to County and City, as a result of the aforementioned base year revenue apportionment, shall be distributed in the amounts as follows:

(a) Annexations of territory where the proposed area is agreed by the Parties to be for residential development, the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

(b) Annexations of territory where the proposed area is agreed by the Parties to be for non-residential development, the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

(c) Annexations of territory where the proposed area is agreed by the Parties to be a combination of residential and non-residential development (mixed development), the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

2.3.3. Property owned by a tax-exempt entity. For annexations of territory of property owned by a tax-exempt entity, the base year revenue shall be zero dollars ($0.00). Additionally, a tax increment shall only be generated if the property, or a portion thereof, is developed by an entity subject to property taxation. In that specific instance, tax increment shall be distributed in accordance to Section 2.3.1 or Section 2.3.2 of this Agreement as applicable.

2.3.4. The table below summarizes the preceding items under Section 2 of this Agreement for reference:

Category	County of Imperial	City of El Centro
Special Districts	0%	100%
Base Year Allocation		
Substantially Developed Areas	100%	0%
Not Substantially Developed Areas	60%	40%
Increment Allocation		
Substantially Developed Areas	50%	50%
Not Substantially Developed Areas: Residential, Non-Residential and Mixed Development	40%	60%

3. APPLICATION

The provisions of this Agreement shall apply to the apportionment of all secured and unsecured property tax revenues, due to annexation to the City which have not heretofore been negotiated and agreed to by the parties to the effective date of this Agreement.

4. COUNTY DEVELOPMENT IMPACT FEES

4.1. To offset the negative impacts to County of any annexation approved during the term of this Agreement, City shall require developer, as compensation for the discounted negative impacts for the first twenty (20) years of project development, to pay the County certain Impact fees pursuant to the *Schedule of Fiscal Impact Fees Per Unit (residential) and per Square Foot (nonresidential) – Countywide* attached hereto as **Exhibit "A"** ("Fee Schedule"). Said Fee Schedule is pursuant to the Impact Fee Study prepared for the County of Imperial, California by Tischler Bise dated August 17, 2006. A copy of said Impact Fee Study is available upon request.

4.2. In the event that the developer fails to pay the County the applicable County Impact Fees required to be paid in respect of any building permits related to any annexation approved during the term of this agreement for which the developer is making application to the City, City shall deny the application for the said building permits until such time as the developer pays the required County Impact Fees applicable to such building permits as provided for pursuant to the Fee Schedule.

4.3. Said payment of County Impact Fees shall be made by the developer to the County in the appropriate and applicable amount depending upon the number of building permits for which the developer is making application to the City at any given time. Upon payment by the developer of the County Impact Fees applicable to any building permits for which the developer is making application to the City as provided for above, the County shall issue a receipt and/or other form of documentation evidencing that the developer has made the required payment and the City shall be entitled to rely upon such receipt and/or other documentation issued by the County that the required County Impact Fees in respect of such building permits have been paid for the purposes of this Agreement.

4.4. In the event that 1) the developer fails to pay the County the applicable County Impact Fees required to be paid in respect of any building permits related to any annexation approved during the term of this agreement for which the developer is making application to the City and 2) the City approves the application for the said building permits despite the failure of developer to pay the applicable County Impact Fees, then City shall pay County the applicable County Impact Fees. Such payment shall be due within thirty (30) days of the approval of the application for building permits.

5. TERM OF AGREEMENT

5.1. This Agreement shall become effective upon execution by both Parties and remain in effect for a term of one (1) year from the date of signing. The terms and conditions shall remain in full force and effect until each term or condition is completely and fully satisfied or a subsequent agreement is negotiated and approved by both Parties.

5.2. Not less than ninety (90) days prior to the expiration of this Agreement, the County and City shall commence negotiation for continuance of this Agreement or formation of new Agreement including fee review and related studies to support any new or revised agreement.

6. REDEVELOPMENT

Prior to the City including any portion of any annexations covered by this Agreement into any program which adversely fiscally impacts County, such as former "Redevelopment Agencies / Zones" ("RDA's") where any successor Agencies are formed that are similar to RDA's and property tax revenues could be affected, City and County shall renegotiate and enter into a new and separate agreement which addresses said negative fiscal impacts.

7. INTENT OF AGREEMENT

By entering into this Agreement, the parties mutually assume the continuation of a statutory scheme for the distribution of tax revenues that is compatible with the provisions contained herein, and such assumption is a basic intent of this Agreement.

8. MEMORANDUM OF ANNEXATION

Following approval of each individual annexation project by LAFCO falling under the terms of this Master Tax Sharing Agreement, a Memorandum of Annexation memorializing the subject annexation shall be entered into by the parties, signed by the City and agendized before the Board of Supervisors for approval, so that a public record is created for the Imperial County Auditor-Controller's Office to utilize as a tool for processing annual property tax distributions going forward. The form of Memorandum is attached hereto as **Exhibit "B"**.

9. SEVERABILITY

If any term or provision of this Agreement is held by a court of competent jurisdiction to be void, invalid or otherwise unenforceable, the remaining terms and provisions shall continue in full force and effect.

10. GOVERNING LAW

This Agreement is made and entered into in Imperial County, California. This agreement shall be construed and enforced in accordance with the laws of the State of California, except that the Parties agree

that any action brought by either Party regarding this Agreement shall be brought in a court of competent jurisdiction in Imperial County, or if appropriate, in the Federal District Court serving Imperial County.

11. GOOD FAITH

The Parties hereto agree to act in good faith and deal fairly with the other Party in the performance of this Agreement.

12. NOTICES.

Notices required hereunder shall be in writing and may be given either personally or by registered or certified mail, postage prepaid, return receipt requested. If given by registered or certified mail, such notice shall be addressed as indicated below, and shall be deemed given and received upon the earlier of actual receipt by the Party to whom the notice was sent, or return of the requested receipt to the Party giving notice. Notice personally given shall be deemed given when delivered to the Party to whom the notice is addressed. Any party may upon ten (10) days written notice to the other Party, change the address where notices are to be sent.

Notice to County

County of Imperial
County Executive Office
Attention: County Executive Officer
940 Main Street, Suite #208
El Centro, CA 92243

With Copies To

Imperial County LAFCO
Attention: Executive Officer
1122 State St., Suite D
El Centro, CA 92243

Notice to City

City of El Centro
Attention: City Manager
1275 W. Main Street
El Centro, CA 92243

13. COUNTERPARTS.

The Parties herein agree that this Agreement may be executed in counterparts.

14. AUTHORITY.

The Parties herein each warrant and represent that they are authorized to execute this Agreement and bind City or County to the terms and conditions of this Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed the day and year written below.

COUNTY OF IMPERIAL:

By: _____
Luis A. Plancarte, Chairman
Imperial County Board of Supervisors

Date: _____

ATTEST:

By: _____
Blanca Acosta, Clerk
of the Board of Supervisors

Approved as to Form:

By: _____
Eric R. Havens
County Counsel

CITY OF EL CENTRO

By: _____
Sylvia Marroquin, Mayor
El Centro City Council

Date: _____

ATTEST:

By: _____
Norma Wyles, Clerk
of the City of El Centro

Approved as to Form

By: _____
Elizabeth L. Martyn
City Attorney

Exhibit “A”

COUNTY OF IMPERIAL
FISCAL IMPACT FEES
EFFECTIVE JANUARY 20, 2007

Exhibit A

Units	Total Impact Fee Per Unit	Per Fiscal Impact Studies	Surcharge for Developable Land	Total
Residential		Per Housing Unit		
Single Family	$2,420	$225	$72.60	$2,718
Multi Family	$1,895	$276	$56.85	$2,228
Mobile Home	$1,624		$48.72	$1,673
Non-Residential	Countywide Impact Fee Per 1,000 Square Foot			
Com/Shop Ctr (50,000 or less sq ft)	$671.00	$80.00	$20.00	$771
Com/Shop Ctr (50,001-100,000 sq ft)	$587.00	$80.00	$17.00	$684
Com/Shop Ctr (100,001-200,000 sq ft)	$513.00	$80.00	$15.00	$608
Com/Shop Ctr over (200,000 sq ft)	$449.00	$80.00	$13.00	$542
Office/Inst (25,000 or less sq ft)	$549.00	$80.00	$16.00	$645
Office/Inst (25,000-50,000 sq ft)	$502.00	$80.00	$15.00	$597
Office/Inst (50,001-100,000 sq ft)	$461.00	$80.00	$13.00	$554
Medical-Dental Office	$700.00	$80.00	$21.00	$801
Hospital	$470.00	$80.00	$14.00	$564
Business Park	$407.00	$80.00	$12.00	$499
Light Industrial	$276.00	$80.00	$8.00	$364
Manufacturing	$199.00	$80.00	$5.00	$284
Warehousing	$162.00	$80.00	$4.00	$246
Elementary School	$216.00	$80.00	$6.00	$302
Other Non-Residential				
Lodging (per room)	$91.00		$2.00	$93
Day Care (per student)	$55.00		$2.00	$57
Nursing Home (per bed)	$54.00		$1.00	$55

Prepared 11/14/2006
Based on TischlerBise Fiscal Impact Fee Study dated August 17, 2006 &
Proposed Fiscal Impact Fee Ordinance

Exhibit “B”

MEMORANDUM OF ANNEXATION

This Memorandum of Annexation is made and entered into by and between the **CITY OF EL CENTRO**, a municipal corporation of the state of California ("**City**"), and the **COUNTY OF IMPERIAL**, a political subdivision of State of California ("**County**"), with respect to that certain Master Tax Sharing Agreement dated _____, 2024 ("**Agreement**"), for the annexation located at _____, also identified as a portion of APN _____ ("Annexation Property"):

1. Parties: County of Imperial & City of El Centro
2. Reference to the 2024 Master Tax Sharing Agreement approval date (not known yet)
3. Name of Annexation (ex: "EC __-__")
4. Annexation date of approval by LAFCO
5. Assessor's Parcel Numbers for the affected properties

IT IS SO AGREED.

COUNTY:

County of Imperial

By: _____
, Chairperson
Imperial County Board of Supervisors

Date: _____

CITY:

City of El Centro

By: _____
, Mayor

Date: _____

Resolution
No. 2024-148
Exhibit "B"

MEMORANDUM OF ANNEXATION

This Memorandum of Annexation is made and entered into by and between the **CITY OF EL CENTRO**, a municipal corporation of the state of California ("**City**"), and the **COUNTY OF IMPERIAL**, a political subdivision of State of California ("**County**"), with respect to that certain Master Tax Sharing Agreement dated _____, 2024 ("**Agreement**"), for the annexation located at _____, also identified as a portion of APN _____ ("Annexation Property"):

1. Parties: County of Imperial & City of El Centro
2. Reference to the 2024 Master Tax Sharing Agreement approval date (not known yet)
3. Name of Annexation (ex: "EC __-__")
4. Annexation date of approval by LAFCO
5. Assessor's Parcel Numbers for the affected properties

IT IS SO AGREED.

COUNTY:

County of Imperial

By: _____
, Chairperson
Imperial County Board of Supervisors

Date: _____

CITY:

City of El Centro

By: _____
, Mayor

Date: _____

EXHIBIT M

Tax Sharing and Fiscal Impact Agreement

MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT

THIS MASTER TAX SHARING AND FISCAL IMPACT AGREEMENT ("Agreement"), made and entered into by and between the COUNTY OF IMPERIAL, a political subdivision of the state of California ("County"), and the CITY OF EL CENTRO, a municipal corporation of the state of California ("City") (individually, "Party;" collectively, "Parties") shall be as follows:

WHEREAS, Section 99 of the California Revenue and Taxation Code provides that in case of a jurisdictional change, the governmental bodies of all agencies whose service areas or responsibilities would be altered by such jurisdictional change must agree, by resolution, to accept the negotiated exchange of property tax revenues; and

WHEREAS, Section 56668 of the California Government Code requires that certain factors be considered in reviewing any Proposal before the Local Agency Formation Commission ("LAFCO"), including the, "effect of the proposed action and of alternative actions on adjacent areas, on mutual social and economic interests and on the local government structure of the county;" and

WHEREAS, Section 56069 of the California Government Code defines "Proposal" as a request or statement of intention made by petition, or by resolution of application of a legislative body, proposing proceedings for the Change of Organization or reorganization described in the request or statement of intention; and

WHEREAS, Section 56021 of the California Government Code defines "Change of Organization" to mean any of the following: (a) a city incorporation; (b) a district formation; (c) an annexation to, or detachment from, a city or district; (d) a disincorporation of a city; (e) a district dissolution; (f) a consolidation of cities or special districts; or (g) a merger or establishment of a subsidiary district; and

WHEREAS, LAFCO requires a written agreement regarding the exchange of property tax between the affected governmental bodies prior to the approval of any annexation; and

WHEREAS, in order to offset the negative fiscal impacts to County, to facilitate annexations to the City, and to comply with LAFCO requirements, the Parties are entering into this Agreement, in which City agrees to exchange property tax revenues and make certain payments to County, as further detailed below.

NOW, THEREFORE, the Parties agree as follows:

1. **DEFINITIONS.**

1.1. "Base year revenues" means property tax revenues accruing to each agency in the current fiscal year, being defined as the fiscal year in which the annexation is accepted by the State Board of Equalization.

1.2. "Tax increment" means that the amount of property tax revenues in excess of base year revenues accruing to each agency (by Tax Rate Area) and resulting from the increase in assessed valuation from one year to the next.

2. **TAX APPORTIONMENT.**

2.1. Special Districts. When a special district, including County Fire and Library Districts, gives up its service responsibility in a territory, upon annexation of such territory to a City, the affected special districts shall transfer to the City all of its base year revenues and tax increment attributable to the annexed territory, effective in the fiscal year following the calendar year in which annexation is completed. Cemetery Districts are expressly excluded from this paragraph, such that any changes in assessments and tax revenues would need to be negotiated directly with the Cemetery Districts.

2.2. Substantially Developed Areas. For jurisdictional changes where the proposed area is agreed to by County and City to be already substantially developed at the time of annexation, revenue shall be distributed as follows:

2.2.1. Base year revenues. No transfer of the base year revenues is required.

2.2.2. Tax increment. The aggregate amount of the tax increment that would accrue to County, as a result of the aforestated base year revenue apportionment, shall be distributed in the amount of fifty percent (50%) of the increment to the City and fifty percent (50%) of the increment to the County.

2.3. Not Substantially Developed Areas. For jurisdictional changes where the proposed area is agreed to by County and City to be not substantially developed at the time of annexation, revenue shall be distributed as follows:

2.3.1. Base year revenues. The County shall transfer to the City forty percent (40%) of the base year revenues.

2.3.2. Tax increment. The aggregate amount of the tax increment that would accrue to County and City, as a result of the aforementioned base year revenue apportionment, shall be distributed in the amounts as follows:

(a) Annexations of territory where the proposed area is agreed by the Parties to be for residential development, the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

(b) Annexations of territory where the proposed area is agreed by the Parties to be for non-residential development, the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

(c) Annexations of territory where the proposed area is agreed by the Parties to be a combination of residential and non-residential development (mixed development), the tax increment shall be distributed in the amount of sixty percent (60%) to the City and forty percent (40%) to the County.

2.3.3. Property owned by a tax-exempt entity. For annexations of territory of property owned by a tax-exempt entity, the base year revenue shall be zero dollars ($0.00). Additionally, a tax increment shall only be generated if the property, or a portion thereof, is developed by an entity subject to property taxation. In that specific instance, tax increment shall be distributed in accordance to Section 2.3.1 or Section 2.3.2 of this Agreement as applicable.

2.3.4. The table below summarizes the preceding items under Section 2 of this Agreement for reference:

Category	County of Imperial	City of El Centro
Special Districts	0%	100%
Base Year Allocation		
Substantially Developed Areas	100%	0%
Not Substantially Developed Areas	60%	40%
Increment Allocation		
Substantially Developed Areas	50%	50%
Not Substantially Developed Areas: Residential, Non-Residential and Mixed Development	40%	60%

3. APPLICATION

The provisions of this Agreement shall apply to the apportionment of all secured and unsecured property tax revenues, due to annexation to the City which have not heretofore been negotiated and agreed to by the parties to the effective date of this Agreement.

4. COUNTY DEVELOPMENT IMPACT FEES

4.1. To offset the negative impacts to County of any annexation approved during the term of this Agreement, City shall require developer, as compensation for the discounted negative impacts for the first twenty (20) years of project development, to pay the County certain Impact fees pursuant to the *Schedule of Fiscal Impact Fees Per Unit (residential) and per Square Foot (nonresidential) – Countywide* attached hereto as **Exhibit "A"** ("Fee Schedule"). Said Fee Schedule is pursuant to the Impact Fee Study prepared for the County of Imperial, California by Tischler Bise dated August 17, 2006. A copy of said Impact Fee Study is available upon request.

4.2. In the event that the developer fails to pay the County the applicable County Impact Fees required to be paid in respect of any building permits related to any annexation approved during the term of this agreement for which the developer is making application to the City, City shall deny the application for the said building permits until such time as the developer pays the required County Impact Fees applicable to such building permits as provided for pursuant to the Fee Schedule.

4.3. Said payment of County Impact Fees shall be made by the developer to the County in the appropriate and applicable amount depending upon the number of building permits for which the developer is making application to the City at any given time. Upon payment by the developer of the County Impact Fees applicable to any building permits for which the developer is making application to the City as provided for above, the County shall issue a receipt and/or other form of documentation evidencing that the developer has made the required payment and the City shall be entitled to rely upon such receipt and/or other documentation issued by the County that the required County Impact Fees in respect of such building permits have been paid for the purposes of this Agreement.

4.4. In the event that 1) the developer fails to pay the County the applicable County Impact Fees required to be paid in respect of any building permits related to any annexation approved during the term of this agreement for which the developer is making application to the City and 2) the City approves the application for the said building permits despite the failure of developer to pay the applicable County Impact Fees, then City shall pay County the applicable County Impact Fees. Such payment shall be due within thirty (30) days of the approval of the application for building permits.

5. TERM OF AGREEMENT

5.1. This Agreement shall become effective upon execution by both Parties and remain in effect for a term of one (1) year from the date of signing. The terms and conditions shall remain in full force and effect until each term or condition is completely and fully satisfied or a subsequent agreement is negotiated and approved by both Parties.

5.2. Not less than ninety (90) days prior to the expiration of this Agreement, the County and City shall commence negotiation for continuance of this Agreement or formation of new Agreement including fee review and related studies to support any new or revised agreement.

6. REDEVELOPMENT

Prior to the City including any portion of any annexations covered by this Agreement into any program which adversely fiscally impacts County, such as former "Redevelopment Agencies / Zones" ("RDA's") where any successor Agencies are formed that are similar to RDA's and property tax revenues could be affected, City and County shall renegotiate and enter into a new and separate agreement which addresses said negative fiscal impacts.

7. INTENT OF AGREEMENT

By entering into this Agreement, the parties mutually assume the continuation of a statutory scheme for the distribution of tax revenues that is compatible with the provisions contained herein, and such assumption is a basic intent of this Agreement.

8. MEMORANDUM OF ANNEXATION

Following approval of each individual annexation project by LAFCO falling under the terms of this Master Tax Sharing Agreement, a Memorandum of Annexation memorializing the subject annexation shall be entered into by the parties, signed by the City and agendized before the Board of Supervisors for approval, so that a public record is created for the Imperial County Auditor-Controller's Office to utilize as a tool for processing annual property tax distributions going forward. The form of Memorandum is attached hereto as **Exhibit "B"**.

9. SEVERABILITY

If any term or provision of this Agreement is held by a court of competent jurisdiction to be void, invalid or otherwise unenforceable, the remaining terms and provisions shall continue in full force and effect.

10. GOVERNING LAW

This Agreement is made and entered into in Imperial County, California. This agreement shall be construed and enforced in accordance with the laws of the State of California, except that the Parties agree

that any action brought by either Party regarding this Agreement shall be brought in a court of competent jurisdiction in Imperial County, or if appropriate, in the Federal District Court serving Imperial County.

11. GOOD FAITH

The Parties hereto agree to act in good faith and deal fairly with the other Party in the performance of this Agreement.

12. NOTICES.

Notices required hereunder shall be in writing and may be given either personally or by registered or certified mail, postage prepaid, return receipt requested. If given by registered or certified mail, such notice shall be addressed as indicated below, and shall be deemed given and received upon the earlier of actual receipt by the Party to whom the notice was sent, or return of the requested receipt to the Party giving notice. Notice personally given shall be deemed given when delivered to the Party to whom the notice is addressed. Any party may upon ten (10) days written notice to the other Party, change the address where notices are to be sent.

Notice to County

County of Imperial
County Executive Office
Attention: County Executive Officer
940 Main Street, Suite #208
El Centro, CA 92243

With Copies To

Imperial County LAFCO
Attention: Executive Officer
1122 State St., Suite D
El Centro, CA 92243

Notice to City

City of El Centro
Attention: City Manager
1275 W. Main Street
El Centro, CA 92243

13. COUNTERPARTS.

The Parties herein agree that this Agreement may be executed in counterparts.

14. AUTHORITY.

The Parties herein each warrant and represent that they are authorized to execute this Agreement and bind City or County to the terms and conditions of this Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed the day and year written below.

COUNTY OF IMPERIAL:

By: _____
Luis A. Plancarte, Chairman
Imperial County Board of Supervisors

Date: 12.27.24

ATTEST:

By: _____
Blanca Acosta, Clerk
of the Board of Supervisors

Approved as to Form:

By: _____
Eric R. Havens
County Counsel

CITY OF EL CENTRO

By: _____
Sylvia Marroquin, Mayor
El Centro City Council

Date: 12/17/24

ATTEST:

By: _____
Norma Wyles, Clerk
of the City of El Centro

Approved as to Form

By: _____
Elizabeth L. Martyn
City Attorney

COUNTY OF IMPERIAL
FISCAL IMPACT FEES
EFFECTIVE JANUARY 20, 2007

Exhibit A

Units	Total Impact Fee Per Unit	Per Fiscal Impact Studies	Surcharge for Developable Land	Total
Residential		Per Housing Unit		
Single Family	$2,420	$225	$72.60	$2,718
Multi Family	$1,895	$276	$56.85	$2,228
Mobile Home	$1,624		$48.72	$1,673
Non-Residential	Countywide Impact Fee Per 1,000 Square Foot			
Com/Shop Ctr (50,000 or less sq ft)	$671.00	$80.00	$20.00	$771
Com/Shop Ctr (50,001-100,000 sq ft)	$587.00	$80.00	$17.00	$684
Com/Shop Ctr (100,001-200,000 sq ft)	$513.00	$80.00	$15.00	$608
Com/Shop Ctr over (200,000 sq ft)	$449.00	$80.00	$13.00	$542
Office/Inst (25,000 or less sq ft)	$549.00	$80.00	$16.00	$645
Office/Inst (25,000-50,000 sq ft)	$502.00	$80.00	$15.00	$597
Office/Inst (50,001-100,000 sq ft)	$461.00	$80.00	$13.00	$554
Medical-Dental Office	$700.00	$80.00	$21.00	$801
Hospital	$470.00	$80.00	$14.00	$564
Business Park	$407.00	$80.00	$12.00	$499
Light Industrial	$276.00	$80.00	$8.00	$364
Manufacturing	$199.00	$80.00	$5.00	$284
Warehousing	$162.00	$80.00	$4.00	$246
Elementary School	$216.00	$80.00	$6.00	$302
Other Non-Residential				
Lodging (per room)	$91.00		$2.00	$93
Day Care (per student)	$55.00		$2.00	$57
Nursing Home (per bed)	$54.00		$1.00	$55

Prepared 11/14/2006
Based on TischlerBise Fiscal Impact Fee Study dated August 17, 2006 &
Proposed Fiscal Impact Fee Ordinance

EXHIBIT "B"

MEMORANDUM OF ANNEXATION

This Memorandum of Annexation is made and entered into by and between the **CITY OF EL CENTRO**, a municipal corporation of the state of California ("**City**"), and the **COUNTY OF IMPERIAL**, a political subdivision of State of California ("**County**"), with respect to that certain Master Tax Sharing Agreement dated _____, 2024 ("**Agreement**"), for the annexation located at _____, also identified as a portion of APN _____ ("Annexation Property"):

1. Parties: County of Imperial & City of El Centro
2. Reference to the 2024 Master Tax Sharing Agreement approval date (not known yet)
3. Name of Annexation (ex: "EC __-__")
4. Annexation date of approval by LAFCO
5. Assessor's Parcel Numbers for the affected properties

IT IS SO AGREED.

COUNTY:

County of Imperial

By: _____
, Chairperson
Imperial County Board of Supervisors

Date: _____

CITY:

City of El Centro

By: _____
, Mayor

Date: _____

ACKNOWLEDGEMENT

A notary public or public officer completing this certificate verifies only the identity of the individual who signed the document, to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
BOARD OF SUPERVISORS
COUNTY OF IMPERIAL

} SS

On **December 27, 2024,** before me, **Blanca Acosta, Clerk of the Board of Supervisors** personally appeared **Luis A. Plancarte** who proved to me on the basis of satisfactory evidence to be the **person**(s) whose **name**(s) **is**/are subscribed to the within instrument and acknowledged to me that **he**/she/they executed the same in **his**/her/their authorized **capacity**(ies) and that by **his**/her/their signature(s) on the instrument the **person**(s) or the entity upon behalf of which the **person**(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal:

CLERK, BOARD OF SUPERVISORS * COUNTY OF IMPERIAL * CALIFORNIA

Blanca Acosta, Clerk of the Board
County of Imperial, State of California

EXHIBIT N

County Auditor-Controller Letter

Karina B. Alvarez, CPA
Auditor-Controller
Karinabalvarez@co.imperial.ca.us

County Administration Center
940 Main Street, Suite 108
El Centro, California 92243
Telephone: 442-265-1277
FAX: 442-265-1296

AUDITOR-CONTROLLER

February 10, 2025

Miguel Figueroa
County Executive Officer
County of Imperial
Administration Center
El Centro, CA 92243

Subject: Annexation - LAFCO File No. EC 1-24

Dear Mr. Figueroa:

Pursuant to Section 99(B) of the Revenue and Taxation Code the estimated amount of property tax revenue generated within the territory which is subject to jurisdictional change for the current fiscal year are as follows:

County General Fund	$ 2,858
County Library	$ 108
County Fire Protection	$ 439

The estimated proportion of property tax revenue are:

County General Fund	36%
County Library	1%
County Fire Protection	5%

The estimated total assessed valuation for the territory subject to jurisdictional change is $888,671

Sincerely,

Karina B Alvarez, CPA
Auditor-Controller

cc: LAFCO Executive Officer

Karina B. Alvarez, CPA
Auditor-Controller
Karinabalvarez@co.imperial.ca.us

County Administration Center
940 Main Street, Suite 108
El Centro, California 92243
Telephone: 442-265-1277
FAX: 442-265-1296

AUDITOR-CONTROLLER

February 10, 2025

City of El Centro
1275 W Main Street
El Centro, CA 92243

Subject: Annexation - LAFCO File No. EC 1-24

Dear Sir:

Pursuant to Section 99(B) of the Revenue and Taxation Code the estimated amount of property tax revenue generated within the territory which is subject to jurisdictional change for the current fiscal year are as follows:

County General Fund	$ 2,858
County Library	$ 108
County Fire Protection	$ 439

The estimated proportion of property tax revenue are:

County General Fund	36%
County Library	1%
County Fire Protection	5%

The estimated total assessed valuation for the territory subject to jurisdictional change is $888,671

Sincerely,

Karina B Alvarez, CPA
Auditor-Controller

EXHIBIT O

Final EIR

Draft Environmental Impact Report
for
City of El Centro
Zone Change 05-05 and
Tentative Subdivision Map (Willow Bend)
State Clearinghouse Number: 2005101128

Prepared for:

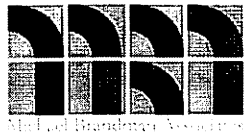
City of El Centro
Planning Department
1275 Main Street
El Centro, CA 92243

Contact: Oliver Alvarado, Planning Director

Prepared by:

Michael Brandman Associates
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Contact: Kara E. Palm, Project Manager



August 9, 2006

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SECTION 1: INTRODUCTION

1.1 - Purpose of the EIR

This Draft Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with the development of the Willow Bend project, which includes an annexation to the City of El Centro and residential subdivision of 131 single-family residences. The City of El Centro is the lead agency for the preparation of the EIR. This document is a project EIR and has been prepared in conformance with CEQA, California Public Resources Code Section 2100 et seq; the California CEQA guidelines (California Code of Regulation, Title 14, Section 15000 et seq.); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of El Centro.

This Draft EIR is intended to serve as an informational document for the public agency decision-makers and the public regarding the objectives and components of the proposed project. This document will address the potentially significant adverse environmental impacts that may be associated with the planning, construction, or operation of the project, as well as identify appropriate feasible mitigation measures and alternatives that may be adopted to reduce or eliminate these impacts. This EIR considers a series of actions that are needed to achieve development of the proposed project. The actions currently being requested include approval of the following project components, a zone change, an annexation, and a tentative tract map. Additional approvals (i.e., grading permits and building permits) will be needed. In addition to the City, other public agencies (i.e., responsible and trustee agencies) will also use the information in the EIR in their decision-making process as well as additional information that may be presented during the CEQA process. A more detailed discussion of the potential project approvals is provided in this EIR's Section 3.4, Intended Use of this EIR, Responsible Agencies, and Approvals Needed.

This EIR is the primary reference document for the formulation and implementation of a mitigation monitoring program for the proposed project. Environmental impacts cannot always be mitigated to a level that is considered to be less than significant. In accordance with Section 15093(b) of the State CEQA Guidelines, if a lead agency approves a project that has significant impacts that are not substantially mitigated (i.e. significant unavoidable impacts), the agency shall state in writing the specific reasons for approving the project, based on the final CEQA documents and any other information in the public record for the project. This is termed, per Section 15093 of the state CEQA Guidelines, a statement of overriding considerations.

The intent of this project EIR is to provide a comprehensive single environmental document that will allow the City of El Centro to carry out the proposed project. This EIR provides a reasonably anticipated scope of the project. This EIR will also be used to determine whether subsequent environmental documentation will be required. Subsequent actions on the project site may include,

but not limited to, the consideration of conditional use permits, grading permits, and building permits. The lead agency can approve subsequent actions without additional environmental documentation unless as otherwise required by Public Resources Code Section 21166, and the state CEQA Guidelines Sections 15162 and 15163.

1.2 - Scope of the EIR

The EIR will address the potential environmental effects of the proposed project. The scope of the EIR includes issues identified by the City of El Centro during the preparation of the Initial Study (IS) and Notice of Preparation (NOP) for the proposed project, and issues raised by agencies and the general public in response to the IS/NOP, as described below.

1.2.1 - Environmental Procedures

This document analyzes the environmental effects of the project to the degree of specificity appropriate to the current proposed actions, as required by Section 15146 of the state CEQA Guidelines. This analysis considers the series of actions associated with the various discretionary actions required for project implementation to determine the associated short-term and long-term effects. This EIR discusses both the direct and indirect impacts of this project, as well as the cumulative impacts associated with planned and foreseeable future development within the project area as identified in Section 6, Cumulative Impacts, of this EIR.

CEQA requires the preparation of an objective, full disclosure document, to inform agency decision-makers and the public of the direct and indirect environmental effects of the proposed action; provide mitigation measures to reduce or eliminate potential adverse effects; and identify and evaluate reasonable alternatives to the proposed project.

1.2.2 - Scoping Process

In compliance with State CEQA Guidelines, the City of El Centro has taken steps to maximize opportunities to participate in the environmental process. During the preparation of the Draft EIR, an effort was made to contact various federal, state, regional, and local governmental agencies and other interested parties to solicit comments and inform the public of the proposed project. This included the distribution of the IS/NOP on October 27, 2005. The project was described, potential environmental effects associated with the project implementation were identified, and agencies and the public were invited to review and comment on the NOP. The close of the NOP review period was November 25, 2005. The IS/NOP and comment letters received during the NOP review period are included in Appendix A of this EIR.

Agencies, organizations, and interested parties who did not respond to the NOP request for comments, or did provide other comments during the preparation of the Draft EIR currently have the opportunity to comment during the 45-day public review period on the Draft EIR.

1.3 - EIR Focus and Effects Found Not To Be Significant

Based on the findings of the IS/NOP, a determination was made that an EIR is required to address the potentially significant environmental effects, including the cumulative effects of the proposed project. The scope of the EIR includes issues identified by the City of El Centro during the preparation of the IS/NOP for the proposed project, as well as environmental issues raised by agencies and the general public in response to the IS/NOP. The following are the issues addressed in this EIR:

- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Noise
- Public Services and Utilities
- Transportation and Traffic

As discussed in the IS/NOP (Appendix A of this EIR) the environmental issues that were determined not to be significantly affected by the proposed project and therefore, do not require evaluation in the document, per section 15063(c) of the State CEQA Guidelines, are as follows:

- Aesthetics
- Hydrology/Water Quality
- Land Use and Planning
- Mineral Resources
- Population and Housing

1.4 - Components of the EIR Analysis

The analysis of each environmental category within Section 5, Existing Conditions, Project Impacts, Mitigation Measures, and Level of Significance After Mitigation, of this EIR is organized into the following subsections:

- **Existing Conditions**: describes the physical conditions that exist at this time and which may influence or affect the issue under investigation.
- **Project Impacts**: describes the potential environmental changes to the existing physical conditions that may occur if the proposed project is implemented.
- **Mitigation Measures**: are those specific measures that may be required of the project by the decision-makers in order to (1) avoid an impact, (2) minimize an impact, (3) rectify an impact

by restoration, (4) reduce or eliminate an impact over time by preservation and maintenance operations, or (5) compensate for the impact by replacing or providing substitute resources or environment.

- **Level of Significance After Mitigation**: discusses whether the project and the project's contribution to cumulative impacts can be reduced to levels that are considered less than significant.

In addition, Section 6, Cumulative Impacts, describes the potential environmental changes to the existing physical conditions that may occur with the proposed project, together with anticipated growth in the vicinity of the project site.

1.5 - Project Sponsors and Contact Persons

The City of El Centro is the lead agency in the preparation of the EIR. Development Design & Engineering, Inc. is the project sponsor. Michael Brandman Associates is the environmental consultant for the project. Preparers of this EIR are provided in Section 10. Key contact persons are as follows:

Lead Agency.....	City of El Centro Planning Department Oliver Alvarado, Planning Director 1275 Main Street El Centro, CA 92243
Project Applicant.....	Development Design & Engineering, Inc. 1122 State Street, Suite D El Centro, CA 92243
Environmental Consultant.....	Michael Brandman Associates Kara Palm, Project Manager 220 Commerce, Suite 200 Irvine, CA 92602

1.6 - Incorporation by Reference

In addition to the project technical studies, a number of other environmental documents and technical studies were consulted to aid in the preparation of this EIR, including the City's General Plan. These documents are referenced in Section 11, References, and are on file and available for review at the City of El Centro Planning Department.

1.7 - Review of the Draft EIR

This Draft EIR was distributed to responsible and trustee agencies, other affected agencies, surrounding cities, and interested parties, as well as all parties requesting a copy of the Draft EIR in

accordance with Public Resources Code 21092(b)(3). The Notice of Completion of the Draft EIR was also distributed as required by CEQA. During the 45-day public review period, the EIR, including technical appendices, is available for review at the City of El Centro, Planning Department, 1275 Main Street, El Centro, California, 92243.

Written comments on the Draft EIR should be addressed to:

City of El Centro
Planning Department
Oliver Alvarado, Planning Director
1275 Main Street
El Centro, CA 92243

Upon completion of the 45-day review public review period, written responses to all significant environmental issues raised will be prepared and available for review at least 10 days prior to the public hearing before the El Centro City Council at which the certification of the Final EIR will be considered. These environmental comments and their responses will be included as part of the environmental record for consideration by decision-makers for the project.

SECTION 2: EXECUTIVE SUMMARY

2.1 - Proposed Project

The proposed project is the development of a single-family residential community that includes the subdivision of 38 acres of farmland to provide for 131 single-family residential lots, a 3.02-acre retention basin, and a 1.67 acre park. Project implementation includes a zone change from County zoning, General Agriculture/Urban Overlay (A2U) to City zoning Single Family Residential (R-1). It is the intent of the City of El Centro to annex the project site into the City's incorporated boundaries. Project implementation will also require the extension and/or upgrade of public services and utilities and the internal circulation system. Primary access to the project is proposed via 4th Street (SR-86) along two access drives (Willow Bend Drive and Countryside Drive).

In addition to the required changes to the City's Municipal Code, the proposed project will also require the following City approvals: zone change, annexation, tentative subdivision maps, grading permits, and building permits. The project will also require approvals from LAFCO (annexation) and the Imperial Irrigation District (retention basin and storm water measures).

2.2 - Areas of Controversy/Issues To Be Resolved

The potential areas of controversy and issues to be resolved through the EIR process are derived from the Initial Study/Notice of Preparation (Appendix A) and responses thereto. These areas are summarized as follows:

- The project site is currently vacant and has been historically used for agriculture production. The project site contains Soils of Statewide Importance, and accordingly, the project site is considered to contain Farmland of Statewide Importance. Project implementation will result in the conversion of designated farmland to non-agricultural land uses. (see Section 5.1, Agricultural Resources).
- The proposed project will have air quality impacts in the short-term during the mass grading of the site and the construction of the residential units and associated infrastructure and in the long-term as vehicular traffic increases in the project area. In addition the proposed project will need to be examined for consistency with the Air Quality Management Plan (see Section 5.2, Air Quality).
- The project site is currently vacant and has been historically used for agriculture production. The project site provides marginal habitat or foraging area for burrowing owls, a species of concern, which is known to occur in the project area. The project site also may contain habitat for nesting birds (see Section 5.3, Biological Resources).

- The project site consists of undeveloped farmland. While past agricultural activities resulted in ground disturbance that would have potentially destroyed any archeological or paleontological resources, no record search or cultural survey has been performed to identify the presence or lack thereof of cultural resources. Project implementation will involve earth moving activities that could potentially destroy any unknown resources (see Section 5.4, Cultural Resources).
- The project site is located in an area that is seismically active and may experience primary and secondary seismic activity. The site may be subject to geological constraints including but not limited to, groundshaking, liquefaction and expansive soils (see Section 5.5, Geology and Soils).
- Historically the project site was used for agricultural production, which included the application of herbicides and pesticides. Implementation of the proposed project will involve grading and other construction related activities that have the potential to unearth yet unknown hazardous materials and/or waste. Once operational, the project will increase the use of common household hazardous wastes in the project area (see Section 5.6, Hazards and Hazardous Materials).
- The proposed project will result in the generation of noise in the short-term during construction and in the long term as vehicular traffic increases in the project area (see Section 5.7, Noise).
- Project implementation will result in the conversion of undeveloped land to residential land uses, which will increase the demand for public services within the project area and the need for infrastructure to be extended to the project site (see Section 5.8, Public Services and Utilities).
- The proposed project will introduce 1,333 daily vehicle trips to the project area circulation system, of which 101 trips will be during the AM peak hour and 137 will be during the PM peak hour. (see Section 5.9, Transportation and Traffic).

2.3 - Significant Unavoidable Adverse Environmental Effects

Section 15126.2(b) of the State CEQA Guidelines requires an EIR to, "describe any significant impacts, including those which can be reduced but not mitigated to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect should be described."

Section 5, Environmental Setting, Project Impacts, Mitigation Measures, and Level of Significance After Mitigation and Section 6, Cumulative Impacts, of this EIR, provides an evaluation of the potential environmental impacts of the proposed project and recommends mitigation measures to reduce impacts to a less than significant level where feasible. With the implementation of the mitigation measures proposed, no significant unavoidable project-related or cumulative impacts will occur, with the exception of impacts to agricultural resources and air quality as discussed below:

- Project implementation will result in the conversion of this agricultural land to urban uses, which would constitute a significant loss of Farmland of Statewide Importance. Potential impacts in this regard are significant and unavoidable under CEQA. No mitigation is available to reduce this significant impact to a level of less than significant.

- The Imperial County population projections for year 2010 used in the Attainment Plan and PM-10 Plan for the City of El Centro assumes land use designations in the General Plan and includes build-out of the site. The project site under the current County General Plan land use designation would accommodate approximately only 2 dwelling units per parcel. The proposed project includes the development of 131 single-family residential dwelling units. Clearly the proposed project would result in a higher density, and more vehicle trips and vehicle miles traveled than what was anticipated in the Attainment Plan and PM-10 Plan. Because the project will result in more people and more traffic than what was considered in the plan, the project is not consistent with the Attainment Plan and PM-10 Plan, and therefore would create a significant impact in this regard. No mitigation is available to reduce this significant impact to less than significant.

2.4 - Summary of Alternatives

Section 15126.6 of the CEQA Guidelines state that "An EIR shall include a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." In addition, in CEQA Guidelines Section 15126.6(e), indicates that if other future uses of the land are predictable, such uses should be discussed as possible no-project conditions and the project should be compared to them. Section 7, Alternatives, of this draft EIR provides descriptions and analysis of each alternative in adequate detail to allow the decision-maker to decide whether or not an alternative should be adopted in lieu of the proposed project. The alternatives evaluated in the following draft EIR include the following:

- No Project/No Development Alternative; and
- No Project/Development In Accordance with Existing Zoning Designation.

Additionally, an Alternative Site Alternative was initially considered for analysis within this Draft EIR; however after further consideration, it was determined that this alternative would not be feasible. Specifically, an examination of available parcels of land that could support the proposed project indicated that the inventory of available parcels consisted of agricultural lands and lands designated for agricultural land uses. Therefore, similar to the proposed project, the implementation of an Alternative Site Alternative would result in the conversion of agricultural lands and would not be consistent with the Air Quality Management Plan thus, an Alternative Site Alternative would not eliminate a significant unavoidable project impact. Additionally, while CEQA Guidelines do not require that an alternative meet the project objectives and may to some degree impede attainment of

project objectives, there was no suitable alternative site that could avoid a project-related significant unavoidable impacts and partially meet the project objectives.

2.4.1 - No Project/No Development Alternative

Under the No Project/No Development Alternative (No Project Alternative), the entire project site would remain unchanged and no new development would occur onsite. In general, the Willow Bend project site would continue to exist as undeveloped land and the project site would not be annexed into the City of El Centro.

2.4.2 - No Project/Development in Accordance with Existing Zoning Alternative

The No Project/Development in Accordance with Existing Zoning Alternative (Zoning Alternative) would result in the development of the project site under the existing zoning designation. Similar to the No Project Alternative, under this alternative scenario, the project would not be annexed into the City of El Centro. Currently the project site is zoned by Imperial County as General Agriculture/Urban Overlay (A2U). Under this designation, agricultural land uses are allowed. The density permitted is one dwelling unit per 40 acre parcel. Therefore, under the current County zoning designation, the 38-acre project would preclude residential development but allow agricultural production and associated activities.

2.5 - Mitigation Monitoring Program

CEQA requires public agencies to set up monitoring report programs for ensuring compliance with those mitigation measures adopted as conditions of approval in order to mitigate or avoid significant environmental effects as identified in the EIR. A mitigation monitoring program, incorporating the mitigation measures set forth in this document, will be adopted at the time of certification of the EIR.

2.6 - Summary of Significant Environmental Impacts and Mitigation Measures

Table 2-1 summarizes the potential environmental effects of the proposed project, the recommended mitigation measures, and the level of significance after mitigation. Impacts that are noted in the summary as "significant" after mitigation will require the adoption of a statement of overriding considerations, if the project is approved as proposed (CEQA Section 15903).

Impacts of the project are classified as (1) Less than Significant (adverse effects that are not substantial according to CEQA or adverse effects that have been mitigated to levels that are considered less than significant or (2) Significant and Unavoidable (substantial changes in the environment that cannot be avoided even with feasible mitigation). Mitigation measures are listed, when feasible for each impact. The EIR also identifies other effects, which are either not considered significant or are beneficial effects of the proposed project; such effects are not the focus of the following summary. The reader is referred to the full text of this EIR for a description of the

environmental effects of the proposed project and feasible mitigation measures recommended to reduce these effects to a level considered less than significant.

Table 2-1: Summary of Project Impacts and Mitigation Measures

Impacts	Mitigation Measures	Level of Significance After Mitigation
Section 5.1 - Agricultural Resources		
Project implementation will result in the conversion of Farmland of Statewide Importance.	There are no feasible mitigation measures.	Significant and unavoidable.
Section 5.2 - Air Quality		
Onsite construction emissions generated during construction principally consist of exhaust emissions (NO_X, SO_X, CO, VOC, and PM_{10}) from heavy-duty construction equipment operation and fugitive dust (PM_{10}) from disturbed soil.	**AQ 5.2-1.** During construction of the proposed improvements, all construction equipment will be properly maintained at an offsite location and includes proper tuning and timing of engines. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction. **AQ 5.2-2.** During construction of the proposed improvements, all construction equipment will be fueled with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use in off-road equipment). **AQ 5.2-3.** To the maximum extent feasible, use diesel construction equipment meeting the CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines. **AQ-5.2.4.** Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction site and provide temporary traffic control (i.e. flag person) during demolition debris transport and other construction related truck hauling activities. **AQ 5.2-5.** During construction of the proposed improvements, construction equipment will not idle on site for more than 10 minutes. **AQ 5.2-6.** During construction of the proposed improvements, the project applicant will provide onsite meals to construction workers by arranging a lunch wagon to visit the construction site during work breaks including the lunch break. This will improve air quality by reducing traffic created by construction workers. **AQ 5.2-7.** During construction of the proposed improvements, the project applicant will provide onsite electrical hook ups for electric construction tools, such as saws, drills and compressors, to eliminate the need for diesel powered electric generators.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
	AQ 5.2-8. Prior to construction of the proposed improvements, the project proponent will provide a Dust Control Plan that will describe the application of standard best management practices to control dust during construction. Best management practices will include application of water on disturbed soils a minimum of two times per day, covering haul vehicles, replanting disturbed areas as soon as practical, restricting vehicle speeds on unpaved roads to 15 mph, sweeping street access points at the end of each day, and other measures, as deemed appropriate to the site, to control fugitive dust. The Fugitive Dust Control Plan shall be submitted to the City and the Imperial County Air Pollution Control District for approval and approved prior to construction. **AQ 5.2-9.** During construction of the proposed improvements, only low volatility paints and coatings as defined in Imperial County APCD Rule 424 shall be used. All paints shall be applied using either high volume, low pressure (HVLP) spray equipment or by hand application.	
The proposed project is not consistent with the AQMP	No mitigation is available.	Significant and unavoidable.
Section 5.3 - Biological Resources		
Burrowing owls would be adversely impacted on a short-term basis during construction activities to underground the onsite drains.	**BR 5.3-1.** Additional focused survey shall be conducted to more conclusively determine the number of owls occupying the project site and a 500-foot buffer. Focused surveys shall follow accepted burrowing owl protocol, which includes a nesting season survey. During the nesting season survey, four site visits are conducted between April 15 and July 15. Surveys shall be conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise. **BR 5.3-2.** A burrowing owl preconstruction survey shall be completed no sooner than 30 days prior to commencement of construction. **BR 5.3-3.** Burrowing owls inside the project site shall be actively relocated prior to construction activity in order to avoid direct impacts of burrow destruction. Once all burrows on the project site are confirmed to be absent of owls, they shall be systematically collapsed. Where possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
	BR 5.3-4. No construction-related disturbance shall occur within 50 m., approx. 160 ft., of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m., approx. 250 ft., during the breeding season of February 1 through August 31. **BR 5.3-5.** If feasible, 6.5 acres of foraging habitat for each pair of burrowing owl would be preserved in a conservation easement and managed to promote burrowing owl use of the site. This habitat shall be adjacent to the project site but at least 50 meters from the impact area. The displaced owls would be encouraged to occupy this conserved area by actively relocating them to natural or artificial burrows. One alternate natural or artificial burrow should be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. Conservation of agricultural lands to the west or south of the project site would be the only appropriate options under this mitigation measure. **BR 5.3-6.** If Mitigation Measure BR 5.3-5 is not feasible, this mitigation measure is required. Off-site replacement of burrowing owl habitat shall be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable burrowing owl habitat. One alternate natural or artificial burrow shall be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. The off-site replacement of suitable burrowing owl habitat shall follow one of the following scenarios: 1. Replacement of occupied habitat with off-site occupied habitat: 9.75 acres per pair or single bird. 2. Replacement of occupied habitat with off-site suitable unoccupied habitat: 19.5 acres per pair or single bird.	
In the long-term, due to increased recreational use of the berms by humans and pets, harassment of owls will occur. Also, the conversion of burrowing owl foraging, dispersing, and nesting habitat will be impacted.	**BR 5.3-7.** An educational flyer shall be developed that informs new residences that off-road activity is not permitted on the surrounding berms. In addition, pets shall be on leashes if walked on berms. The flyer shall also make new residents aware of burrowing owls, their biology, how and why they are sensitive, and their benefits to insect and rodent control.	Less than significant.
The proposed project contains suitable nesting bird habitat. If actively nesting birds are present during	**BR 5.3-8.** The removal of vegetation, ground disturbance, or elimination of other potential nesting habitat should be conducted outside of avian	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
construction, they will be disturbed by construction activities.	nesting season (February through August). This is particularly true for construction during the undergroundment of the drains as burrowing owls were confirmed as present and are likely resident breeders. If construction occurs during the avian nesting season, a pre-construction nesting bird survey shall be conducted seven days prior to any ground disturbing activities. If birds are found to be nesting inside the impact area, construction will need to be postponed until a no-construction buffer, 250 feet for passerines and 500 feet for raptors, is established. Construction inside the buffer could commence once a qualified biologist determines that the nest is no longer active.	
Section 5.4 - Cultural Resources		
Cultural Resources The records search and field survey results revealed that there a low potential exists for impacts to prehistoric cultural resources. However, there is always the potential for undiscovered resources to be uncovered.	**CR 5.4-1.** In the event that human remains are uncovered, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the Imperial County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the remains to be Native American, then the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98, or **CR 5.4-2.** Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the recommendations of the most likely descendant or on the property in a location not subject to further subsurface disturbance: • The NAHC is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission. • The descendant identified fails to make a recommendation; or • The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the NAHC fails to provide measures acceptable to the landowner.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
Paleontological Resources There is a high probability that the project site contains significant paleontological resources, at a depth of eight feet or greater below ground surface.	**CR 5.4-3.** Prior to any clearing and grubbing and/or earthmoving activities on the project area, a qualified Project Paleontologist retained by the Proponent and approved by the City shall review the approved development and construction plans. The paleontologist shall participate in a pre-construction project meeting with the development staff to ensure an understanding of the mitigation measures required during construction. **CR 5.4-4.** Paleontologic monitoring of any shall be conducted by a qualified monitor, under direct guidance of a Project Paleontologist. Earthmoving in areas of the parcel where previously undisturbed sediments will be buried but not otherwise disturbed will not be monitored. Monitoring shall begin once earthmoving reaches 8 feet below the original ground surface. Non-virgin soils need not be monitored. **CR 5.4-5.** If too few fossil remains are found after 50 percent of earthmoving is complete, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction. If fossil remains are found during monitoring, up to 6,000 pounds of fossiliferous sediments will be recovered from the fossil site and processed to allow for the recovery of smaller fossil remains. The total weight of all processed samples from the fossil-bearing rock unit will not exceed 6,000 pounds at any one site. **CR 5.4-6.** If fossil remains are found, the Project Paleontologist shall develop a storage agreement with a museum repository acceptable within the City to allow for the permanent storage and maintenance of any fossil remains recovered in the Project Site as a result of the mitigation program, and for the archiving of associated specimen data and corresponding geologic and geographic site data. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then shall be curated (assigned and labeled with museum repository fossil specimen numbers and corresponding fossil site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards) and catalogued. Associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into appropriate museum repository catalogs and computerized data bases) at the museum repository by a laboratory technician. The remains then will be accessioned into the	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
	museum repository fossil collection, where they will be permanently stored and maintained. The associated specimen and site data shall be made available for future study by qualified investigators. **CR 5.4-7.** A final report of findings shall be prepared by the Project Paleontologist for submission to the City, and the museum repository following accessioning of the specimens into the museum repository fossil collection. The report shall describe parcel geology/stratigraphy, summarize field and laboratory methods used, include a faunal list and an inventory of curated/catalogued fossil specimens, evaluate the scientific importance of the specimens, and discuss the relationship of any newly recorded fossil site in the parcel to relevant fossil sites previously recorded from other areas.	
Section 5.5 - Geology and Soils		
The project site is within the vicinity of numerous active faults and will likely experience moderate to strong ground motion from earthquakes in the region.	**GS 5.5-1.** Prior to the issuance of grading permits, LandMark Consultants, Inc., or other qualified engineering geologist approved by the City of El Centro shall review and approve all grading plans and earthwork operation plans in relation to the Recommendations set forth in Section 4 of the Geotechnical Study (Appendix F of this DEIR). **GS 5.5-2.** LandMark Consultants, Inc. or other qualified engineering geologist approved by the City of El Centro shall be provided with a forty-eight hours advance notice in order to be present at the site during all earthwork activities related to the excavation, tree root removal, stripping, backfill, and compacting and filling of the site and to perform periodic compaction tests. **GS 5.5-5.** Prior to the issuance of grading permits, the project applicant is recommended to include in the structural designs the following foundation improvements to reduce the potential effects of liquefaction induced settlements by making the structures more able to withstand differential settlement. • Reinforced foundations that use grade-beam footings to tie floor slabs and isolated columns to continuous footings (conventional or stiffened post-tensioned); • Structural flat-plate mats, either conventionally reinforced or tied with post-tensioned tendons.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
The results of the testing soils for expansive properties indicated that earthwork operations can be expected to encounter expansive soils with expansion indexes in the range of medium to high. Thus, there is the potential for soils at the site to have a high potential for expansion.	Please refer to mitigation measures **GS 5.5-1, 5.5-2, and 5.5-5.** **GS 5.5-3.** Prior to the issuance of grading permits, the project applicant shall include one of the following foundation systems and remediation schemes to reduce the potential for expansive soils to less than significant. • Waffle-slabs supported on a system of drilled piers anchored below the zone of moisture change; • Moisture conditioning subgrade soils to a minimum of 5% above optimum moisture (ASTM D1557) for the full range in depth of surface soils; • Design of foundations that are resistant to shrink/swell forces of silt/clay soil; • Excavation of existing materials and replacement by non-expansive soils; • Reinforcement in footings and slabs. Flexural and shear stresses in slabs should be computed by determining the differential swell for the center lift and edge lift conditions using design procedures recommended by the Post-Tensioning Institute. The differential swell should be used to compute the maximum shear stresses and flexural stresses in floor slabs and flatwork. Use edge moisture variation distance (em) of six feet and three feet for the center lift and edge lift conditions, respectively; and • Provide Post-tensioned, free floating slabs-on-grade. **GS 5.5-6.** Provide positive free drainage away from the structure and make every effort possible to prevent subgrade saturation by measures such as: • containing all landscaping in sealed planters, sealing all construction joints with an elastomeric compound, providing the building with eave gutters and downspouts; and • routing all drainage impinging upon the site from off-site sources as well as drainage generated on the site away from the proposed residential structures.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
There is groundwater at a level of eight feel below ground surface. Soils encountered below three feet have the potential to pump groundwater under heavy construction wheel loads because of the silty conditions in the near surface soils have the tendency to support layers of groundwater.	**GS 5.5-4.** Base line collectors (6-8 inches in diameter) along the north side of the project site shall be crushed in place and trench backfill compacted (85-90%). The 4-inch lateral pipeline drains shall be plugged at street crossings. **GS 5.5-5.** Light earthmoving equipment (i.e., 613 and/or 623 Earthmovers) shall be used on the project site during construction activities to reduce the potential for groundwater pumping. **GS 5.5-6.** Provide positive free drainage away from the structure and make every effort possible to prevent subgrade saturation by measures such as: • containing all landscaping in sealed planters, sealing all construction joints with an elastomeric compound, providing the building with eave gutters and downspouts; and • routing all drainage impinging upon the site from off-site sources as well as drainage generated on the site away from the proposed residential structures.	Less than Significant.
Section 5.6 - Hazards and Hazardous Materials		
Remnants of past activities and debris are located on the project site.	**HM 5.6-1.** Prior to any earth moving activities on the project site, debris consisting of a wood pallet, dry brush, Styrofoam, cardboard and automobile tires found at the northern portions of the project site shall be removed and properly disposed.	Less than significant.
Pesticide residue (DDE) exists in the project site soils below current threshold (action) limits.	**HM 5.6-2.** Prior to the issuance of a grading permit, the project applicant shall coordinate with DTSC to review and approve the results of the pesticide scan. DTSC shall provide written verification that no further action is required in relation to the presence of DDE in near surface soils. If DTSC determines that the soils exceed the acceptable limits the soils shall be remediated and/or properly disposed of per DTSC requirements.	Less than significant.
Section 5.7 - Noise		
Activities involved in construction of the project would generate noise levels in the range of 80 dBA to 87 dBA.	**N 5.7-1.** Prior to the issuance of grading permits, the grading plans shall state that all gas and diesel power equipment shall be properly muffled and maintained. Construction activities should be limited to the hours and days permitted by the City of El Centro.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
Section 5.8 - Public Services and Utilities		
The project's construction would generate approximately 920 tons of construction debris. This would be significant short-term solid waste impact.	**PSU 5.8-1.** At the time building permits are sought, the project applicant shall demonstrate to the satisfaction of the City of El Centro Public Works Department that a certified construction and demolition recycler has been retained and a Waste Management Plan has been prepared for the construction phase of the proposed project.	Less than significant.
Section 5.9 - Transportation and Traffic		
With the implementation of the proposed project all intersections and roadway segments will operate at an acceptable LOS.	No mitigation is required.	Less than significant.
Section 6 - Cumulative Impacts		
Agricultural Resources The proposed project will result in the conversion of Farmlands of Statewide Importance. Similar projects will result in the conversion of designated farmlands and/or lands zoned for agricultural land uses. This is considered a significant and unavoidable cumulative impact.	No mitigation is available.	Significant and unavoidable.
There is substantial development in the project area and in the Salton Sea Air Basin. Much of this new development was not contemplated in the populations of the 1991 Attainment Plan and the 1993 PM_{10} Plan. These new development projects have the potential to increase the emissions of the basin. The project area is not attainment for ozone, CO, or PM_{10}. Operational emissions of ROG, NO_X (Ozone precursor pollutants) CO, and PM_{10} from the proposed project will incrementally contribute to a significant cumulative effect because the project emissions combined with emissions from all other projects in the Salton Sea Air Basin will be cumulatively considerable air quality impacts with regard to these pollutants.	No mitigation is available	Significant and unavoidable.

Impacts	Mitigation Measures	Level of Significance After Mitigation
Biological Resources Implementation of the proposed project, in conjunction with future developments as identified earlier in this section would contribute to the ongoing loss of open space in the region, resulting in a decline of habitat for burrowing owls and nesting birds. .	Please see mitigation measures **BR 5.3-1** through **BR 5.3-8** in Section 5.3, Biological Resources, of this EIR.	Less than significant.
Cultural Resources Like the proposed project, cumulative projects may result in the disturbance of soils at a depth of 8 feet or greater below ground level, which, could contain paleontological resources.	Please see mitigation measures **CR 5.4-1** through **BR 5.4-7**, in Section 5.4, Cultural Resources, of this EIR.	Less than significant.
Noise Onsite locations will exceed El Centro's acceptability criterion of 60 dB L_{eq} within the outdoor activity areas.	**N 6-1.** A 6-foot high sound wall should be constructed along the project site. The sound wall must be continuous and constructed of a dense material such as masonry blocks or stucco on both sides of a wood/steel frame. **N .6-2.** Mechanical ventilation or air conditioning must be provided for all homes so that windows and doors may remain closed for the required acoustical insulation.	Less than significant.
Transportation and Traffic *Near-Term Scenario* *Intersections* Seven of the eight study area intersections under the near-term conditions will experience a significant cumulative impact. The addition of project traffic will cumulatively contribute to the degradation of these intersections resulting in an operational LOS E or worse. These intersections are: • State Route 86 and West McCabe Road (AM - LOS F, PM - LOS F) • State Route 86 and Horne Road (PM - LOS F) • State Route 86 and Willow Bend Drive (Project Access) (PM - LOS F) • State Route 86 and Countryside Drive (Project	The following roadway improvements are recommended to improve the operation of the impacted locations. The City Engineer shall make the determination of whether the payment of proportionate share or installation of the improvements is required. This shall be completed at the time of project approval. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for all cumulatively impacted locations. As these roadway network improvements effect intersections and roadways under Jurisdiction of the State of California Department of Transportation (Caltrans) along State Route 86, the following improvements are in accordance with the Memorandum of Understanding (MOU) regarding State Route 86 between Caltrans and the City of El Centro. These improvements adhere to the guidelines as established within the MOU and mitigate all intersections and roadway segments to a LOS D or better.	Less than significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
Access) (PM - LOS F) • State Route 86 and Interstate 8 Westbound Ramp (PM - LOS F) • State Route 86 and Interstate 8 Eastbound Ramp (PM - LOS F) • State Route 86 and Wake Avenue (PM - LOS E)	*Intersections* **TT 6-1.** State Route 86 and Interstate 8 Westbound Ramp - The project applicant should contribute a fair share (4.9%) towards the construction of a westbound right-turn lane and a second northbound left-turn lane. LOS before/after mitigation: F/D. **TT 6-2.** State Route 86 and Interstate 8 Eastbound Ramp - The project applicant should contribute a fair share (4.6 %) towards the construction of two eastbound right-turn lanes and a second southbound left-turn lane. LOS before/after mitigation: F/D. **TT 6-3.** State Route 86 and Wake Avenue - The project applicant should contribute a fair share (4.7%) towards the construction of a second eastbound left-turn lane. LOS before/after mitigation: E/D. **TT 6-4.** State Route 86 and Horne Road - The project applicant should contribute a fair share (10.6%) towards the signalization of the intersection. LOS before/after mitigation: F/B. **TT 6-5.** State Route 86 and Willow Bend Drive - The project applicant should contribute a fair share (13.8%) towards the construction of a right turn in/right turn out island from the project driveway. LOS before/after mitigation: F/C. **TT 6-6.** State Route 86 and Countryside Drive - The project applicant should contribute a fair share (9.0%) towards the signalization of the intersection. LOS before/after mitigation: F/A. **TT 6-7.** State Route 86 and West McCabe Road - The project applicant should contribute a fair share (1.5%) towards the signalization of the intersection including the provision of dedicated eastbound and westbound left-turn pockets. LOS before/after mitigation: F/C.	
Roadway Segments Two of the five roadway segments under the near-term conditions will be significantly impacted by cumulative projects that include the proposed project. The addition of project traffic will cumulatively contribute to the degradation of these roadway segments resulting in an operational LOS E or worse. These roadway segments are:	*Roadway Segments* **TT 6.8.** State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps - The project applicant should contribute a fair share (5.6 %) towards the widening of SR 86 between Wake Avenue and I-8 to six lanes. LOS before/after mitigation: E/B. **TT 6-9.** State Route 86 - McCabe Road to Project Access - The project applicant should contribute a fair share (2.7%) towards the widening of SR 86 between McCabe Road and Project Access to four lanes, including the	Less than Significant.

Impacts	Mitigation Measures	Level of Significance After Mitigation
• State Route 86 - McCabe Road to Project Access (South of Horne Road) (LOS E) • State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps (LOS E)	widening of SR 86 to four lanes along the project frontage. LOS before/after mitigation: E/A.	
Horizon Year 2025 Scenario The proposed project will contribute to a significant cumulative roadway segment impact along SR 86 between Danenberg Drive and Wake Avenue.	**TT 6-10.** SR-86 between Danenberg Drive and Wake Avenue - The project applicant shall contribute a fair share (5.7%) towards the widening of the SR-86 between Danenberg Drive and Wake Avenue to four lanes. It should be noted that the City Engineer shall make the determination whether the payment of the proportionate share or installation of the improvements is required. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for a cumulatively impacted locations.	Less than significant.

SECTION 3: PROJECT DESCRIPTION

3.1 - Project Location

The project site is located in the County of Imperial, within the Sphere of Influence of the City of El Centro, California (Exhibit 3-1). The 38-acre project site is located east, south, and west of the City of El Centro jurisdictional boundaries, approximately 0.9 mile south of Interstate (I) 8 in Tract 83, of Township 16 South, Range 14 East, of the United States Geological Survey El Centro 7.5-minute topographic. Specifically, the proposed project site is situated north of McCabe Road, east of 8th Street, west of 4th Street (State Route [SR] 86) (Exhibit 3-2)

3.2 - Project Characteristics

The proposed project is the development of a single-family residential community on approximately 38 acres. The project includes the subdivision of 38 acres of farmland to provide for 131 single-family residential lots, a 3.02-acre retention basin, and 1.67-acre park (Exhibit 3-3). Project site access is via SR-86 and two project access drives (Willow Bend Drive and Countryside Drive).

3.3 - Project Objectives

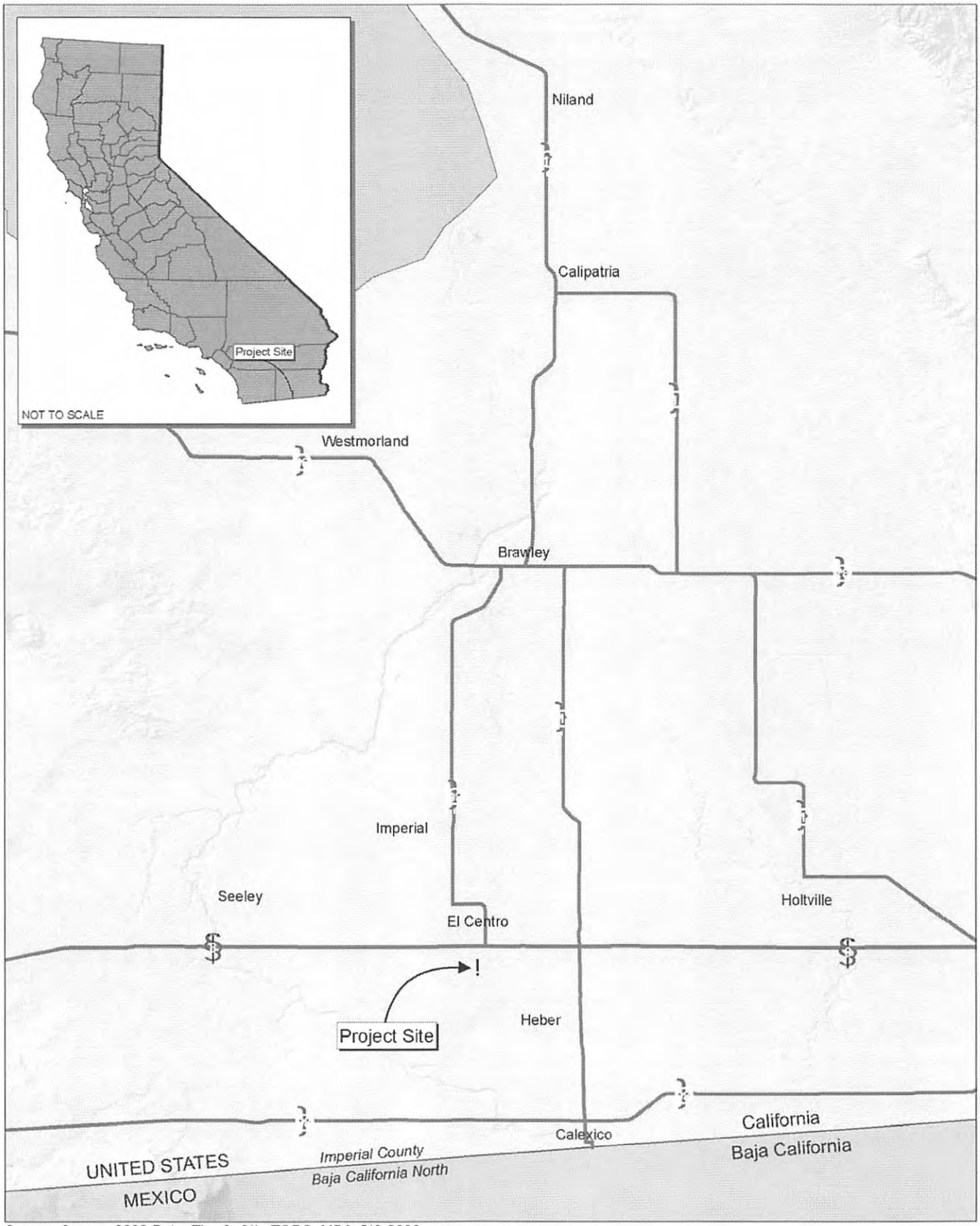
The project objectives are:

- Supply single-family housing to meet the growth projections of the City of El Centro contiguous to similar development within the City's Sphere-of-Influence;
- Locate development to meet anticipated growth in areas of relatively lesser environmental sensitivity, accommodating growth while balancing environmental considerations;
- Provide public infrastructure improvements for the orderly expansion of urban development; and
- Locate housing adjacent to major highway arterials (SR-86) and with convenient access to Interstate 8 to promote efficient traffic flows and minimize traffic demands on local and collector streets.

3.4 - Intended Use of this EIR, Responsible Agencies, and Approvals Needed

This EIR is being used by the City of El Centro to assess the potential environmental impacts that may arise in connection with the actions related to the implementation of the proposed project. The City of El Centro is the lead agency for the proposed project and the project approvals. Discretionary approvals include the following:

- **Zone Change** - The project applicant is required to obtain approval of a zone change on 38 acres from County zoning General Agriculture/Urban Overlay (A2U) to City zoning Single-Family Residential (R-1) prior to subsequent approvals.
- **Annexation** - The project applicant is requesting that the 38-acre project site within the City of El Centro's Sphere of Influence be annexed into the City's jurisdictional boundaries.



Source: Census 2000 Data, The CaSIL, TOPO, MBA GIS 2006.

Michael Brandman Associates

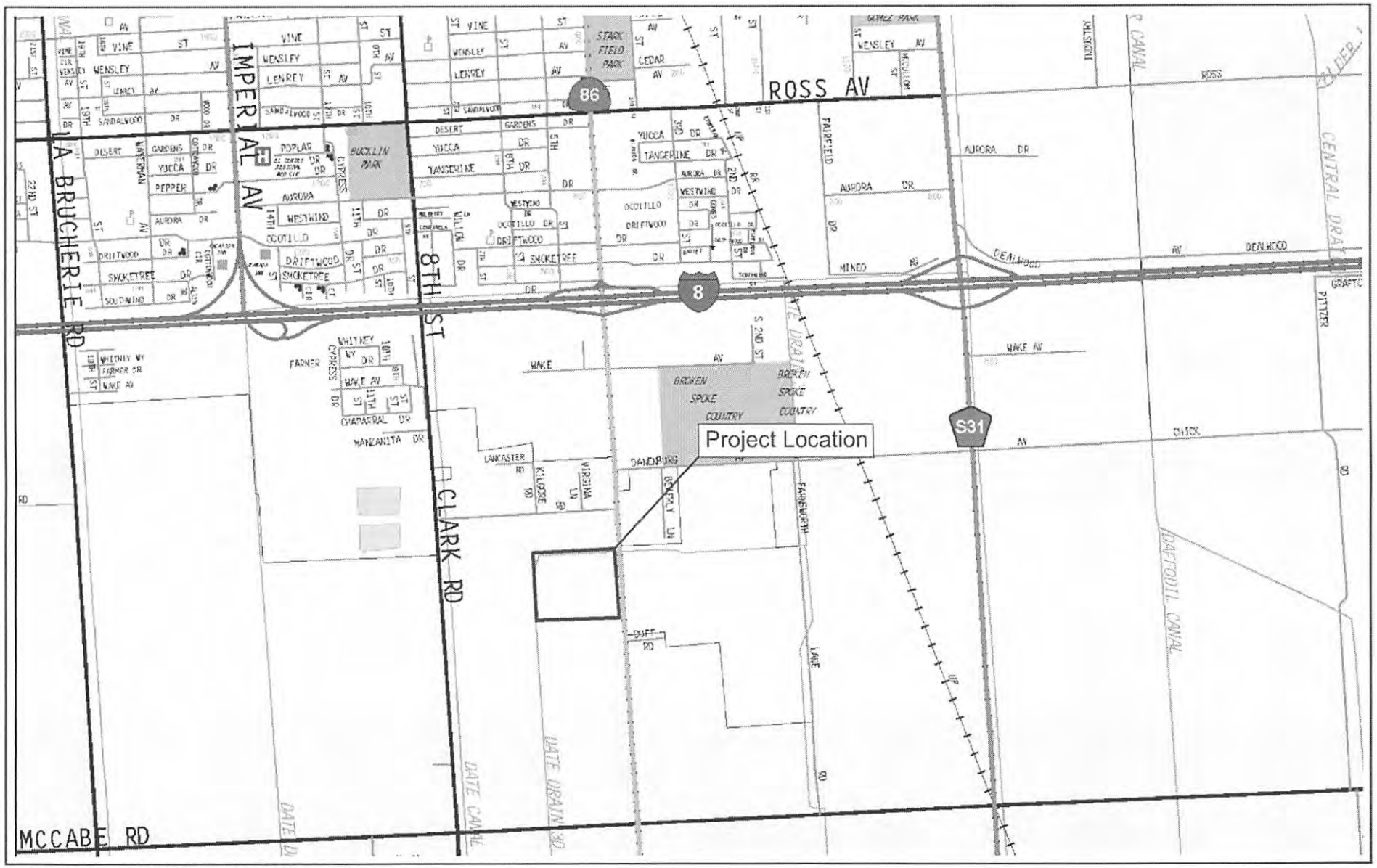
NORTH

5 2.5 0 5

Miles

27990002 • 08/2006 | 3-1_regional.mxd

Exhibit 3-1
Regional Location Map



Source: Thomas Guide Digital Edition, 2004.

NORTH

2,051 1,025.5 0 2,051

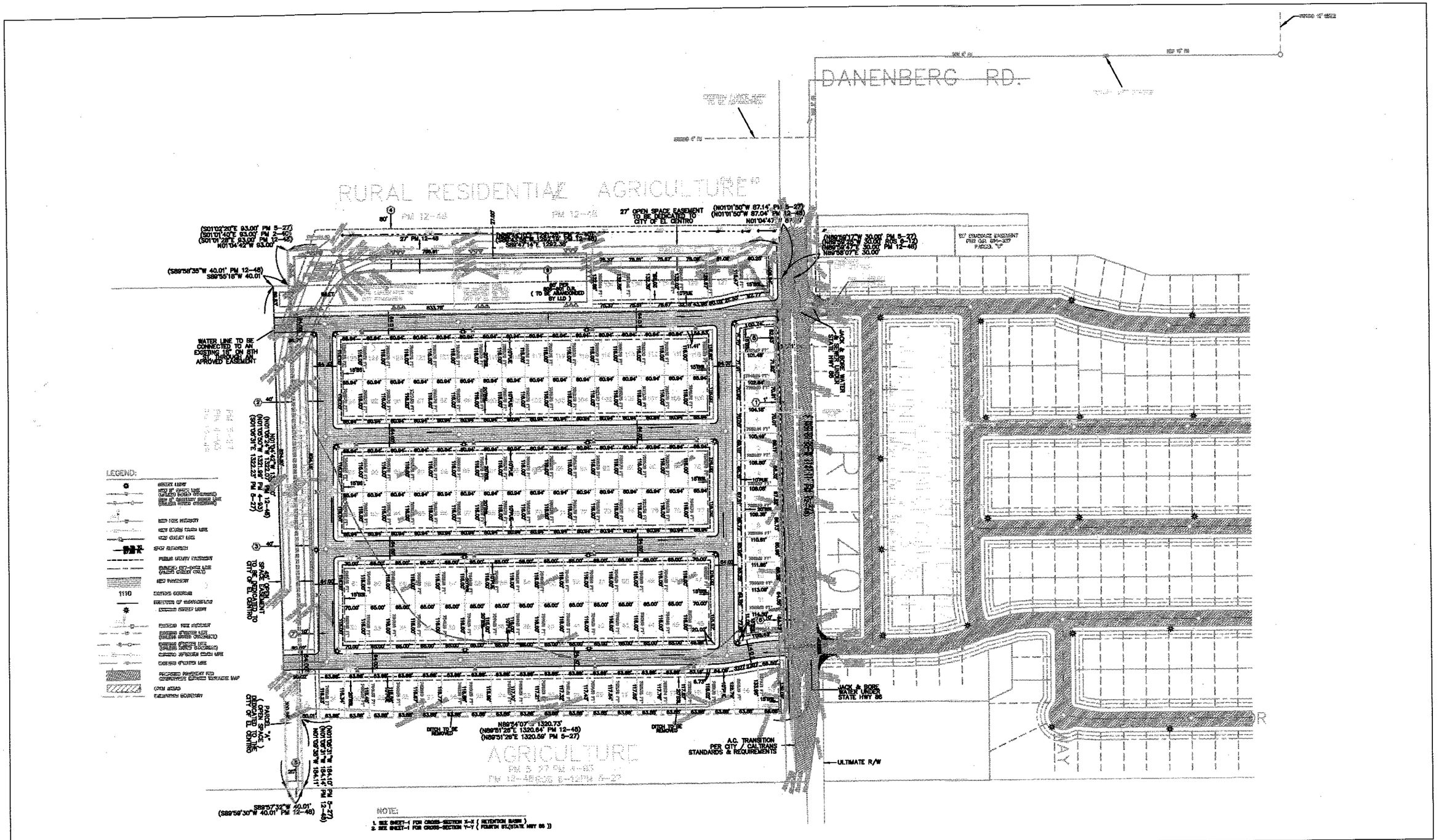
SCALE IN FEET

Exhibit 3-2
Local Vicinity Map

Michael Brandman Associates

27990002 • 08/2006 | 3-2_local_vicinity.cdr

ZONE CHANGE 05-05 AND TENTATIVE SUBDIVISION MAP
WILLOW BEND • DRAFT EIR



Source: Development Design & Engineering, Inc., June 2006.

NORTH

250 125 0 250 Feet

Michael Brandman Associates

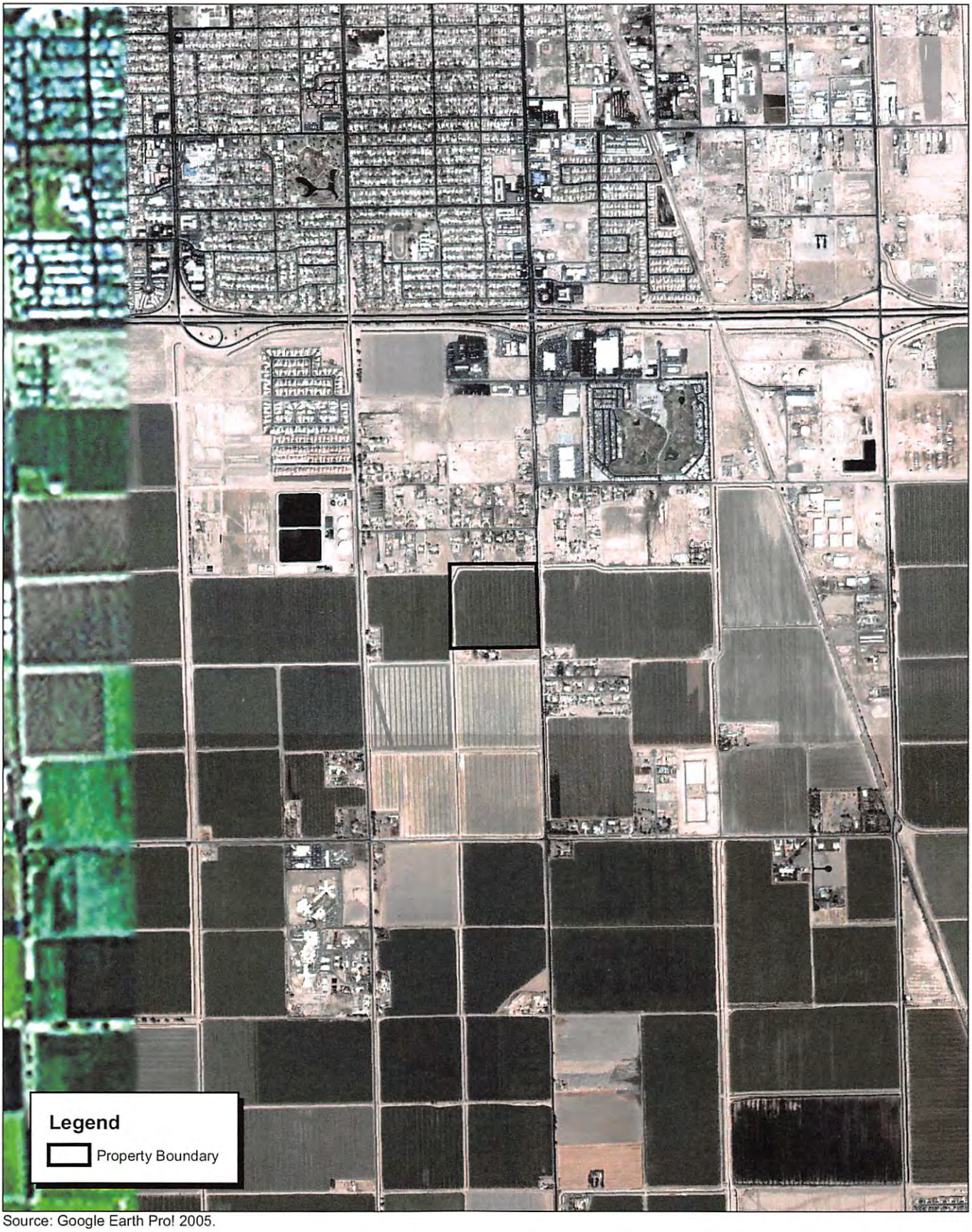
27990002 • 08/2006 | 3-3_site_plan.cdr

Exhibit 3-3
Site Plan

SECTION 4: GENERAL DESCRIPTION OF ENVIRONMENTAL SETTING

The 38-acre project site is located east, south, and west of the City of El Centro jurisdictional boundaries, approximately 0.9 mile south of Interstate 8 (I-8) in Tract 83, of at Township 16 South, Range 14 East, of the United States Geological Survey El Centro 7.5-minute topographic. Specifically, the proposed project site is situated north of McCabe Road, east of 8th Street, west of 4th Street (State Route [SR] -86).

The project site is undeveloped land that historically supported agricultural resources. The land uses surrounding the project site include agriculture, single-family dwelling units, and public facility land uses. In particular, urban development is approaching the project site from the north, east, and west. As is visible in Exhibit 4-1, surrounding land uses include single-family subdivisions and agricultural land uses. The City's potable water plant is located one-quarter mile east of the project site and Heber Elementary School is located three-quarters of a mile southeast of the project site.



Source: Google Earth Pro! 2005.

NORTH

2,000 1,000 0 2,000

Feet

Michael Brandman Associates

27990002 • 08/2006 | 4-1_land_use.mxd

Exhibit 4-1
Surrounding Land Use Map

SECTION 5: PROJECT IMPACTS

5.1 - Agricultural Resources

Michael Brandman Associates prepared a Land Evaluation and Site Assessment (LESA) (see Appendix B) farmland model, the findings of which are summarized herein. Impacts to surrounding agricultural uses were analyzed using the City of El Centro General Plan, the County of Imperial General Plan, and the County of Imperial Zoning Ordinance. Additional information contained in this section was provided by the Imperial County Land Use Conversion reports, prepared by the California Department of Conservation (1997-2005) and the California Statistical Abstract 2004, prepared by the California Department of Finance (January 2005).

5.1.1 - Existing Conditions

Regulatory Conditions

Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) was established in 1982 to continue farmland mapping efforts initiated in 1975 by the Soil Conservation Service, since renamed Natural Resources Conservation Service (NRCS), of the U.S. Department of Agriculture. Since 1980, the State of California has assisted the NRCS with completing its mapping in the state. The FMMP was created within the California Department of Conservation to carry on the mapping activity on a continuing basis and with a greater level of detail.

The Important Farmland Maps produced under the FMMP identify five farmland categories: prime farmland, unique farmland, farmland of statewide importance, farmland of local importance, and grazing land. Each of these categories is summarized below, as excerpted from *A Guide to the Farmland Mapping and Monitoring Program (1994)*, prepared by the California Department of Conservation.

- **Prime Farmland:** Land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields.
- **Unique Farmland:** Land of less quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards, as found in some climactic zones in California.
- **Farmland of Statewide Importance:** Land similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.
- **Farmland of Local Importance:** Land of importance in the local agricultural economy, as determined by each county's Board of Supervisors and a local advisory committee. Farmland of local importance in the Imperial Valley includes all farmable land not meeting the

definitions of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. This includes land that is or has been used for irrigated pasture, dry land farming, confined livestock or dairy facilities, aquaculture, poultry facilities, and dry grazing. This designation also includes soils previously designated by soil characteristics as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance that has since become idle.

- **Grazing Land:** Areas covered by vegetation, both natural and cultivated, that is suited to the grazing of livestock.

Williamson Act

The California Land Conservation Act of 1965 (Williamson Act) enables private landowners to enter into contracts with local governments to restrict specific parcels of land for agricultural use. The Williamson Act was adopted to provide agricultural landowners on the urban fringe, who were under pressure to convert their lands to urban use, with a financially viable alternative to conversion. Under the Williamson Act, agricultural landowners can receive property tax assessments that are much lower than other landowners are because the assessments are based on generated agricultural income rather than on market (i.e., development) potential. In return, the landowners enter into contracts committing to maintain their lands for agricultural use. Approximately one-half of the state's agricultural lands, approximately 16 million acres, are subject to Williamson Act contracts.

The minimum term for a Williamson Act contract is ten years, with automatic renewal at the end of each term. At that time, contracts can be terminated by the landowner or local government, which initiates the process of "non-renewal." If a property is designated for contract non-renewal, property tax rates gradually increase during the remainder of the contract term until they reach market (i.e., non-restricted) levels. Williamson Act contracts can also be cancelled without completing the non-renewal process. Contract cancellation, however, involves a comprehensive review and approval process and the payment of fees by the landowner equal to 12 percent of the full market value of the property.

Right-to-Farm Ordinance

To ensure the continued viability of agricultural production and the preservation of agricultural land, the County Board of Supervisors approved the "Right-to-Farm" Ordinance in 1990. All owners of property located within 0.25-mile of agricultural land are advised that their property's proximity to farm operations may subject them to discomfort or inconveniences associated with noise, odors, light, fumes, dust, smoke, insects, chemicals, operation of machinery, etc. The notification further advises the owner that living in an active agricultural area requires acceptance of farm related annoyances as long as the operations are in conformance with existing laws and regulations and accepted customs and standards.

Physical Conditions

The Imperial Valley is characterized by a mild climate that allows year-round agricultural production of a wide variety of commodities. The soils found in the geographic subregion are the result of centuries of deposits by the Colorado River and, as a result, are naturally saline. Agricultural production is made possible only through the delivery of irrigation water from the Colorado River, and the availability of the Salton Sea as a repository for agricultural drainage.

Agricultural Economy

Agriculture is the primary economic activity in Imperial County. Leading commodities produced in Imperial County include cattle, alfalfa, lettuce, carrots, and onions. Agricultural commodities generated more than $1 billion for the County's farmers in 2003 and represented the 11th largest county agricultural economy in the State.

Agricultural Land Use

Table 5.1-1 summarizes the agricultural land uses in Imperial County as of 2004, the most recent year available. As identified in Table 5.1-1, important farmland currently accounts for 53 percent of the County area.

Table 5.1-1: Agricultural Land Use Summary (2004)

Land Use	2004 (acres)	% of Total Area
Prime Farmland	196,927	19.1%
Unique Farmland	2,132	0.2%
Farmland of Statewide Importance	313,218	30.5%
Farmland of Local Importance	33,333	3.2%
Important Farmland Subtotal	**545,610**	**53.0%**
Urbanized	26,357	2.6%
Other	455,697	44.3%
Water	903	0.1%
Total Land Area	**1,028,567**	**100.0%**
Source: California Department of Conservation. Imperial County 2002-2004 Land Use Conversion. 2005.		

The loss of agriculture to urbanization is occurring at a steady pace in Imperial County. Between 1994 and 2004, the California Department of Conservation estimated that more than 4,000 acres of important farmland land were converted to urban uses in Imperial County.

Table 5.1-2: Conversion of Important Farmland (2004)

Agricultural Land Use	Acres Converted to Urban Uses					
	1994 - 1996	1996 - 1998	1998 - 2000	2000 - 2002	2002 - 2004	Total
Prime Farmland	206	78	54	375	473	**1,186**
Unique Farmland	0	0	0	0	29	**29**
Farmland of Statewide Importance	215	180	226	405	1,019	**2,045**
Farmland of Local Importance	35	164	22	234	464	**919**
Important Farmland Total	**456**	**422**	**302**	**1,014**	**1,985**	**4,179**

Source: California Department of Conservation. Imperial County 1994-1996, 1996-1998, 1998-2000, 2000-2002, 2002-2004 Land Use Conversion. 2005.

Site Conditions

Currently, the project site is undeveloped and supports ruderal vegetation. The Date Drainage Channel forms the northern and western boundaries of the project site.

Soils

A soils map of the project site published by the California Department of Conservation indicates that the followings soils are present on the project site:

- Imperial silty clay, wet
- Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slope

Both soils are designated as Soils of Statewide Importance by the Farmland Mapping and Monitoring Program (FMMP).

5.1.2 - Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant agricultural resources impact if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland, to non-agricultural use.

Impacts

Farmland Conversion

The project site contains Soils of Statewide Importance, and accordingly, the project site is considered to contain Farmland of Statewide Importance. Table 5.1-3 summarizes each type of soil present on the project site and its corresponding farmland designation. Note that the area analyzed is 37.9 acres and includes areas that are not a part of the proposed project.

Table 5.1-3: Soils Summary

Soil	Farmland Designation	Area (acres)	Percent of Project Site
114 - Imperial silty clay, wet	Farmland of Statewide Importance	1.6	4.2
115 - Imperial-Glenbar silty clay loams, wet, 0 to 2% slopes	Farmland of Statewide Importance	36.3	95.8
		37.9	**100.0**
Source: California Department of Conservation. Soil Mapping Program. 2005.			

The information presented in Table 5.1-3 was inputted into the LESA model to determine the significance of the loss of this farmland. Listed below are the factors used in the LESA model:

- **Soils:** 100 percent of the 37.9-acre site contains Farmland of Statewide Importance.
- **Acreage:** A total of 37.9 acres of farmland will be converted to urban uses.
- **Water Availability:** Irrigated production is feasible in drought and non-drought years; however, physical and economic restrictions are present during drought years. This is a conservative estimate.
- **Surrounding Land Uses:** Agriculture accounts for approximately 65 to 69 percent of the surrounding land uses. For the purposes of this analysis, it was estimated that 45 to 49 percent of this surrounding agricultural land is designated as protected agricultural resource land. This is a conservative estimate.

Table 5.1-4 summarizes the individual Land Evaluation and Site Assessment (LESA) scores. The sum of both scores is the Final LESA Score.

Table 5.1-4: Final LESA Score Calculation

Land Evaluation Score	Site Assessment Score	Final LESA Score
34.00	32.25	**66.25**
Source: Michael Brandman Associates. November 14, 2005.		

The LESA threshold criteria indicate that this score is considered significant unless either the Land Evaluation or the Site Assessment score is less than 20 points. In this instance, neither score is less than 20 points. Therefore, the conversion of this agricultural land to urban uses would constitute a significant loss of Prime Farmland or Farmland of Statewide Importance. Potential impacts in this regard would be significant and unavoidable under CEQA. No mitigation is available to reduce this potential impact to a level of less than significant.

Williamson Act Contracts

The Imperial County Assessor's Office indicates that no active Williamson Act contracts encumber the project site. This condition precludes the possibility of a conflict with a Williamson Act contract. Therefore, no impacts to lands regulated by the Williamson Act would occur.

Compatibility with Surrounding Agricultural Uses

Surrounding Land Use Designations

The project site is within unincorporated Imperial County, but within the El Centro Sphere of Influence. The City of El Centro General Plan designates the site for low density residential. The County of Imperial General Plan land use map designates the project site for future urban development and the Zoning Ordinance designates the site as Agriculture/Urban Overlay. The County's land use and zoning designations reflect the City's ultimate intent to annex this land into its limits and convert it to urban uses. The project site is proposed to be annexed into the City of El Centro and re-zoned Single-Family Residential.

The areas immediately north and east of the project site are within the El Centro city limit and are composed of residential uses, while the areas immediately west and south of the project site are in unincorporated Imperial County and contain agricultural uses. A summary of the agricultural parcels that surround the project site and their corresponding County of Imperial land use and zoning designations are summarized below in Table 5.1-5. Note that the project site is part of the agricultural parcel to the west (APN 054-370-11).

Table 5.1-5: Surrounding Agricultural Uses

Assessor's Parcel Number	Relationship to Project Site	County of Imperial General Plan Land Use Designation	County of Imperial Zoning Designation	City of El Centro General Plan Land Use Designation
054-370-11	Adjacent to west side of project site (parcel also includes project site)	Urban Area	Agriculture/Urban Overlay	Low Density Residential
054-380-17	Adjacent to south side of project site	Urban Area	Agriculture	Low Density Residential

APN = Assessor's Parcel Number
Source: County of Imperial Building and Planning Division. November 17, 2005; City of El Centro General Plan. Figure LU-1 (Land Use Policy Map). 2004

Both of the above listed parcels are with the El Centro Sphere of Influence and are designated for urban uses by the County of Imperial General Plan and the City of El Centro General Plan. The proposed project would not be incompatible with the agricultural uses to the west and south of the project site because the County and City adopted land use plans anticipate the annexation of those parcels into the City of El Centro and their ultimate conversion to urban uses. Moreover, the eventual conversion of these lands to urban uses has already been analyzed in the environmental impact report for each respective general plan, and potential impacts have already been disclosed and mitigated where feasible. Therefore, impacts in this regard would be less than significant.

Incompatible Uses

The proposed project could create compatibility conflicts between future project residents and existing agricultural uses to the west and south of the project site. The provisions of the County's Right-to-Farm Ordinance require that project residents be notified of the existence of ongoing agricultural operations within 0.25-mile of the project and exempt agricultural land owners from nuisance lawsuits. Ensuring that future residents are notified about surrounding agricultural operations would reduce potential impacts to a level of less than significant.

Premature Conversion of Agricultural Lands

Imperial County LAFCO regulates the conversion of agricultural land to urban uses by virtue of its authority to approve or deny annexations of unincorporated areas into incorporated cities. To determine if agricultural land is being prematurely converted to urban uses, LAFCO has specific threshold criteria it uses to evaluate individual annexation applications. Below is discussion of the proposed project's consistency with LAFCO agricultural conversion criteria:

The east side of the project site is immediately adjacent to the City of El Centro limits and urban uses within the city limits. This satisfies LAFCO requirements for contiguousness with existing or planned urban development.

The project site is within a Tier II Growth Area, as defined by the City of El Centro General Plan. There are three Tiers, I, II, and III, and their designation reflects the availability of infrastructure to support urban development. Tier I is the "Current Service Area;" Tier II is the "Planned Urban Service Area;" and Tier III is the "Future Urban Service Area." As the project site is in Tier II, it contains land adjacent to the city limits, but contains limited infrastructure. Note that the General Plan states that the Tier Growth Areas numbering system reflects the infrastructure necessary to serve planned development and is not intended to be a sequence of future development. Regardless, the proposed project is consistent with the Urban Service Plan of the City of El Centro.

Finally, the project site is expected to be developed within the next five years because insufficient available land of similar acreage to the project site exists within the El Centro city limits. The absence of developable land of this size within the limits of the City of El Centro and the demand for

new housing creates the reasonable expectation that the project site will be converted to urban uses within the next five years. This condition satisfies the last two LAFCO requirements.

In summary, the project site meets LAFCO criteria to be converted from agricultural use to urban use. Impacts would be less than significant in this regard.

5.1.3 - Mitigation Measures

There are no available mitigation measures to reduce impacts to Farmlands of Statewide Importance.

5.1.4 - Level of Significance After Mitigation

Project implementation will result in significant and unavoidable impacts to agricultural resources.

5.2 - Air Quality

This section analyzes the potential air quality impacts that would result from construction and operation of the proposed project. This analysis provides a discussion of existing climate conditions, criteria air pollutants, ambient air quality standards and air quality regulations. Air quality modeling was completed to address short-term air quality impacts during construction and long-term impacts associated with traffic and stationary emission sources in the project area. The air quality modeling and air pollutant calculations are based on appropriate methodologies established by the Imperial County Air Pollution Control Board's (APCD) "CEQA Air Quality Handbook (2005)" and the California Air Resources Board (CARB) for evaluation of air quality impacts in CEQA documents.

5.2.1 - Existing Conditions

Regulatory Conditions

Ambient Air Quality Standards

Imperial County APCD, the CARB, and the United States Environmental Protection Agency (USEPA) have established air quality significance levels. Both CARB and USEPA have established air quality standards which are designed to protect those that are most sensitive to air pollution. They include individuals susceptible to respiratory distress such as asthmatics, the young, the elderly, and others with pre-existing health conditions that may be affected by higher levels of pollutant concentrations. Healthy adults can tolerate occasional exposure to air pollutants concentrations above these minimum standards without adverse effects, however, unhealthful response can occur at levels that are only marginally above these standards.

The National Ambient Air Quality Standards (NAAQS) were established by the Federal Clean Air Act of 1970 and identified six "criteria" pollutants. These pollutants were identified by medical evidence that was available at the time and the NAAQS were established based on that evidence. The State of California has adopted the same six pollutants as criteria pollutants, however, has different standards. The six criteria air pollutants as well as reactive organic gases and their descriptions are as follows:

- **Carbon Monoxide (CO)**: A colorless, odorless toxic gas produced by incomplete combustion of carbon-containing fuels (e.g. gasoline or diesel fuel). CO levels tend to be highest during the winter months, when the meteorological conditions favor the accumulation of the pollutants.
- **Ozone (O_3)**: A photochemical oxidant that is formed when reactive organic gases (ROG) and oxides of nitrogen (NO_x) (both byproducts of internal combustion engines) react in the presence of ultraviolet sunlight. Ozone is a very energetic combination of three oxygen atoms that, when it comes into contact with a surface, releases its force as chemical energy. When this happens to biological systems (i.e., the respiratory tract), this energy can cause damage to

sensitive tissues in the upper and lower airways. The conditions within the region are ideal for accumulating O_3.

- **Oxides of Nitrogen (NO_x)**: The two important forms of nitrogen oxide in air pollution are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is from as a byproduct of fuel combustion and quickly reacts with oxygen to form NO_2. NO_x is a mixture of NO and NO_2 in the atmosphere. The major concern with NO_x emissions is mainly due to their contribution to the formation of O_3 and particulate matter.
- **Reactive Organic Gases (ROGs)**: Gaseous emissions that react with oxides of nitrogen to form ozone. ROGs are not listed as criteria pollutants, and therefore, there are no state or federal ambient air quality standards them. Though there is no direct standard for ROGs, they are regulated because they are involved in chemical reactions that contribute to the formation of ozone. In addition, ROGs contribute to higher PM_{10} concentrations and lower visibility levels. Health effects can occur from exposures to high concentrations of ROGs, in particular, reduced oxygen uptake.
- **Sulfur Dioxide (SO_2)**: Sulfur Dioxide is a colorless, pungent gas formed by the combustion of sulfur containing fossil fuels. SO_2 is a precursor to sulfate and PM_{10}. Exposure to sulfur dioxide, especially sensitive populations, can result in irritation of existing cardiovascular disease and respiratory illness. Symptoms include wheezing, shortness of breath and chest tightness, especially during exercise, and by people with asthma.
- **Lead (Pb)**: Lead concentrations have not exceeded state or federal standards in the region since 1982. Lead can accumulate in bone, soft tissue, and blood and can damage the kidneys, liver, and nervous system, and can result in learning disabilities, seizures, and death.
- **Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)**: PM_{10} refers to particulate matter that is 10 microns or less in diameter (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter. Particulate matter arises from sources such as road dust, diesel soot, erosion of soil, combustion particles (ashes and soot), and tire and brake abrasion. Breathing particulate matter can cause or aggravate problems associated to asthma, can increase coughing and cause breathing to be difficult or painful. Breathing particulate matter has been associated to chronic bronchitis, and decreases lung function.

Because California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table 5.2-1.

Table 5.2-1: Ambient Air Quality Standards

Air Pollutant	California Standards	Federal Standards	
	Concentration	Primary (>)	Secondary (>)
Ozone	0.09 ppm, 1-hr. avg. > 0.07 ppm, 8-hr. avg. >[a]	0.12 ppm, 1-hr. avg. 0.08 ppm, 8-hr. avg.	0.12 ppm. 1-hr. avg. 0.08 ppm, 8-hr. avg.
Carbon Monoxide	9.0 ppm, 8-hr. avg. >[b] 20 ppm, 1-hr. avg. >	9 ppm, 8-hr. avg.[c] 35 ppm, 1-hr. avg. >	9 ppm, 8-hr. avg. 35 ppm, 1-hr. avg. >
Nitrogen Dioxide	0.25 ppm, 1-hr. avg. >[d]	0.053 ppm, annual avg.[e]	0.053 ppm, annual avg.[f]
Sulfur Dioxide	0.05 ppm, 24-hr. avg.>=with ozone>=0.10 ppm, 1-hr. avg. or TSP >= 100 ug/m^3, 24-hr. avg.0.25 ppm, 1-hr. avg.>[f]	0.03 ppm, annual avg. 0.14 ppm, 24-hr. avg.	0.50 ppm, 3-hr. avg.
Suspended Particulate Matter (PM_{10})	30 ug/m^3, annual geometric mean> 50 ug/m^3, 24-hr. avg. >[g]	50 ug/m^3, annual[h] arithmetic mean 150 ug/m^3, 24-hr. avg.	50 ug/m^3, annual [h] arithmetic mean 150 ug/m^3, 24-hr. avg.
Fine Particulate Matter ($PM_{2.5}$)	12 ug/m^3, annual geometric mean>	15 ug/m^3, annual[i] arithmetic mean 65 ug/m^3, 24-hr. avg.	15 ug/m^3, annual[i] arithmetic mean 65 ug/m^3, 24-hr. avg.
Sulfates	25 ug/m^3, 24-hr. avg. >=		
Lead	1.5 ug/m^3, 30-day avg. >=	1.5 ug/m^3, calendar quarter	1.5 ug/m^3, calendar quarter
Hydrogen Sulfide	0.03 ppm, 1-hr. avg. >=	No Federal Standard	No Federal Standard
Vinyl Chloride	0.010 ppm, 24-hr. avg. >=	No Federal Standard	No Federal Standard
Visibility Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hr. avg. (9am-5pm)[j]	No Federal Standard	No Federal Standard

[a] Effective January 2006. Standard originally by the CARB on April 28, 2005.
[b] Effective December 15, 1982. The standards were previously 10 ppm, 12-hour average and 40 ppm, 1-hour average.
[c] Effective September 13, 1985, standard changed from > 10 mg/m^3 (>= 9.3 ppm) to > 9ppm (>= 9.5 ppm).
[d] Effective March 9, 1987, standard changed from >= .25 ppm to > .25 ppm.
[e] Effective July 1, 1985, standard changed from > 100 ug/m^3 (> .0532 ppm) to > .053ppm (> .0534 ppm).
[f] Effective October 5, 1984. The standard was previously .5 ppm, 1-hour average.
[g] Effective August 19, 1983. The standards were previously 60 ug/m^3 TSP, annual geo. mean, and 100 ug/m^3 TSP, 24-hour average.
[h] Effective July 1, 1987. The standards were previously: Primary- Annual geometric mean TSP > 75 ug/m^3, and a 24-hour average TSP > 260 ug/m^3. Secondary- Annual geometric mean TSP > 60 ug/m^3, and a 24-hour average TSP > 150 ug/m^3.
[i] Effective July 18, 1997. The U.S. Supreme Court upheld this standard in February 2001.
[j] Effective October 18, 1989. The standard was previously "In sufficient amount to reduce the prevailing visibility to less than 10 miles at relative humidity less than 70%, 1 observation", and was based on human observation rather than instrumental measurement.

Source: California Air Resources Board.

Physical Conditions

The project site is located in the sphere of influence for the City of El Centro in Imperial County and within the Salton Sea Air Basin (SSAB). The SSAB consists of the southeast portion of Riverside County, and all of Imperial County. The Imperial County portion of the SSAB extends over 4,597 square miles, bordered by Mexico to the south, Riverside County to the north, San Diego County on the west, and the State of Arizona to the east. The SSAB is a north/south facing trough consisting of a very flat valley surrounded by the Peninsular range to the west; the Chocolate, Orocopia, and Cargo Muchaco Mountains to the east; and the Banning Pass to the north. Most of the Salton Sea Trough is below sea level, and is generally an arid desert region with agricultural land uses located north and south of the Salton Sea.

Regionally, the large-scale sinking and warming of air in the semi-permanent subtropical high-pressure cell controls local wind patterns within the SSAB. Local area wind statistics indicate prevailing winds are from the west-northwest through southwest with a secondary flow maximum from the east-southeast also evident. The area occasionally experiences high winds speeds exceeding 21 knots, which occur most frequently in April and May. On an annual basis, strong winds (>21 knots) are observed 0.6 percent of the time, with an average annual wind speed of 6.74 knots.

The semi-permanent high-pressure cell blocks out most mid-latitude storms except in the winter when the high-pressure zone is weakest. The coastal Peninsular range to the west prevents the intrusion and influence of any cool, damp marine air. The combination of the subsiding air, protective mountains and distance from the Pacific Ocean all combine to severely limit precipitation. Rainfall is highly variable with precipitation from a single heavy storm often times exceeding the entire annual total during a later drought year condition. Humidity is low throughout the year, ranging from 28 percent in the summer to 52 percent in the winter.

Regional and local air quality within the SSAB is affected by topography and the atmospheric inversions. The mountains surrounding the Salton Sea trough are natural barriers to the dispersion of air contaminants. The SSAB experiences surface inversions almost every day of the year. The presence of the subtropical high-pressure cell can cause the air mass aloft to sink. As the air descends, compressional heating warms it to a temperature higher than the air below. This highly stable atmospheric condition, termed a subsidence inversion, can act as a nearly impenetrable lid to the vertical mixing of pollutants. The strength of these inversions makes them difficult to disrupt. Consequently, they can persist for long periods of time causing air stagnation and the buildup of pollutants to occur. The highest ozone concentrations are often associated with the presence of this type of inversion.

The Imperial County APCD has air quality monitoring stations in Niland, Brawley, Westmorland, El Centro and three stations in Calexico. The monitoring stations measure the levels for the various air pollutants that are used to define ambient air quality. The monitoring station in El Centro is located

on 9th Street north of Interstate 8 approximately one mile northwest of the project site and best reflects conditions at the project site.

The most recent published data for the project area is presented in Table 5.2-2. Table 5.2-2 reflects data taken at the El Centro Monitoring Station. This data shows that the baseline air quality conditions in the project area include occasional events of unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade. The greatest recognized air quality problems in the SSAB are ozone and PM_{10}. In 1996, approximately twelve percent of the days (44 days) experienced a violation of the state hourly ozone standard. However, ozone levels have dropped significantly in the last few years with less than one percent of the days (4 days) experiencing a violation of the state hourly ozone standard in 2005.

Although the overall air quality in project area is improving, one exception is the ambient concentrations of PM_{10}. Over the last decade the State air quality standard for PM_{10} has been consistently exceeded in the area, and the Federal standard has been exceeded in every year except 2004 since monitoring began in the project area.

The sources contributing to particulate matter pollution include road dust, windblown dust, agriculture, construction, fireplaces and wood burning stoves, and vehicle exhaust. Specifically, Imperial County APCD data indicates the largest component of PM_{10} particles in the SSAB comes from road and windblown dust. The next highest component of PM_{10} pollution in the project area comes from nitrate (NO_3) particulates. Nitrates produced by photochemcial reactions of NO from vehicles basin-wide react with ammonium produced from diaries and grazing cattle to form ammonium nitrate particles, adding to a unique air quality problem in the area.

The last notable constituent is $PM_{2.5}$. The primary source of $PM_{2.5}$ is elemental carbon. Unlike the constituents of particulates described above, elemental carbon is primarily the result of vehicle exhaust. The 1997 Federal standards for $PM_{2.5}$ (annual arithmetic mean of 15 $\mu g/m^3$ and 24-hour average of 65 $\mu g/m^3$) was upheld by the U.S. Supreme Court in February 2001. Imperial County APCD monitoring data shows the area has not exceeded either the federal annual standards since Imperial County APCD began monitoring $PM_{2.5}$ in 1999. The project area has exceeded the 24-hour standard for $PM_{2.5}$ on one day in 2004.

Table 5.2-2: Air Quality Monitoring Summary

Air Pollutant	Most Stringent Air Quality Standards	Year			Meet Standard?
		2003	2004	2005	
		Maximum Concentration & days exceeding standard	Maximum Concentration & days exceeding standard	Maximum Concentration & days exceeding standard	
Ozone (O_3)					
1 Hour	0.09 ppm[a]	0.130 ppm (19 days)	0.096 ppm (1 day)	0.122 ppm (8 days)	No
8 Hours	0.08 ppm[b]	0.092 ppm (8 days)	.0080 ppm (0 days)	.0097 ppm (5 days)	No
Carbon Monoxide (CO)					
8 Hours	9.0 ppm[a]	2.38 ppm (0 days)	ND	ND	Yes
Nitrogen Dioxide (No_2)					
Annual Arithmetic Mean	0.053 ppm[b]	0.012 ppm (0 days)	0.013 ppm (0 days)	0.011 ppm (0 days)	Yes
1 Hour	0.25 ppm[a]	0.071 ppm (0 days)	0.067 ppm (0 days)	0.065 ppm (0 days)	Yes
Sulfur Dioxide (So_2)					
Annual Arithmetic Mean	0.030 ppm[b]	ND	ND	ND	Yes
24 Hours	0.04 ppm[a]	0.001 (0%)	0.0031 (0%)	0.002 (0%)	Yes
Suspended Particulate Matter (Pm_{10})					
Annual Arithmetic Mean	20 $\mu g/m^3$ [a]	48.6 $\mu g/m^3$	49 $\mu g/m^3$	49 $\mu g/m^3$	No
24 Hours	50 $\mu g/m^3$ [a]	180 $\mu g/m^3$ (25 days)	135 $\mu g/m^3$ (7 days)	62 $\mu g/m^3$ (3 days)	No
Fine Suspended Particulate Matter ($PM_{2.5}$)					
Annual Arithmetic Mean	12 $\mu g/m^3$ [a]	9.2 $\mu g/m^3$	9.7	ND	Yes
24 Hours	65 $\mu g/m^3$ [b]	26.0 $\mu g/m^3$ (0 days)	74.26 $\mu g/m^3$ (1 day)	21.8 $\mu g/m^3$ (0 days)	No

Abbreviations: ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter; ND: No Data
[a] California state standard used
[b] Federal standard used
Note: Measurements are the maximum concentrations; numbers in parenthesis refer to the number of sampling days per year that the ambient concentration exceeded the most stringent standard.
Source: CARB, November 2005.

5.2.2 - Project Impacts

Emissions that can adversely affect air quality originate from various activities. A project generates emissions both during the period of its construction and through ongoing daily operations. During construction of the proposed project, emissions will be generated by onsite construction equipment, offsite vehicles used to deliver supplies, and by construction workers commuting to and from the construction site. Once residential units are occupied emissions are generated by the ongoing daily activities associated with the residential units of the proposed project. Long-term daily operations and activities of the proposed project include air quality emissions resulting from the use of natural gas within the residential units, gasoline driven landscape equipment, and commuting traffic. Thresholds of significance based upon air quality criteria including the state and federal AAQS need to be established to evaluate project related impacts.

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant air quality impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or protected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Based on the EIR scoping process as described in Section 1.0, it was determined that this project could result in potentially significant impacts to air quality as a result of project development. The State CEQA Guidelines define a significant effect on the environment as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." In order to determine whether or not the proposed project would cause a significant effect on the environment, the impact of the project must be determined by examining the types and levels of emissions generated and their impacts on factors that affect air quality. To accomplish this determination of significance, the Imperial County APCD has established air pollution thresholds against which a proposed project can be evaluated and assist lead agencies in determining whether or not the proposed project is potentially significant.

While the final determination of whether or not a project is significant is within the purview of the lead agency pursuant to § 15064(b) of the State CEQA Guidelines, the Imperial County APCD

recommends that the following air pollution thresholds be used by the lead agencies in determining whether the proposed project could result in a significant impact. If the lead agency finds that the proposed project has the potential to exceed these air pollution thresholds, the project should be considered significant. These thresholds have been defined by the Imperial County APCD for the Imperial County portion of the SSAB based on scientific data the Imperial County APCD has obtained and factual data within the federal and state Clean Air Acts. Since the project is located within the Imperial County and current air quality in the project area is typical of the air basin as a whole, these thresholds are considered valid and reasonable. Each of these threshold factors is discussed below.

Thresholds for Emissions Related to Construction Activities

The Imperial County APCD's approach to CEQA analysis of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than producing a detailed evaluation of the emissions. The Imperial County APCD does require EIR's to quantify emissions from construction activities, but mitigation measures should be proposed for these activities. Section 7.1 of the Imperial County APCD's "CEQA Air Quality Handbook" provides a set of standard and discretionary mitigation measures for construction equipment and fugitive dust emissions controls during construction activities. Implementation of the mitigation measures described in Section 7.1 of the Imperial County APCD's "CEQA Air Quality Handbook" will result in a less than significant impact.

Thresholds for Emissions Related to Operation of the Project

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the Imperial County APCD "CEQA Air Quality Handbook." The criteria for these emissions thresholds include, compliance with the State and National air quality standards and conformity with the existing Air Quality Implementation Plans for Imperial County. The daily operational emissions "significance" thresholds are:

- 55 pounds per day of NO_x;
- 55 pounds per day of ROC;
- 550 pounds per day of CO; and
- 150 pounds per day of SO_x or PM_{10}.

Emissions resulting from the operation of the proposed project may also be considered significant if a CO hotspot analysis determines that project-generated emissions cause a localized violation of the state CO 1-hour standard of 20 parts per million (ppm), state CO 8-hour standard of 9 ppm, federal CO 1-hour standard of 35 ppm, or federal CO 8-hour standard of 9.5 ppm.

Project Generated Short-term Construction Emissions

Construction-related emissions can be distinguished as either onsite or offsite. Onsite emissions generated during construction principally consist of exhaust emissions (NO_x, SO_x, CO, VOC, and

PM_{10}) from heavy-duty construction equipment operation and fugitive dust (PM_{10}) from disturbed soil. Offsite emissions during the construction phase normally consist of exhaust emissions and entrained paved road dust (PM_{10}) from worker commute trips, and material delivery trips to and from the construction site.

Short-term emissions were evaluated with the URBEMIS 2002 computer program. The model divided construction into two distinct phases: (1) site grading; and (2) the construction period when the remainder of the project construction takes place. Site grading will take approximately 70 workdays (3.2 months). The total construction period is projected to occur over a two year, 5 month period. The results of these evaluations are summarized in Table 5.2-3.

Table 5.2-3: Short-term Construction Emissions

Source	ROG (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)
Site Grading Activities	27.0	213.36	199.05	0.01	104.88
Construction Period 2006: Building Construction Activities	165.17	233.94	235.38	>0.01	10.84
Construction Period 2007: Final Building Construction Activities	165.09	223.67	241.77	0.02	9.96
Asphalt Paving Activities	13.52	83.22	97.16	0.02	3.07
Threshold of Significance	Implementation of Mitigation Measures shown in Section 7.1 of the Imperial County APCD's "CEQA Air Quality Handbook."				
Source: Michael Brandman Associates, July 2006.					

Without mitigation measures all construction emissions are considered a significant impact. The URBEMIS Output reports found in Appendix C have a comprehensive review of construction emissions.

Project Generated Long-term Operational Emissions

Long-term operational emissions for the proposed development are considered for project build-out. Emission sources consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas and consumer products, as well as emissions resulting from landscape maintenance. Long-term emissions were evaluated with the URBEMIS 2002 for Windows computer program. Table 5.2-4 and Table 5.2-5, presents the estimated daily total emissions at project build out.

Table 5.2-4: Long-Term Emissions (Summer)

Source	ROG (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)
Mobile Source Emissions	14.21	26.44	185.61	0.12	20.86
Natural Gas Consumption	0.12	1.58	0.67	—	—
Landscape Equipment Emissions	0.63	0.02	4.39	0.04	0.02
Consumer Products	6.16	—	—	—	—
Architectural Coatings	4.29	—	—	—	—
Total Emissions:	25.41	28.04	190.67	0.16	20.88
Thresholds of Significance (lbs/day)	55	55	550	150	150
Significant Impact ?	NO	NO	NO	NO	NO
Source: Michael Brandman Associates, July 2006.					

Table 5.2-5: Long-Term Emissions (Winter)

Source	ROG (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)
Mobile Source Emissions	18.88	32.91	228.52	0.12	21.69
Natural Gas Consumption	0.13	1.64	0.70	—	—
Fireplace Emissions	4.50	1.57	36.00	0.12	5.89
Consumer Products	6.41	—	—	—	—
Architectural Coatings	4.46	—	—	—	—
Total Emissions:	34.38	36.12	265.22	0.24	27.58
Thresholds of Significance (lbs/day)	55	55	550	150	150
Significant Impact?	NO	NO	NO	NO	NO
Source: Michael Brandman Associates, July 2006.					

Since composite long-term emissions as a result of the project are below the Imperial County APCD thresholds for significance, long-term impacts as a result of this project are less than significant.

CO Hotspot Analysis

Carbon Monoxide (CO) is a localized problem requiring additional analysis beyond total project emissions quantification. Projects with sensitive receptors or projects that could negatively impact levels of service (LOS) of existing roads need to use the California Department of Transportation Carbon Monoxide Protocol (hereafter referred to as the CO protocol) to determine the potential to create a CO hot spot. A CO hot spot is a localized concentration of CO that is above the State or Federal 1-hour or 8-hour ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles.

The CO protocol requires projects that are likely to worsen air quality at signalized intersections having a LOS E or F to conduct a detailed analysis. Since the project specific traffic study shows that with mitigation, all study intersections operate at LOS D (see Section 5.9) or better, traffic conditions are satisfied and no further analysis is necessary. No CO Hotspots are anticipated as a result of the proposed project and localized CO impacts are less than significant.

Odor Impacts

The proposed project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site during construction of the project. However, these emissions would rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Further criteria for evaluation odor impacts are found in Table 3 of the Imperial County APCD's "CEQA Air Quality Handbook." That criteria screens out projects as having odor impacts if the proposed project is 1 mile or greater distance to wastewater treatment plants, landfills, composting stations, feedlots, asphalt batching plants, painting/coating operations (including auto body shops), or rendering plants. The project site is approximately ¼ mile north of a horse stable. The Imperial County APCD was contacted and a request made to obtain any odor complaints lodged in the project area. The Imperial County APCD indicates that no odor complaints were submitted for the project area in the last year. Recognizing the lack of odor complaints in the project area for existing odor sources, and the quantity and dispersion of the odor emanating pollutants generated on the project site during construction, the project will not subject a substantial number of people to objectionable odors.

Air Quality Attainment Plans Project Consistency Analysis

The Imperial County Air Quality Attainment Plan (Attainment Plan) and the State Implementation Plan for PM_{10} in the Imperial Valley (PM_{10} Plan) contain performance standards and emissions reduction targets necessary to attain the state and federal AAQS. According to the CARB's transportation performance standards, the rate of growth in vehicle miles traveled (VMT) and trips should be held to the rate of population growth. Compliance with this performance standard for residential projects is one way suggested by the CARB to show compliance with the attainment plans and is assessed by determining the population, vehicle trips generated (VT) and VMT for the project at build-out year and comparing that to the disaggregated population, VT and VMT for the project area. If the total VMT generated by the proposed project at project build-out year is at or below the disaggregated total VMT for the project site assumed in the Attainment Plan and PM_{10} Plan, then the proposed project is consistent with the Attainment Plan and PM_{10} Plan.

The URBEMIS 2002 model assigns trip generation and miles traveled for particular land uses.

The Imperial County population projections for year 2010 used in the Attainment Plan and PM_{10} Plan for the City of El Centro assumes land use designations in the General Plan and includes build-out of the site. The project site under the current County General Plan land use designation (A-2) would accommodate approximately only 1 dwelling unit (based on the 1 unit per 40 acres). The proposed project accommodates a maximum of 126 single-family residential dwelling units. Clearly the

proposed project would result in a higher density, and more vehicle trips and vehicle miles traveled than what was anticipated in the Attainment Plan and PM_{10} Plan. Because the project will result in more people and more traffic than what was considered in the plan, the project is not consistent with the Attainment Plan and PM_{10} Plan, and therefore would create a significant impact in this regard.

5.2.3 - Mitigation Measures

Long-term emissions once the residential units are occupied were found to be less than significant without mitigation, and therefore, do not require mitigation. However, without mitigation short-term emissions during grading and construction of the proposed project would be a significant impact. In an effort to reduce exhaust and fugitive dust emissions related to grading and construction activities, a range of mitigation measures found in Section 7.1 of the Imperial County APCD "CEQA Air Quality Handbook," were considered and integrated into the proposed project. The mitigation Measures are as follows:

AQ 5.2-1 *Timing and Tuning.* During construction of the proposed improvements, all construction equipment will be properly maintained at an offsite location and includes proper tuning and timing of engines. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction.

AQ 5.2-2 *Diesel Fuel.* During construction of the proposed improvements, all construction equipment will be fueled with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use in off-road equipment).

AQ 5.2-3 *Construction Equipment.* To the maximum extent feasible, use diesel construction equipment meeting the CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines.

AQ 5.2-4 *Traffic Control Plan.* Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction site and provide temporary traffic control (i.e. flag person) during demolition debris transport and other construction related truck hauling activities.

AQ 5.2-5 *Idling Restrictions.* During construction of the proposed improvements, construction equipment will not idle on site for more than 10 minutes.

AQ 5.2-6 *Provide Onsite Meals.* During construction of the proposed improvements, the project applicant will provide on-site meals to construction workers by arranging a lunch wagon to visit the construction site during work breaks including the lunch break. This will improve air quality by reducing traffic created by construction workers.

AQ 5.2-7 *Temporary Construction Power.* During construction of the proposed improvements, the project applicant will provide on-site electrical hook ups for electric construction tools, such as saws, drills and compressors, to eliminate the need for diesel powered electric generators.

AQ 5.2-8 *Fugitive Dust Control Plan.* Prior to construction of the proposed improvements, the project proponent will provide a Dust Control Plan that will describe the application of standard best management practices to control dust during construction. Best management practices will include application of water on disturbed soils a minimum of two times per day, covering haul vehicles, replanting disturbed areas as soon as practical, restricting vehicle speeds on unpaved roads to 15 mph, sweeping street access points at the end of each day, and other measures, as deemed appropriate to the site, to control fugitive dust. The Fugitive Dust Control Plan shall be submitted to the City for approval and approved prior to construction.

AQ 5.2-9 *High Volume-Low Pressure Spray Equipment or Hand Application.* During construction of the proposed improvements, only low volatility paints and coatings as defined in Imperial County APCD Rule 424 shall be used. All paints shall be applied using either high volume, low pressure (HVLP) spray equipment or by hand application.

5.2.4 - Level of Significance After Mitigation

Long-term emissions once the residential units are occupied were found to be below the thresholds and therefore, less than significant without mitigation, and therefore, do not require further evaluation. The project will not be consistent with the Attainment Plan and PM_{10} Plan, however, and will therefore create a significant impact in that regard.

Without mitigation short-term emissions during grading and construction of the proposed project would be a significant impact. Incorporation of mitigation measures AQ 5.2-1 through AQ 5.2-9 will reduce project related emissions during construction of the proposed project. Table 5.2-6 shows the quantified emissions that would result from grading and construction of the proposed project with implementation of mitigation measures AQ 5.2-1 through AQ 5.2-9

Table 5.2-6: Mitigated Short-term Construction Emissions

Source	ROG (lbs/day)	NO_x (lbs/day)	CO (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)
Site Grading Activities	24.32	192.06	179.52	0.01	23.08
Construction Period 2006: Building Construction Activities	53.46	52.08	70.84	>0.01	2.46
Construction Period 2007: Final Building Construction Activities	53.38	50.18	71.04	0.01	1.96
Asphalt Paving Activities	12.34	75.31	87.55	0.02	3.05
Threshold of Significance	Implementation of Mitigation Measures shown in Section 7.1 of the Imperial County APCD's "CEQA Air Quality Handbook."				
Above Threshold?	NO	NO	NO	NO	NO
Source: Michael Brandman Associates, July 2006.					

With mitigation project generated air quality impacts related to construction activities are less than significant.

5.3 - Biological Resources

Michael Brandman Associates (MBA) conducted a field survey and a literature review, including a query of the California Natural Diversity Database (CNDDB) in November 2005.The survey area included the project site and a 500-foot buffer around the perimeter. The CNDDB Geographic Information System (GIS) database was utilized, together with ArcGIS software, to determine sensitive species located within a five-mile radius of the project site. The field notes from the field survey and the results of the CNDDB are provided in Appendix C of this EIR

5.3.1 - Existing Conditions

Regulatory Conditions

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) administers the federal Endangered Species Act (FESA) that provides a process for listing species as either threatened or endangered, and methods of protecting listed species. The FESA defines as "endangered" any plant or animal species that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is a species that is likely to become endangered in the foreseeable future. A "proposed" species is one that has been officially proposed by USFWS for addition to the federal threatened and endangered species list.

Section 9 of the FESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. The presence of any federally threatened or endangered species that are in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the FESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

California Endangered Species Act

The California Department of Fish and Game (CDFG) administers the California Endangered Species Act (CESA). The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

Section 3503 and 3511 of California Fish and Game Code

The CDFG administers the California Fish and Game Code (Code). There are particular sections of the Code that are applicable to natural resource management. For example, section 3503 of the Code states it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3511

of the Code lists fully-protected bird species, where the CDFG is unable to authorize the issuance of permits or licenses to take these species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, capture, kill, or possess or attempt to do the same to any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union.

Section 404 of the Federal Clean Water Act

Section 404 of the federal Clean Water Act (CWA), which is administered by the U.S. Army Corps of Engineers (USACE), regulates the discharge of dredge and fill material into waters of the United States. USACE has established a series of nationwide permits that authorize certain activities in waters of the U.S., provided that a proposed activity can demonstrate compliance with standard conditions. Normally, USACE requires an individual permit for an activity that will affect an area equal to or in excess of 0.3 acre of waters of the United States. Projects that result in impacts to less than 0.3 acre can normally be conducted pursuant to one of the nationwide permits, if consistent with the standard permit conditions. USACE also has discretionary authority to require an Environmental Impact Statement for projects that result in impacts to an area between 0.1 and 0.3 acre. Use of any nationwide permit is contingent on the activities having no impacts to endangered species.

Section 1600 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California are subject to the regulatory authority of the CDFG pursuant to Sections 1600 through 1603 of the Code, requiring preparation of a Streambed Alteration Agreement. Under the Code, a stream is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Included are watercourses with surface or subsurface flows that support or have supported riparian vegetation. CDFG also has jurisdiction within altered or artificial waterways based on the value of those waterways to fish and wildlife, and also has jurisdiction over dry washes that carry water ephemerally during storm events.

Section 401 of the Federal Clean Water Act

Section 401 of the federal CWA requires that "any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the federal Clean Water Act." Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification from the Regional Water Quality Control Board (RWQCB).

Porter-Cologne Water Quality Act

The RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with any region that could affect the water of the state" (water code 13260(a)), pursuant to provisions of the State Porter-Cologne Water Quality Act. "Waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (water code 13050 (e)).

Physical Conditions

Vegetation

The project site is relatively flat at an elevation of approximately 40 feet above mean sea level. The site is currently undeveloped and contains one plant community, ruderal, which covers the entire survey study area. The site was once used for agriculture, but it appears to now be fallow. The plant species located on the project site included non-native grasses and Russian thistle species (*Salsola species*). This is not considered a sensitive plant community although it would provide foraging opportunities for several sensitive raptor species, including burrowing owl (*Athene cunicularia*).

The project site lies adjacent to an unvegetated berm associated with Imperial Irrigation District's (IID) agricultural canals and drains. The drain occurs along the western and northern portions of the project site. These unvegetated berms, where burrows occur, provide nesting sites and cover for burrowing owls.

Wildlife

The project site supports several wildlife species, some of which were observed during the field survey conducted by MBA. Wildlife observations made during the survey were dominated by avian species. Common bird species observed in the survey area included:

- Great-tailed grackle (*Quiscalus mexicanus*)
- European starling (*Sturnus vulgaris*)
- White-crowned sparrow (*Zonotrichia leucophrys*)
- Western meadowlark (*Sturnella neglecta*)
- Black-necked stilt (*Himantopus mexicanus*)
- Yellow-rumped warbler (*Dendroica coronata*)
- American kestrel (*Falco sparverius*)
- Snowy egret (*Egretta thula*)
- Savannah sparrow (*Passerculus sandwichensis*)
- Black phoebe (*Sayornis nigricans*)
- Say's phoebe (*Sayornis saya*)

Sensitive Biological Resources

Sensitive biological resources include those that have been afforded special status and/or recognition by federal and state resource agencies, as well as other organizations, because of concern for their

continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels.

Sensitive Plant Communities

No sensitive plant communities are present on the project site.

Sensitive Plant Species

One special status plant species, Abram's spurge (*Chamaesyce abramsiana*), was documented by the CNDDB as occurring within the vicinity of the project site. It is a California Native Plant Society (CNPS) List 2 species, which means it is rare, threatened, or endangered in California, but more common elsewhere. It was determined by MBA that no suitable habitat for this species was present within the project site. Abram's spurge occurs in Mojavean and Sonoran desert scrub, which is absent from the project site. Therefore, this species would not be expected to occur on the project site.

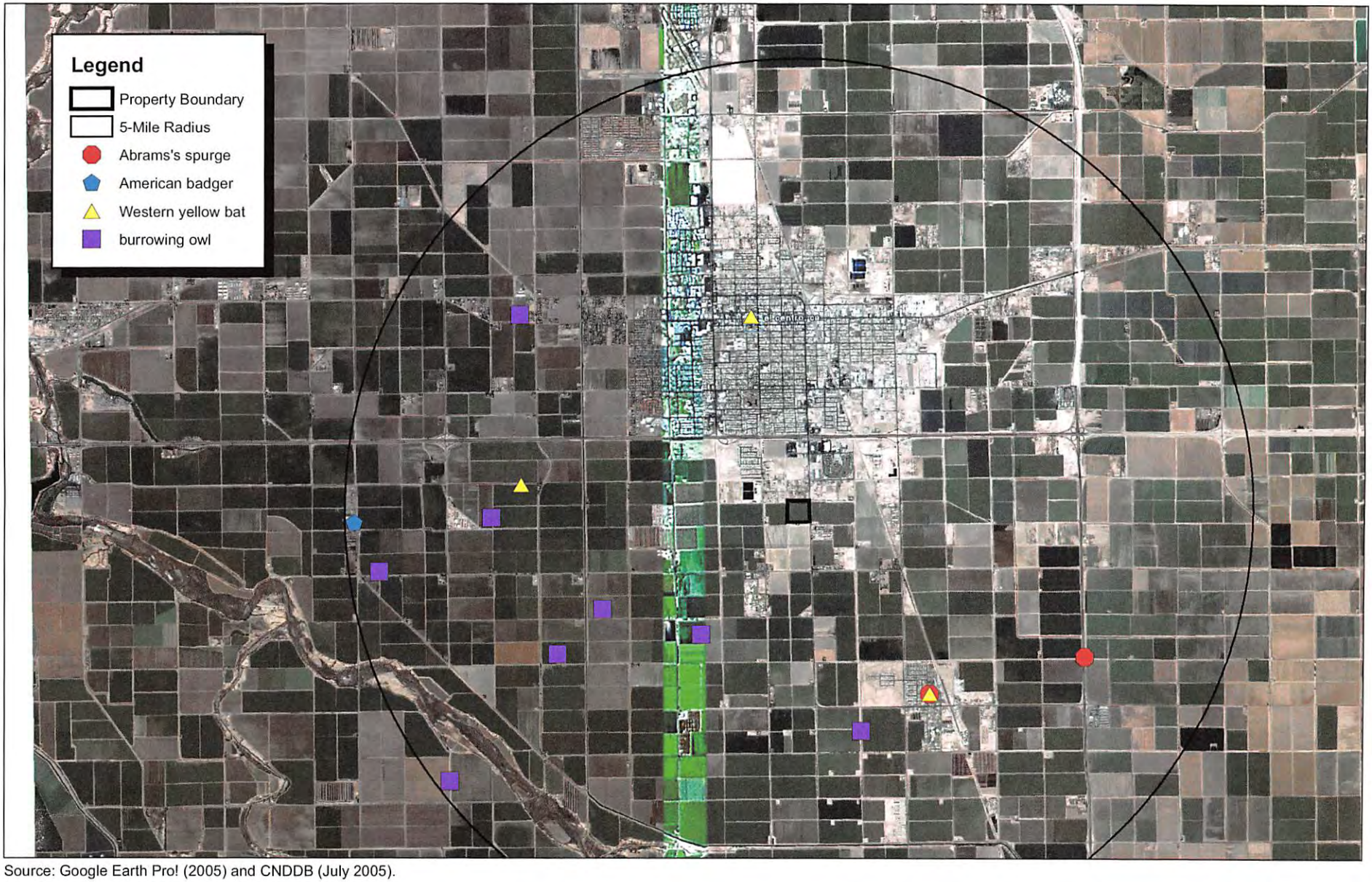
Sensitive Wildlife Species

Review of the CNDDB (2005) determined that there are three sensitive wildlife species occurring within the vicinity of the project site. The survey area was confirmed as being occupied by burrowing owl. During the reconnaissance-level survey, a total of five burrowing owls were confirmed as occurring within the project site and the 500-foot buffer (please see Exhibit 5.3-1). This included two pairs of owls, and one individual owl. The owls were observed to be utilizing the unvegetated berms associated with IID's agricultural canals and drains that occur immediately adjacent to the north and west. The berms provide suitable nesting habitat for the owls but would not provide suitable foraging habitat. The owl pairs are likely utilize the project site as foraging habitat, since they are constrained by existing development to the north and east. The individual owl may forage on the project site, as well as adjacent agricultural lands to the west and south of the project site. The individual owl on the east berm is not currently constrained by existing development.

The western yellow bat (*Lasiurus xanthinus*) is known to occur in the vicinity of the project site but only has a low potential for presence. The project site does not provide suitable foraging habitat since this species prefers to forage over water and among trees. The adjacent canals and drains may provide suitable foraging habitat. In addition, the project site provides only two palm trees, which is the preferred roost tree.

The American badger (*Taxidea taxus*) is known to historically occur in the vicinity of the project but only has a low potential for presence. The record for this species dates back to the early 1900's.

Previous agricultural practices on the project site would have created conditions unsuitable for burrowing by this species. Recently the project site has been left fallow but no sign of American badger or it's burrows was observed during the field survey.



Source: Google Earth Pro! (2005) and CNDDB (July 2005).

Michael Brandman Associates

NORTH

1.5 0.75 0 1.5
Miles

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Exhibit 5.3-1
Sensitive Species Location Map

ZONE CHANGE 05-05 AND TENTATIVE SUBDIVISION MAP
WILLOW BEND • DRAFT EIR

Table 5.3-1: Special Status Plant and Animal Species Identified in CNDDB

Species		Status			Life Form	Blooming Period	Preferred Habitat	Potential on Site/Suitable Habitat
Scientific Name	Common Name	USFWS	CDFG	CNPS				
Athene cunicularia	Burrowing owl	—	CSC	—	—	—	Inhabits areas of short vegetation or bare ground. Breeds primarily in open fields, short grasslands, and rangelands. Requires burrows.	**Species present.** A total of five individuals, two pairs and one individual owl, were observed within the survey area.
Chamaesyce abramsiana	Abram's spurge	—	—	2	Annual herb	Sept - Nov	Prefers sandy places within Sonoran desert scrub and Mojave desert scrub.	**Not likely to occur.** No suitable habitat occurs on the project site. Nearest record is 2.2 miles southeast.
Lasiurus xanthius	Western yellow bat	—	CSC	—	—	—	Occurs in areas with untrimmed palm trees. Roosts in primarily palm trees and prefers dead fronds. Forages over water and among trees.	**Low potential to occur.** Limited suitable roosting habitat; foraging habitat is absent on project site. Nearest record is 2.2 miles southeast.
Taxidea taxus	American badger	—	CSC	—	—	—	Herbaceous, shrub, and open stages of most uncultivated habitats with dry, friable soils. Preys on burrowing rodents. Digs burrows.	**Low potential to occur.** Historically cultivated land not highly suitable. Nearest historical record from early 1900's is 4.5 miles west.

U.S. Fish and Wildlife Service
- FE Federal Endangered
- FT Federal Threatened

California Department of Fish and Game
- CE California Endangered
- CT California Threatened
- CR California Rare
- CSC California Species of Concern

California Native Plant Society
- 1A Plants presumed extinct in California.
- 1B Plants rare, threatened, or endangered in California and elsewhere.
- 2 Plants rare, threatened, or endangered in California, but more common elsewhere.
- 3 Plants about which we need more information.
- 4 Plants of limited distribution.

Table 5.3-1 (Cont.): Special Status Plant and Animal Species Identified in CNDDB

Species		Status			Life Form	Blooming Period	Preferred Habitat	Potential on Site/Suitable Habitat
Scientific Name	Common Name	USFWS	CDFG	CNPS				

Not Likely to Occur - There are no present or historical records of the species occurring on or in the immediate vicinity (within 2 miles) of the property area and the diagnostic habitats strongly associated with the species does not occur on or in the immediate vicinity of the property area.
Low Potential for Occurrence - There is a historical record of the species within the vicinity of the property, but no existing suitable habitat on or in the immediate vicinity of the property area.
Moderate Potential for Occurrence - The suitable habitat associated with the species occurs on or in the immediate vicinity of the property area, but there is not a recorded occurrence of the species within the immediate vicinity (within 2 miles) of the property.
High Potential for Occurrence - There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the property area (within 2 miles).
Species Present - The species was observed on the property at the time of the survey.
Source: California Natural Diversity Database, 2005.

Regional Connectivity/Wildlife Movement

The project site may provide live-in habitat for species in the area, such as the burrowing owl. Resident and wintering burrowing owls could use the site as foraging, breeding, post-natal dispersing, and winter migrations. The project site may also provide foraging and dispersing habitat for wintering raptor species. However, the project site's connectivity to other similar habitat occurs only to the west and south, where agricultural land occurs. To the north and east the project site abuts residential development associated with urban El Centro that would limit east to west and north to south movement. Therefore, the site is not thought to provide an important wildlife corridor that could provide regional connectivity to other similar habitats.

Jurisdictional Water Resources

Surface drainage features indicated as blue-line streams on United States Geological Survey (USGS) maps that are observed or expected to exhibit evidence of flow are considered potentially subject to state and federal regulatory authority as jurisdictional waters. Aerial photography was reviewed prior to the general surveys and an assessment of potentially jurisdictional waters was conducted during the habitat assessment. The project site does not contain any jurisdictional waters. The canals and drains (Date Drain Three-B) that occur on the north and west sides of the project site are operated by the IID. The IID has jurisdictional waivers that allow operation and maintenance of canals and drains.

Nesting Birds

Nesting birds are protected under the MBTA and CDFG codes. The fallow agricultural field and berms associated with the canals and ponds provide suitable habitat for nesting birds, such as burrowing owl, killdeer (*Charadrius vociferous*), and western meadowlark. The ornamental trees immediately to the south of the project site could provide suitable nesting habitat to raptor species such as red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), and American kestrel.

5.3.2 - Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant biological resources impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA, including, but not limited to, marsh, vernal pool, coastal, etc., through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impacts

Sensitive Plant Communities

No impacts to sensitive plant communities will occur as a result of the proposed project.

Sensitive Plant Species

No impacts to sensitive plant species will occur as a result of the proposed project.

Sensitive Wildlife Species

Construction related temporary indirect impacts, such as noise, motion, and human activity, are considered significant to sensitive species, such as burrowing owl and Cooper's hawk, when nesting. These activities may disrupt the natural foraging patterns or lead to startle effects that reduce productivity of the nests. However, these impacts can be mitigated to below a level of significance.

Additionally, short-term impacts to burrowing owl will occur as a result of the open drainage facilities being undergrounded. The field survey determined that a total of three territories consisting of five burrowing owls were utilizing the IID's drains in the survey area. These owls would be adversely impacted on a short-term basis during construction activities to underground the drains. Adverse impacts would include potential direct fatalities to the owls, as all burrows would be destroyed during the undergrounding process. In addition, the loss of burrows during the undergrounding process would result in displacement of owls. The fill material used during the undergrounding process will determine if it remains suitable to fossorial mammals and owls after construction. If fill material or other design features make the post-construction undergrounding incompatible with owls, then these impacts would be considered long-term and permanent. These impacts would be considered significant and will require mitigation measures.

In the long-term indirect impacts will occur as a result of the proposed residential development. These impacts would include increased recreational use of the berms. This overall impact would include increased harassment of owls due to human activity and pets utilizing the berms. Burrowing owls are generally sensitive to disturbance and will commonly flush from the burrow. Pets, in particular dogs, are known to dig at the burrow entrance and would result in an overall degraded environmental condition for burrowing owls. These long-term indirect impacts to burrowing owls are considered significant and will require mitigation measures.

Additionally, development of the project site will result in long-term permanent impacts to 38 acres of burrowing owl foraging, dispersing, and nesting habitat. Five burrowing owls, two pairs and one individual, were confirmed to be utilizing the survey area, project site plus a 500-foot buffer, and will be significantly impacted by conversion of the fallow agricultural field to a residential subdivision. Mitigation measures will be required to reduce this impact to below a significant threshold.

Regional Connectivity/Wildlife Corridor

The proposed project is not within a known wildlife corridor, and abuts residential development to the north and east. No movement of wildlife would occur in an east-west or north-south direction due to urbanization. Therefore, the proposed project will have a less than significant impact on the regional movement of wildlife in the area.

Jurisdictional Water Resources

The project site does not contain any features that would be considered jurisdictional. Therefore, no impacts to jurisdictional water resources will occur as a result of project construction. The IID will be required to underground the water conveyance system adjacent to the project site. The IID has waivers for operation and maintenance of drains. Therefore, no jurisdictional areas would be impacted as a result of undergroundment of IID's canals and drains.

Nesting Birds

Birds and their nests are protected under the MBTA and CDFG codes. The proposed project contains suitable nesting bird habitat. If actively nesting birds are disturbed by construction activities, the proposed project would have a significant impact. Mitigation measures will be required to reduce this impact to below a significant threshold.

5.3.3 - Mitigation Measures

BR 5.3-1 Additional focused survey shall be conducted to more conclusively determine the number of owls occupying the project site and a 500-foot buffer. Focused surveys shall follow accepted burrowing owl protocol, which includes a nesting season survey. During the nesting season survey, four site visits shall be conducted between April 15 and July 15. Surveys shall be conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise.

BR 5.3-2 A burrowing owl preconstruction survey shall be completed no sooner than 30 days prior to commencement of construction.

BR 5.3-3 Burrowing owls inside the project site will be actively relocated prior to construction activity in order to avoid direct impacts of burrow destruction. Once all burrows on the project site are confirmed to be absent of owls, they shall be systematically collapsed. Where possible, burrows will be excavated using hand tools and refilled to prevent

reoccupation. Sections of flexible plastic pipe or burlap bags will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

BR 5.3-4 No construction-related disturbance shall occur within 50 m., approx. 160 ft., of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m., approx. 250 ft., during the breeding season of February 1 through August 31.

BR 5.3-5 If feasible, 6.5 acres of foraging habitat for each pair of burrowing owl would be preserved in a conservation easement and managed to promote burrowing owl use of the site. This habitat should be adjacent to the project site but at least 50 meters from the impact area. The displaced owls would be encouraged to occupy this conserved area by actively relocating them to natural or artificial burrows. One alternate natural or artificial burrow should be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. Conservation of agricultural lands to the west or south of the project site would be the only appropriate options under this mitigation measure.

BR 5.3-6 If mitigation measure BR 5.3-5is not feasible, this mitigation measure is required. Off-site replacement of burrowing owl habitat shall be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable burrowing owl habitat. One alternate natural or artificial burrow shall be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. The off-site replacement of suitable burrowing owl habitat would follow one of the following scenarios:

1. Replacement of occupied habitat with off-site occupied habitat: 9.75 acres per pair or single bird.

2. Replacement of occupied habitat with off-site suitable unoccupied habitat: 19.5 acres per pair or single bird.

BR 5.3-7 An educational flyer shall be developed that informs new residences that off-road activity is not permitted on the surrounding berms. In addition, pets shall be on leashes if walked on berms. It would also make new residents aware of burrowing owls, their biology, how and why they are sensitive, and their benefits to insect and rodent control.

BR 5.3-8 The removal of vegetation, ground disturbance, or elimination of other potential nesting habitat should be conducted outside of avian nesting season (February through August). This is particularly true for construction during the undergroundment of the drains as burrowing owls were confirmed as present and are likely resident breeders. If construction occurs during the avian nesting season, a pre-construction nesting bird survey shall be conducted seven days prior to any ground disturbing activities. If birds

are found to be nesting inside the impact area, construction will need to be postponed until a no-construction buffer, 250 feet for passerines and 500 feet for raptors, is established. Construction inside the buffer could commence once a qualified biologist determines that the nest is no longer active.

5.3.4 - Level of Significance After Mitigation

With implementation of mitigation measures BR 5.3-1 through BR 5.3-8, biological resources impacts are reduced to less than significant.

5.4 - Cultural Resources

Michael Brandman Associates (MBA) prepared a Phase I Cultural Resources Survey in February 2006, the findings of which are presented in this section. The cultural study is included in its entirety in Appendix E of this EIR.

5.4.1 - Existing Conditions

Regulatory Conditions

In most cases prior to impact, the California Environmental Quality Act (CEQA) and the Office of Historic Preservation (OHP) protocols require that a cultural resource record search and a cultural resource survey take place on a property that exhibits some potential for cultural resources. According to federal National Historic Preservation Act (NHPA)/National Register for Historic Places (NRHP) (NPS 2005, CHRIS 2005) and state protocol, if such a survey detects cultural sites or artifactual remains, the jurisdictional agency, whose role is to fulfill Section 106 requirements, must be able to determine whether the cultural resources are eligible for inclusion in the California Register (CR) and/or the NRHP. A step-by-step Section 106 process has been developed and implemented per 36CFR800, revised December 12, 2000. As a part of this procedure, the resource must be evaluated to determine whether it is "significant." Eligibility must be determined using the four evaluative criteria, A, B, C, and D quoted below, found in implementing regulations 36CFR part 63. At the state level, the eligibility criteria are almost identical to federal protocols (PRC5024.1 - 14 CCR Section 4852). The federal criteria include the following:

A) Is associated with events that have made a significant contribution to the broad patterns of our history;

B) Is associated with the lives of persons significant in our past;

C) Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D) That have yielded or may be likely to yield, information important in prehistory or history.

If avoidance of a site cannot occur as a result of an action, the project developmental plans must be evaluated in order to determine whether the action would cause a "substantial adverse change" in the significance of the resource using the criteria above. Adverse changes to such resources are defined in 36CFR800.5. All archaeological or historical sites must be carefully evaluated relative to the effects of the action, even if they have been or have not been listed at the time the proposed action will take place. Although avoidance of cultural resources is always the best choice, where necessary, impacts to previously listed or potentially listed resources must be mitigated for.

If it is determined that a cultural resource is or could potentially be listed on the CR or NRHP, a testing and/or historical evaluation of the resource must take place, prior to impact. If it is determined

that the resource is significant and that impacts will cause a substantial adverse change in its significance, that resource must undergo data collection prior to impact. Under CEQA, if testing results determine that the resource will not qualify for listing in the CR or the NRHP, no further mitigation of any kind is required. At the federal level, a Section 106 consultation determines the level of mitigative needs once data collection has taken place

Physical Conditions

The project is located several miles south of the center of the City of El Centro. Situated on a gently sloping alluvial fan which leads north-northwest eventually into the Salton Sink, the project is located roughly 10 feet below mean sea level (MSL) and lies several miles northeast of the plotted banks of the New River. The Imperial fault zone is located several miles east of the project area and has produced several significant earthquakes in the last 100 years. Flat and rectangular, the project site is located on ground surrounded on two sides of Date Drain 3D, a water control structure associated with the regional Central Main Canal District, and to the east by State Route 86 (SR-86).

The project area is located in a region of extreme heat. Before canals brought water from the Colorado, the property likely held a mesquite-dominated shrub environment. The project area rests on deposits the result of the extinct Lake Cahuilla. The soils consist of the Imperial wet silt clays and the Imperial-Glenbar silty clay loam (USDA on-line service).

At the time of the field survey, the property was fallow, but is clearly irrigated when in use. The entire parcel has been extensively disturbed since about the 1890's because of agricultural development.

Records Search

Cultural Resources

MBA contracted with Karen Collins, Assistant Coordinator of the Southeastern Information Center (SIC) of Imperial Valley College Desert Museum, Ocotillo, CA, to conduct a cultural resource records search in late January 2006. The records search involved examining an approximately 1-mile search radius surrounding the project site. The current inventories of the NRHP, the CR, the California Historical Landmarks (CHL) list, and the California Points of Historical Interest (CPHI) list were examined to identify any historic properties. Additionally, the California State Historic Resources Inventory (HRI) for El Centro and Imperial County were reviewed to determine the existence of previously documented local historical resources and archival maps were examined to help locate any previously plotted historic resources in the area.

The records search disclosed that no portions of the search radius have been surveyed or researched in the recent past by professional archaeologists. The research efforts indicated that no known cultural resource sites are located on the project site; however, there a few cultural resource sites known for this region consisting of several historic canals that bound the project site and ring the general area, including portions of the Date Drain 3D. Most of the canal systems in south El Centro were routed

before 1950, but it is not certain which portions were built in the modern era and which portions were not. The drains and small feeder canals near the project site are all part of the regional Imperial County Irrigation District (IID) water control system. Ms. Collins stated that OHP considers the canal system part of a CR eligible district. Unfortunately, no factual information about this district is available at the present time. Thus, it is possible that the Date Drain 3D is an element of an eligible historic district.

On March 13, 2006, MBA interviewed IID Staff Ecologist Bruce Wilcox about the process of maintaining the drains. The IID cleans out and rebuilds the shallow walls of these drains once every five years. In addition, any head gates or weirs associated with these drains are regularly replaced. Since MBA's staff archaeologists did not observe any historical elements during the survey, and since the IID process is to rebuild and replace any old elements, it is the professional opinion of MBA that the Date Drain 3D is located on the original footprint, but is entirely modern in appearance and construction. Therefore, this drain should not be considered a historic resource for the purposes of CEQA.

Paleontological Records Search

A paleontological records search was conducted in mid-February 2006 by Kesler Randall under the auspices of Dr. Tom Demeré of the San Diego Natural History Museum (SDNHM). A search of the SDNHM records indicates that no paleontologic resource localities are recorded within the boundaries of the project area or within 1 mile radius (Randall 2006). The project area is located entirely upon surface exposures of Pleistocene/Holocene Lake Cahuilla and Playa deposits. According to research in similar deposits elsewhere in the Imperial Valley, there is a high potential for the presence of paleontologic resources. However, since the property has been utilized for agriculture for many years, subsequently there is little potential for the presence of paleontologic fossils at ground levels above eight feet.

Site Reconnaissance

An archaeological field survey of the Willow Bend project site was undertaken by MBA staff archaeologists on February 5, 2006. Prior to MBA's field survey, the entirety of the project site has not been previously surveyed. The project area was examined using a block-transect technique, where the surveyors walked transects spaced 10 meters apart. The cultural resource field survey was performed to comply with certain cultural resource guidelines.

No cultural resources were detected during the February 2006 field survey. The whole of the project area has been heavily impacted by irrigated hay agriculture, which tends to obscure signatures of prehistoric deposits.

Native American Heritage Commission and Consultation

A sacred lands search with the Native American Heritage Commission (NAHC) has also taken place as part of the Cultural Resource report. On February 9 2006, MBA sent a letter to the NAHC in an

effort to determine whether any sacred sites are listed on their Sacred Lands List for this portion of the City of El Centro. There was no response to the first inquiry from the NAHC, so a second letter was sent on March 10, 2006. At the time of the publication of the Draft EIR, the NAHC had not responded to MBA's requests for information pertaining to sacred sites.

This effort does not represent concurrence with the regulations set forth in SB18 (Burton) in terms of Native American consultation. Formal consultation efforts must be initiated by the City under certain conditions. Accordingly, the Cultural Resource report can assist the City in that effort, should an SB18 consultation be required. It is not known at this time if the Willow Bend project will trigger consultation efforts by the City since the NAHC response is still outstanding.

5.4.2 - Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant cultural resources impact if it would:

- Aversely affect a unique cultural resource. An adverse affect is regarded as the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource will be reduced such that it no longer meets the significance criteria provided in the California Code of Regulations, Title 14, Chapter 3, Section 15064.5; or
- Directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature as defined in Section 15064.5.

Impacts

Cultural Resources

The primary purpose of this cultural resources analysis is to determine what cultural resources more than 45 years old are located within the project area and whether such resources will be or could be impacted be development of the project. The possibility for the project site to contain prehistoric cultural resources exists because any signatures of prehistoric deposits may have been obscured by the heavy disturbances and activities associated with irrigated hay agriculture. Therefore, MBA has concluded from the records search and field survey results that there is a low potential for impacts to prehistoric cultural resources. However, if in the event that prehistoric cultural resources are accidentally discovered, the potential impacts would be mitigated to a level considered less than significant.

Additionally, although the Date Drain 3D water feature is regarded as an unrecorded historic property that might be considered a significant cultural resource by the OHP in light of its possible eligibility, the IID has continually modified the ditch since construction and no historic elements of the ditch, save for the location, remain. Accordingly, MBA has determined that the Date Drain 3D is part of

potentially eligible Historic District, but is inherently modern in construction. Thus, if the drain is buried below ground as part of project implementation, it is not considered a direct impact to any CR-eligible historical resource. No construction-related mitigation-monitoring is recommended with regards to cultural resources during ground-disturbing activities in the Willow Bend project area.

Paleontological Resources

The primary purpose of the paleontological analysis is to determine the potential for impacts to significant paleontological resources in the project area. MBA has concluded that the property has a high chance of containing significant paleontological resources, but only at depth below 8 feet. This depth will likely be reached during trenching for sewer and water. Therefore, potential impacts to paleontological resources are considered significant. A program to mitigate impacts to significant nonrenewable paleontologic resources is recommended for this project and thus MBA recommends that paleontological monitoring should take place during all construction-related excavations within the Tract once eight (8) feet below grade has been reached. Furthermore, only virgin soils should be monitored. The project site should be re-evaluated for sensitivity once 50 percent of the monitoring has been completed.

5.4.3 - Mitigation Measures

In the event of an accidental discovery or recognition of any human remains, Public Resource Code 5097.98 must be followed. In this instance, once project-related earthmoving begins and if there is accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

CR 5.4-1 In the event of the discovery or recognition of human remains, the applicant shall comply with PRC 5097.98. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the Imperial County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the remains to be Native American, then the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98, or

CR 5.4-2 In the event of the discovery or recognition of human remains, the applicant shall comply with PRC 5097.98. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the

recommendations of the most likely descendant or on the property in a location not subject to further subsurface disturbance:

- The NAHC is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission.
- The descendant identified fails to make a recommendation; or
- The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the NAHC fails to provide measures acceptable to the landowner.

CR 5.4-3 Prior to any clearing and grubbing and/or earthmoving activities on the project area, a qualified Project Paleontologist retained by the Proponent and approved by the City shall review the approved development and construction plans. The paleontologist shall participate in a pre-construction project meeting with the development staff to ensure an understanding of the mitigation measures required during construction.

CR 5.4-4 Paleontologic monitoring of any earthmoving shall be conducted by a qualified monitor, under direct guidance of a Project Paleontologist. Earthmoving in areas of the parcel where previously undisturbed sediments will be buried but not otherwise disturbed will not be monitored. Monitoring shall begin once earthmoving reaches 8 feet below the original ground surface. Non-virgin soils need not be monitored.

CR 5.4-5 If too few fossil remains are found after 50 percent of earthmoving is complete, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction. If fossil remains are found during monitoring, up to 6,000 pounds of fossiliferous sediments will be recovered from the fossil site and processed to allow for the recovery of smaller fossil remains. The total weight of all processed samples from the fossil-bearing rock unit will not exceed 6,000 pounds at any one site.

CR 5.4-6 If fossil remains are found, the Project Paleontologist shall develop a storage agreement with a museum repository acceptable within the City to allow for the permanent storage and maintenance of any fossil remains recovered in the Project Site as a result of the mitigation program, and for the archiving of associated specimen data and corresponding geologic and geographic site data. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then shall be curated (assigned and labeled with museum repository fossil specimen numbers and corresponding fossil site numbers, as appropriate; placed in specimen

trays and, if necessary, vials with completed specimen data cards) and catalogued. Associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into appropriate museum repository catalogs and computerized data bases) at the museum repository by a laboratory technician. The remains then will be accessioned into the museum repository fossil collection, where they will be permanently stored and maintained. The associated specimen and site data shall be made available for future study by qualified investigators.

CR 5.4-7 A final report of findings shall be prepared by the Project Paleontologist for submission to the City, and the museum repository following accessioning of the specimens into the museum repository fossil collection. The report shall describe parcel geology/stratigraphy, summarize field and laboratory methods used, include a faunal list and an inventory of curated/catalogued fossil specimens, evaluate the scientific importance of the specimens, and discuss the relationship of any newly recorded fossil site in the parcel to relevant fossil sites previously recorded from other areas.

5.4.4 - Level of Significance After Mitigation

With implementation of mitigation measures CR 5.4-1 through CR 5.4-7, cultural resources impacts are reduced to less than significant.

5.5 - Geology and Soils

LandMark Consultants, Inc. prepared a Geotechnical Investigation in February 2005 for the proposed project. The following section is a summary of the study. The study is included in Appendix F of this Draft EIR.

5.5.1 - Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory standards that are applicable to approval of the proposed project.

Physical Conditions

Geologic Setting

The project site is located in the Imperial Valley portion of the Salton Trough physiographic province. The Salton Trough is a geologic structural depression resulting from large scale regional faulting and is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed sedimentary deposits and high levels of seismicity. The Imperial Valley is directly underlain by laucustriun deposits, which consist of interbedded lenticular and tabular silt, sand, and clay. The Late Pleistocene to Holocene lake deposits are probably less than 100 feet thick and derived from periodic flooding of the Colorado River. Older deposits consist of Miocene to Pleistocene non-marie and marine sediments. Basement rock consisting of Mesozoic granite and Paleozoic metamorphic rocks are estimated to exist at depths between 15,000 to 20,000 feet.

Faulting and Seismicity

As with most of California, there is the potential for seismic activity. As identified in Table 5.5-1, active fault systems within the project area (62 mile/100 kilometer) radius) include: Imperial Valley Fault System, San Jacinto Fault System, Elsinore Fault System, and San Andreas Fault System.

Table 5.5-1: Projected Maximum Peak Ground Acceleration at the Project Site

Fault or Seismic Zone	Approximate Distance (miles) and Direction	Maximum Earthquake Magnitude (Mw)	Maximum Peak Ground Acceleration (g)	Seismic Source Type UBC
Imperial Valley Fault System				
Imperial	5.9 NE	7.0	0.36	A
Brawley	6.7 NE	7.0	0.34	B
Brawley Seismic Zone	13 N	6.4	0.16	B
Cerro Prieto	19 SSE	7.2	0.18	A

Table 5.5-1 (Cont.): Projected Maximum Peak Ground Acceleration at the Project Site

Fault or Seismic Zone	Approximate Distance (mi) and Direction	Maximum Earthquake Magnitude (Mw)	Maximum Peak Ground Acceleration (g)	Seismic Source Type UBC
East Highline Canal	22 ENE	6.3	0.10	C
San Jacinto Fault System				
Superstition Hills	5 NW	6.6	0.32	B
Superstition Mountain	11 NW	6.6	0.19	B
Elmore Ranch	25 NW	6.6	0.11	B
Borrego Mountain	31 WNW	6.6	0.09	B
Anza Segment	47 NW	7.2	0.09	A
Coyote Creek	50 NW	6.8	0.07	B
Hot Springs-Buck Ridge	63 NW	6.5	0.05	B
Whole Zone	11 NW	7.5	0.31	A
Elsinore Fault System				
Laguna Salada	18 SW	7.0	0.17	B
Coyote Segment	28 W	6.8	0.11	B
Julian Segment	53 WNW	7.1	0.08	A
Earthquake Valley	55 WNW	6.5	0.06	B
Whole Zone	28 W	7.5	0.16	A
San Andreas Fault System				
Coachella Valley	42 NNW	7.4	0.11	A
Whole S. Calif. Zone	42 NNW	7.9	0.14	A

Abbreviations: NE = North-East; N = North; SSE = South-South-East; ENE = East-North-East; NW = North-West; WNW = West-North-West; SW = South-West; W = West; NNW = North-North-West
Source: LandMark Consultants, Inc. February 2005.

Primary seismic hazards include groundshaking, surface rupture, and liquefaction. Secondary hazards include landsliding, volcanic hazards, tsunamis, seiches, and flooding, and expansive soils.

Primary Seismic Hazards

Ground Shaking. The project site is located in the seismically active Imperial Valley of southern California and is considered likely to be subject to moderate to strong ground motion from earthquakes in the region. The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the Imperial, Brawley and Cerro Prieto Faults.

Site Acceleration. Ground motions are dependent primarily on the earthquake magnitude and distance to the rupture zone. Accelerations are also dependent upon attenuation by rock and soil deposits, direction of rupture, and typed of fault. Table 5.5-1 identifies the horizontal peak ground accelerations from maximum probable earthquakes on the active fault systems in the project area.

Historically, the largest maximum site accelerations based on deterministic computer-aided methods were 0.36g from a 7.0 magnitude earthquake on the Imperial Fault in 1940 and 0.34g from a 5.8 magnitude earthquake on the Brawley Fault in 1979[1].

Surface Rupture. However, the project site does not lie within a State of California, Alquist-Priolo Earthquake Fault Zone. According to well-delineated fault lines through the Imperial Valley as shown on the United States Geologic Survey (USGS) and California Geologic Survey (CGS) maps, surface-fault rupture is considered unlikely to occur at the project site. Yet, due to the high tectonic activity and deep alluvium of the region, there exists the potential for surface rupture on undiscovered or new faults that may underlie the site.

Liquefaction. Liquefaction occurs when granular soil below the water table is subjected to vibratory motions, such as those produced by earthquakes. Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations. Four conditions generally required for liquefaction to occur are: (1) the soil must be saturated (relatively shallow groundwater); (2) the soil must be loosely packed (low to medium relatively density); (3) the soil must be relatively cohesionless (not clayey); and (4) ground shaking of sufficient intensity must occur to function as a trigger mechanism. All of these conditions exist to some degree at the project site.

Tests performed by LandMark Consultants, Inc. indicated that onsite soils include saturated sandy silts and silty sands that have the potential to liquefy during California Building Code (CBC) Design Basis Earthquake (magnitude 7.0 with an average peak acceleration of 0.65g). Testing also indicated that there is the potential for liquefaction to occur within several isolated silt and sand layers between depths of 10 to 30 feet. According to LandMark Consultants, Inc., it is likely that strong ground shaking associated with the rupture of the Imperial Fault and possibly the Cerro Prieto Fault would be the triggering mechanism for liquefaction.

Secondary Seismic Hazards

Landslides. Due to the regional planar topography, landslide hazards are unlikely. No ancient landslides are shown on geologic maps of the region and LandMark Consultants, Inc. did not observe and indications of landslides during their site investigation.

Volcanic Hazards. The site is not located in proximity to any known volcanically active areas and the risk of volcanic hazards is considered low.

Tsunamis, Siches, and Flooding. The site is not located near any large bodies of water; therefore, the threat of tsunamis, seiches, or seismically induced flooding is considered low.

Expansive Soils. In general, much of the near surface soils in the Imperial Valley consist of silty clays and clays, which are moderate to highly expansive. Subsurface soils encountered during field

[1] Average peak acceleration is expressed in gravity (g) = 9.80 meters per square second.

explorations conducted in 2005 consist of interbedded clays, silty clays, silts, and sands to depths of 50 feet (the maximum depth of exploration). Specifically, the western third of the project site has stiff to very stiff clays and silty clays with minor lenses of silty sand and sandy silt. The central portion of the project site has subsurface soils consisting of silty clay to a depth of 20 feet below the ground surface. Underlying the silty clays in the central portion of the site are medium dense to dense sand that extend to a depth of 32 feet below the ground surface and stiff to very stiff clays at depths from 32 to 50 feet below the ground surface. The eastern third of the project site consists of clay extending to a depth of 16 feet below the ground surface and dense to very dense sands at depths from 16 to 50 feet below the ground surface.

The native surface clays exhibit a have a high expansion potential and the clay is expansive when wetted and can shrink with moisture loss (drying).

Groundwater

During a test performed in January 2005, groundwater was encountered at a depth of 8 feet; however, groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, drainage, and site grading. There is uncertainty in accuracy of short-term water level measurements, particularly in fine-grained soil, and the referenced groundwater level should not be interpreted to represent an accurate or permanent condition. Subsurface agriculture tile drainage pipelines (4-inch diameter plastic) exist at a depth of 5.0 to 6.5 feet below the site and have assisted in preventing an artificially high groundwater depth.

5.5.2 - Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant geology and soils impact if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or

- Be located on expansive soil, as defined in Table 18-1-B of the CBC (1994), creating substantial risks to life or property.

Impacts

Faulting and Seismicity

Primary Seismic Hazards

Although the project site does not lie within a State of California, Alquist-Priolo Earthquake Fault Zone, the project site is within the vicinity of numerous active faults and will likely experience moderate to strong ground motion from earthquakes in the region. The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the Imperial, Brawley and Cerro Prieto Faults.

Based upon the Modified Mercalli Scale which ranges from I an event felt by very few, to XII representing total damage, and according to FEMA, a maximum magnitude earthquake on the Imperial Fault, Brawley Fault, Cerro Prieto Fault, or San Jacinto Fault System (Superstition Hills) would result in an estimated site intensity ranging from VIII to IX. An event with a Modified Mercalli Scale rating of VIII would result in slight damage in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse; and great damage in poorly built structures. Additionally, panel walls would be thrown out of frame structures; chimneys, factory stacks, columns, monuments and walls would all fall; and there would be changes in well water. Whereas, an event with a Modified Mercalli Scale rating of IX would result in well-built buildings suffering considerable damage, houses that are not bolted down moving off their foundations, the breakage of some underground pipes, ground cracks, and serious damage to reservoirs.

Potentially within the lifetime of the Willow Bend project, residents will experience strong groundshaking and structures may suffer damage as a result of seismic activity. As required, structures will incorporate earthquake-reducing design with the latest Uniform Building Code (UBC) and CBC and the appropriate seismic design criteria. In addition, adherence to the Recommendations prepared by LandMark Consultants, Inc. for the proposed project (Appendix F) will reduce seismic related impacts to less than significant. In general, these recommendations offer general guidance in preparing site grading plans and include provisions and recommendations for ground surface preparation, trench backfill, compaction, stripping, fill material, excavation, foundation design, building pad preparation, moisture control and drainage, retaining walls, pavement areas, corrosivity, the placement of utility lines, etc. All of the specifications are in accordance with the standards set forth in the UBC and CBC.

Liquefaction. Evaluation of liquefaction potential at the site indicated that thin (1 to 4 feet thick), isolated, interbedded layers of silty sand and silt at a depth between 10 to 40 feet may liquefy under seismically induced groundshaking potentially resulting in an estimated 0.5 to 1 inch deep seated

settlement. As previously noted, liquefaction may result in additional effects such as settlement ground rupture, lateral spreading, or failure of shallow bearing foundations.

Since the potentially liquefiable sandy soils are overlain by 10 to 24 feet of stiff clay, which resist groundwater movement, Landmark Consultants, Inc. considers it unlikely that the light structure loads of the planned Willow Bend Subdivision are sufficient to result in liquefaction induced settlement greater than the surrounding land mass. Furthermore, it is unlikely that there will be rapid deformation or ground rupture of sand boil formations should liquefaction occur because of the thickness of the overlying non-liquefiable soil. Rather, because of the depth of the liquefiable layer, wide-area subsidence from soil overburden would be the expected effect of liquefaction not bearing capacity failure.

In general, the threshold for determining if liquefaction-induced settlements are considered significant is when the total induced settlements are estimated to be over 1.5-inch. Based on an estimate of 0.5 to 1-inch of differential liquefaction on the project site, the potential for liquefaction induced settlements to occur on the project site is low. According to Landmark Consultants, Inc., deep ground improvement to mitigate liquefaction is not required; however, special foundation designs are recommended to mitigate the potential for differential settlement. Therefore, impacts resulting from liquefaction-induced settlements are considered less than significant without mitigation.

Slope Stability. Given that the project site topography is characterized by level terrain and the depth of the Date Drain irrigation channel bank on site is shallow, the potential for landslides and general slope instability to affect the proposed development is very low.

Secondary Seismic Hazards

As previously discussed in Section 5.5.1, Existing Conditions, the project site is not anticipated to be impacted by landslides, volcanic hazards, tsunamis, seiches, or flooding; therefore, the potential for the project site to be affected by the aforementioned hazards is very low.

Expansive Soils. Information obtained from soil samples indicates that critically expansive soils are present in relatively thick sequences at sporadic locations around the project site. Other near surface soils are sands in a medium to very dense condition and should provide adequate support for the proposed residential structures provided that a portion of this stratum is excavated and compacted to provide a firm support for the proposed residential structures. The results of the testing soils for expansive properties indicated that earthwork operations can be expected to encounter expansive soils with expansion indexes in the range of medium to high. Thus, there is the potential for soils at the site to have a high potential for expansion.

The proposed development will involve site foundations and slabs-on-grade, which in the absence of mitigation, may ultimately rest on soils with a significant potential for expansion and contraction, both in a horizontal as well as a vertical plain. This is considered a significant impact. Accordingly,

development of building foundations, concrete flatwork, and asphaltic concrete pavements should include provisions for mitigating potential expansive forces and reduction in soil strength, which can occur from saturation of the soil. It is impossible to eliminate the risk of structural damage associated with expansive soils completely; however, several foundation systems and remediation schemes, as described in Appendix F's Geotechnical Study, in addition to mitigation measures included in this EIR will reduce potential expansive soils impacts level less than significant.

Groundwater

LandMark Consultants, Inc. encountered groundwater at a level of eight feel below ground surface. Yet, as indicated previously, groundwater levels may fluctuate and the groundwater level should not be interpreted to represent an accurate or permanent condition. According to LandMark Consultants, Inc., soils encountered below three feet have the potential to pump groundwater under heavy construction wheel loads because of the silty conditions in the near surface soils have the tendency to support layers of groundwater. Therefore, light earthmoving equipment such as 613 and/or 623 Earthmovers should be anticipated for use on the project site during construction activities to reduce the potential for groundwater pumping.

As previously noted, subsurface agriculture tile drainage pipelines (4-inch diameter plastic) exist at a depth of 5.0 to 6.5 feet below the site and have assisted in preventing an artificially high groundwater depth. Abandoning and plugging the subsurface drainage pipelines may result in a rise in groundwater levels variably across the site. Specific recommendations are included as mitigation within this draft EIR to reduce potential groundwater impacts associated with the abandoning and plugging of drainage pipelines.

5.5.3 - Mitigation Measures

GS 5.5-1 Prior to the issuance of grading permits, LandMark Consultants, Inc., or other qualified engineering geologist approved by the City of El Centro shall review and approve all grading plans and earthwork operation plans in relation to the Recommendations set forth in Geotechnical Study (Appendix F).

GS 5.5-2 LandMark Consultants, Inc. or other qualified engineering geologist approved by the City of El Centro shall be provided with a 48 hours advance notice in order to be present at the site during all earthwork activities related to the excavation, tree root removal, stripping, backfill, and compacting and filling of the site and to perform periodic compaction tests.

GS 5.5-3 Prior to the issuance of grading permits, the project applicant shall include one of the following foundation systems and remediation schemes to reduce the potential for expansive soils to less than significant.

- Waffle-slabs supported on a system of drilled piers anchored below the zone of moisture change;

- Moisture conditioning subgrade soils to a minimum of 5% above optimum moisture (ASTM D1557) for the full range in depth of surface soils;
- Design of foundations that are resistant to shrink/swell forces of silt/clay soil;
- Excavation of existing materials and replacement by non-expansive soils;
- Reinforcement in footings and slabs. Flexural and shear stresses in slabs should be computed by determining the differential swell for the center lift and edge lift conditions using design procedures recommended by the Post-Tensioning Institute.[2] The differential swell should be used to compute the maximum shear stresses and flexural stresses in floor slabs and flatwork. Use edge moisture variation distance (e_m) of six feet and three feet for the center lift and edge lift conditions, respectively; and
- Provide Post-tensioned, free floating slabs-on-grade.

GS 5.5-4 Base line collectgors (6 to 8 inches in diameter) along the north side of the project site shall be crushed in place and trench backfill compacted (85 to 90 percent). The 4-inch lateral pipeline drains shall be plugged at street crossings.

GS 5.5-5 Light earthmoving equipment (i.e., 613 and/or 623 Earthmovers) shall be used on the project site during construction activities to reduce the potential for groundwater pumping.

GS 5.5-6 Provide positive free drainage away from the structure and make every effort possible to prevent subgrade saturation by measures such as:

- Containing all landscaping in sealed planters, sealing all construction joints with an elastomeric compound, providing the building with eave gutters and downspouts; and
- Routing all drainage impinging upon the site from off-site sources as well as drainage generated on the site away from the proposed residential structures.

5.5.4 - Level of Significance After Mitigation

After implementation mitigation measures 5.5-1 through 5.5-6, geology and soils impacts are reduced to less than significant.

[2] Post-Tensioning Institute; *Design and Construction of Post-Tensioned Slabs on Ground*; First Edition Fourth Printing (1989) by Post-Tensioned Institute.

5.6 - Hazards and Hazardous Materials

GS Lyon Consultants, Inc. (GS Lyon) prepared a Phase I Environmental Site Assessment (ESA) for the project site in January 2006, which included a site reconnaissance and records review. In addition, GS Lyon prepared a supplemental Pesticide Scan report in February of 2006, which included a field investigation and laboratory analysis. The findings of the ESA and Pesticide Scan report are summarized herein, and the complete reports are included in Appendix G of this EIR.

5.6.1 - Existing Conditions

Regulatory Conditions

While the effects of poor management of hazardous wastes are widely publicized, hazardous materials are more commonly used in close proximity to the public. Common hazardous materials referred to as household hazardous wastes (HHWs) by the Environmental Protection Agency (EPA) include solvents, paints, pesticides, herbicides, cleaners, oils, and batteries. More specifically, HHWs are any material discarded from homes, which may threaten human health or the environment when disposed of improperly. These products can include: household cleaners, deodorizers, personal hygiene products, landscaping products, pet care products, paint products, photographic chemicals, swimming pool chemicals, and automotive products and fluids.

Since hazardous materials and wastes are increasingly used and disposed of in urban settings and since they represent such a serious potential threat to human health and safety, numerous laws and regulations have been developed to control their use, storage, disposal, and transport.

Statewide, the California Department of Health Services - Toxic Substances Control Division (DTSC) is responsible for the regulation and control of hazardous materials and wastes. In general, DTSC regulates the generation, handling, storage, disposal, and transportation of hazardous waste, oversees the remediation of contaminated sites, and seeks to reduce the hazardous waste produced in California. While the scope of DTSC activities primarily focuses upon commercial and industrial operations, DTSC also oversees waste evaluation programs and assists in waste determinations to identify what substances and in what concentrations are harmful. The HHW and agricultural chemical collection programs focus on removing dangerous substances from homes and preventing their release into the environment through landfills, sewer systems, and illegal dumping. The California Hazardous Substances Control Law establishes regulations and incentives, which ensure that the generators of hazardous waste employ technology and management practices for the safe handling, treatment, recycling, and destruction of their hazardous wastes prior to disposal.

Locally, the Imperial County Waste Management Department operates the Conditionally Exempt Small Quantity Generator (CESQG) program. A CESQG is an operation that generates no more than 27 gallons or 220 lbs of hazardous waste or 2.2 lbs of extremely hazardous waste per month. In accordance with the program, CESQGs are required to use a licensed hazardous waste hauler to manifest and transport their waste. Additionally, the Regional Water Quality Control Board -

Colorado River Basin Region, the Salton Sea Air Basin Air Pollution Control District, and the City of El Centro Fire Department are responsible for implementing and enforcing hazardous materials and waste regulations, with respect to potential surface or ground water contamination, toxic air emissions, and hazardous materials storage/accident prevention and response plans, respectively. The City of El Centro Fire Department and Imperial County Fire Department have entered a Joint Powers Agreement with regard to hazardous materials emergency response. The El Centro Fire Department Hazardous Material Response program identifies hazardous materials with respect to potential surface or ground water contamination, toxic air emissions, and hazardous materials storage/accident prevention and response plans, respectively; the department also decontaminates and treats exposed victims and contains hazardous leaks, spills, and fires. Typically, the program responds to smaller leak or spill incidents, whereas, the Imperial Valley Hazardous Emergency Assistance Team (IVHEAT), which is comprised of City and County staff and is responsible for remediating and controlling the larger hazardous risk incidents. As previously discussed, the DTSC is the enforcement agency for hazardous materials and waste regulations and is responsible for cleanup operations.

Physical Conditions

The proposed project site is located on approximately 38 acres of land in the County of Imperial, within the Sphere-of-Influence of the City if El Centro, California. The project site lies within a rural agricultural area to the southwest of the City and is situated east, south, and west of City's jurisdictional boundaries. Specifically, the project site is located north of McCabe Road, east of 8th Street, west of State Route (SR) 86 (4th Street) and approximately 0.9 mile south of Interstate 8 (I-8). The project site is almost square in plan view and bounded by the Date Drain No. 3 on the north, northeast, and west. Additionally, review of historical aerial photographs established that the project site was used for agricultural cultivation from at least 1949 and has remained so to date.

Field Reconnaissance

A site reconnaissance, which included a visual observation of surficial conditions at the project site and its adjoining properties, was preformed by a staff environmental specialist of GS Lyon Consultants on January 10, 2006. The objective of the site reconnaissance was to obtain information indicating the likelihood of identifying recognized environmental hazards and/or hazardous materials (including petroleum) in connection with the property. The reconnaissance also included site observations for the presence of polychlorinated biphenyls (PCB's) and/or asbestos containing materials (ACMs), indications of surface or subsurface hydrocarbon or pesticide contamination, the presence of on-site groundwater wells, pits or sumps, wastewater discharge practices, and surface water drainage patterns.

Observations

The project site is a relatively flat undeveloped land that historically supported agricultural production, and lies approximately 30 feet below mean sea level (MSL). The surface soil within the

project site and surrounding area consist predominantly of silty clay and silty clay loams of the Imperial soil group. These loams are formed in sediment and alluvium of mixed origin (Colorado River overflows and fresh-water lakebed sediments). The permeability of these soils is expected to be low to very low.

The groundwater observed within the site area is brackish and is typically encountered at a depth of 8 to 10 feet below the ground surface. Depth to groundwater may fluctuate due to localized geologic conditions, precipitation, irrigation, drainage and construction practices in the region. Based on the regional topography, groundwater flow is assumed to be generally towards the north within the site area. Flow directions may also vary locally in the vicinity of the site.

Dried crop stubble, weeds, and non-native vegetation cover the project site. The project site is bounded on the north, northeast, and west by the Date Drain No. 3, which is an earthen irrigation run-off water ditch. SR-86 (4th Street) defines the eastern boundary, and a concrete-lined Head Ditch forms the southern boundary of the project site. North of the site, high voltage power lines run along the north side of the Date Drain and south of residential uses, and four power poles dispersed along the eastern property line adjacently off-site continue the high voltage power lines from the north. Miscellaneous debris was observed along the northern boundary of the site and included a wood pallet, a cardboard box, and a large piece of Styrofoam. Additionally, three automobile tires were observed near the northeast corner along the northern boundary of the site.

No hazardous materials/waste were observed during the field reconnaissance. No sewer or potable water service is currently provided to the project site. No standing water or major depressions were observed on the project site. Exposed surface soils did not exhibit any obvious signs of discoloration. No obvious evidence (vent pipes, fill pipes, dispensers, etc.) of underground storage tanks (USTs) was noted within the area observed. The potential for contamination of the site by PCBs is unlikely due to the lack of electrical transformers No indications of former structures, such as foundations, were observed on the project site. The potential for ACMs and lead based paint containing materials existing at the project site is highly unlikely due to the lack of prior site development.

Based on the site and surrounding area observations, GS Lyons concluded the following:

- It is unlikely that significant quantities of hazardous materials are stored at the adjacent properties.
- Use of the project site historically and recently has been in agricultural cultivation. Typical agricultural practices in the Imperial Valley consist of aerial and ground application of pesticides and application of chemical fertilizers to both ground and irrigation water. In view of that, a variety of chemicals (including pesticides, fungicides, and fertilizers) could have been applied to the agricultural crops grown on the project site. Consequently, persistent chemicals and elemental residues may exist in the soil and groundwater within and under the project area.

Based on information regarding this issue and the historical uses of the project site, the likelihood of an impact to the subsurface of the subject site by hazardous materials appears to be low.

- No service station, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted adjacent the project site.
- There are no industrial areas within 1.0 mile of the project site.

Adjacent Properties

GS Lyon Consultants also identified the existing land uses on adjacent properties during the site reconnaissance. The following observations were noted in the report:

- North of the project site: Date Drain No. 3 runs along the northern project boundary. Rural single-family residential homes are located north of the site across the Date Drain.
- East of the project site: SR-86 runs north-south along the eastern boundary. The newly constructed residential subdivision (Countryside Estates) is located east of the site across SR-86.
- South of the project site: A concrete-lined Head Ditch runs adjacently along the southern project boundary. Two rural residences are located south of the Head Ditch on the western side below the project site. Properties to the south of these uses consist of agricultural fields in production.
- West of the project site: Date Drain No. 3 runs along the western project boundary. A fallow agricultural field is located west of the site across the Date Drain.

Regulatory Records Review

CEQA requires that the lead agency consult the lists of hazardous waste sites compiled by various state agencies, pursuant to Government Code Section 65962.5 (California Public Resources Code Section 21092.6). Databases from federal and state regulatory agencies were reviewed to identify any sites known to use, generate, store, treat and/or dispose of hazardous materials and chemicals or release incidents of such materials, which may have impacted the project site. GS Lyon Consultants reviewed the available regulatory databases provided by Environmental Data Resources Inc., (EDR) dated January 11, 2006. The environmental and regulatory databases that were included in the review follow the ASTM standard E1527-00 guidelines. EDR conducted the database search by designating a central point within the project site and then expanding the database search outward by a one-mile radius in order to compile a comprehensive list that included the project site and surrounding area (see Overview Map, page 2, Appendix G). A complete description of each database is included in the Appendix G of the EIR. The following is a summary of the findings of the EDR report.

Table 5.6-1: Project Area Database Search

Map Findings Summary							
Database	**Search Distance (Miles)**	**<1/8**	**1/8 - 1/4**	**1/4 - 1/2**	**1/2 - 1**	**Direction**	**Total Plotted**
Federal ASTM Standard							
NPL	1.000	0	0	0	0	--	0
Proposed NPL	1.000	0	0	0	0	--	0
Delisted NPL	1.000	0	0	0	0	--	0
NPL Liens	TP	NR	NR	NR	NR	--	0
CERCLIS	0.500	0	0	0	NR	--	0
CERC-NFRAP	0.250	0	0	0	NR	--	0
CORRACTS	1.000	0	0	0	0	--	0
RCRA-TSD	0.500	0	0	0	NR	--	0
RCRA Lg. Quan. Gen.	0.250	0	0	NR	NR	--	0
RCRA Sm. Quan.Gen.	0.250	0	0	NR	NR	--	0
ERNS	TP	NR	NR	NR	NR	--	0
HMIRS	TP	NR	NR	NR	NR	--	0
US ENG CONTROLS	0.500	0	0	0	NR	--	0
US INST CONTROLS	0.500	0	0	0	NR	--	0
DOD	1.000	0	0	0	0	--	0
FUDS	1.000	0	0	0	0	—	0
US BROWNFIELDS	0.500	0	0	0	NR	—	0
CONSENT	1.000	0	0	0	0	—	0
ROD	1.000	0	0	0	0	—	0
UMTRA	0.500	0	0	0	NR	—	0
ODI	0.500	0	0	0	NR	—	0
TRIS	TP	NR	NR	NR	NR	—	0
TSCA	TP	NR	NR	NR	NR	—	0
FTTS	TP	NR	NR	NR	NR	—	0
SSTS	TP	NR	NR	NR	NR	—	0
PADS	TP	NR	NR	NR	NR	—	0
MLTS	TP	NR	NR	NR	NR	—	0
MINES	0.250	0	0	NR	NR	—	0
FINDS	TP	NR	NR	NR	NR	—	0
RAATS	TP	NR	NR	NR	NR	—	0

Table 5.6-1 (Cont.): Project Area Database Search

Database	Search Distance (Miles)	<1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	Direction	Total Plotted
State ASTM Standard							
AWP	1.000	0	0	0	0	—	0
Cal-Sites	1.000	0	0	0	0	—	0
CA Bond Exp. Plan	1.000	0	0	0	0	—	0
NFA	0.250	0	0	NR	NR	—	0
NFE	0.250	0	0	NR	NR	—	0
REF	0.250	0	0	NR	NR	—	0
SCH	0.250	0	0	NR	NR	—	0
Toxic Pits	1.000	0	0	0	0	—	0
State Landfill	0.500	0	0	0	NR	—	0
CA WDS	TP	NR	NR	NR	NR	—	0
WMUDS/SWAT	0.500	0	0	0	NR	—	0
Cortese	0.500	0	0	0	NR	—	0
SWRCY	0.500	0	0	0	NR	—	0
LUST	0.500	0	0	0	NR*	—	0
CA FID UST	0.250	0	0	NR	NR	—	0
SLIC	0.500	0	0	0	NR	—	0
UST	0.250	0	0	NR	NR	—	0
HIST UST	0.250	0	0	NR	NR	—	0
AST	0.250	0	0	NR	NR	—	0
SWEEPS UST	0.250	0	0	NR	NR	—	0
CHMIRS	TP	NR	NR	NR	NR	—	0
Notify 65	1.000	0	0	0	1	N	1
DEED	0.500	0	0	0	NR	—	0
VCP	0.500	0	0	0	NR	—	0
CLEANERS	0.250	0	0	NR	NR	—	0
WIP	0.250	0	0	NR	NR	—	0
HAZNET	TP	NR	NR	NR	NR	—	0
EMI	TP	NR	NR	NR	NR	—	0
Tribal Records							
INDIAN RESERV	1.000	0	0	0	0	—	0
INDIAN LUST	0.500	0	0	0	NR	—	0

Table 5.6-1 (Cont.): Project Area Database Search

Database	Search Distance (Miles)	<1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	Direction	Total Plotted
INDIAN UST	0.250	0	0	NR	NR	—	0
EDR Proprietary Historical Database							
Manufactured Gas Plants	1.000	0	0	0	0	—	0

* Contains listed LUST site that is outside search distance.
0 = No sites in Search Distance identified
TP = Target Property
NR = Not Requested at this Search Distance
Source: GS Lyon Consultants, Inc. January 2006.

Proposition 65 Notification Records (Notify 65)

Proposition 65 Notification Records (Notify 65) contains facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk. The source of the information comes from the State Water Resources Control Board's Proposition 65 databases. A review of the Notify 65 list, as provided by EDR, has revealed that there is 1 Notify 65 risk site (Gene's 76) located approximately 0.5 to 1 mile north of the project site at 2390 South 4th Street. The listing consisted of a drinking water aquifer potentially affected by a leak in a gasoline tank caused by corrosion and was confirmed in May 1989. The abatement method was to excavate and treat. This involved removal of contaminated soils and treatment of contaminated soils. Remedial action of the hazard occurred in August 1991 and the case was closed in September 1996. Furthermore, the listed hazard site is located at an elevation lower than the project site and the groundwater flow is assumed to be generally towards the north within the project site area. Therefore, based the conditions discussed above, there is no identified hazard risk located near the project site.

Leaking Underground Storage Tank (LUST)

The LUST database contains an inventory of reported leaking underground storage tank incidents. The source of the information is the California State Water Resources Control Board. The EDR report identified one site (Gene's 76) located within approximately 0.5 to 1 mile north of the project site at 2390 South 4th Street. However, upon further investigation, the hazard risk site was not included in the Map Findings Summary (Table 5.6-1) under a LUST listing because the hazard site is located outside the search distance of the LUST database (i.e., 0.5 miles) and thus not considered to pose a hazardous risk on the proposed project given the separation. This listed LUST site is the same as the Notify 65 hazard site discussed above in detail. As previously mentioned, the LUST site is located at an elevation lower than the project site and the groundwater flow is assumed to be generally towards the north within the project site area. Therefore, based the conditions discussed above, there is no identified LUST risk located near the project site.

In addition to the database searches performed by EDR, GS Lyon Consultants, Inc. also performed additional regulatory records reviews as discussed below:

Sanborn Fire Insurance Map Review

Sanborn Fire Insurance Maps (SFIMs) are large scale maps depicting the commercial, industrial, and residential sections of various cities across the United States. Since the primary use of the maps was to assess the buildings that were being insured, the existence and location of fuel storage tanks, flammable or other potentially toxic substances, and the nature of businesses are often shown on these maps. SFIMs were reviewed to evaluate prior land use at the subject site and adjacent properties. GS Lyon's search of SFIMs revealed no coverage for the subject site and adjacent properties due to the rural undeveloped nature of the site.

Historic Topographic Maps Review

Historic topographic maps, United States Geological Survey 7.5-minute El Centro, California Quadrangle, did not show development on the site.

Historic Telephone and Polk Directories Review

Telephone directories for the Imperial County, which included the City of El Centro businesses published in 1941, 1955, 1964, 1974, and 1994, were reviewed. No service station, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted at or in the immediate vicinity of the project site. The subject site is not covered by the Polk Directories due to the rural nature of the site.

Title Information/Environmental Liens Review

No title documents were provided by the client for our review and no checks for environmental liens were made.

Historical Aerial Photographs

Historical aerial photographs from the Imperial Irrigation District (IID) were reviewed to help establish the historical development of the project site. Reproductions of the historical aerial photographs reviewed are included in Appendix G of this EIR. Using the aerial photographs, GS Lyon Consultants, Inc. concluded these changes have taken place on the property within the stated periods of time:

- The 1949 aerial photograph shows the subject property as an agricultural field in production. There are is a single-family residential home outside the margins of the subject site to the south and another to the southeast. The site is surrounded by agricultural fields to the north, south, east, and west.
- The 1965 and 1972 aerial photographs are similar to the 1949 photograph.

- The 1979 aerial photograph shows single-family rural homes north of the subject site.
- The 1984 and 1992 aerial photographs are similar to the 1979 photograph.

Furthermore, findings from the ESA supported the need for near surface soil testing for pesticide contamination. This Pesticide Scan included the collecting of four (4) surface soil samples for pesticide contamination analysis. The samples were collected on January 16, 2006 from locations scattered throughout the project site and were taken from the upper 6 to 12 inches of soil. Subsequently, the samples were analyzed and the observations and findings are presented below.

5.6.2 - Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant hazards and hazardous materials impact if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;
- Impair implementation or physically interfere with an adopted emergency response plan or and emergency response plan or an emergency evacuation plan;
- Emit hazardous emissions or handle hazardous or acutely hazardous, materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Affect a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would create a significant hazard to the public or environment;
- Expose people or structures to significant risk of loss, injury, or death involving wildland fires, including areas where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or
- If the project has environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Impacts

Short-Term Impacts

Construction Activities

Grading and construction activities may involve the limited transport, storage, usage, or disposal of hazardous materials, such as the fueling/servicing of construction equipment, such activity is short-

term or one-time in nature and is subject to federal, state, and local health and safety requirements. Additionally, during the construction phase the proposed project will likely generate hazardous waste such as paint; thus, the project will be subject to the Conditionally Exempt Small Quantity Generator Program, which will require that contractors employ a licensed hazardous waste hauler to manifest and transport such waste. This requirement ensures that no significant impacts from short-term land uses will occur.

Long-Term Impacts

As noted in Table 5.6-1, the project site is not listed on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. GS Lyons performed a Phase I ESA for the project site. Based on the site reconnaissance, and a review of physiographic, historical, and regulatory information, there is no evidence of recognized environmental concerns in connection with the project site including past, present, or potential releases of hazardous substances at the site; or other potential or existing environmental conditions on site and/or the surrounding properties. However, there is the potential for previously unknown hazardous materials to be encountered during the project development activities from historical use of the project site. Such contamination if found, is subject to existing federal, state, and local policies and procedures will require the delineation and remediation of sites containing hazardous substances to the satisfaction of the designated local enforcement agency, and in accordance with the State of California Hazardous Substances Control Law. Moreover, it is unlikely that any such contamination, if to occur, will not extend beyond the capacities of typical remediation measures.

Pesticide Use/Groundwater and Soil Contamination

Review of historical aerial photographs indicates the subject site was utilized for agricultural purposes from at least 1949 and has remained so to date. Agricultural activities rely heavily on chemical fertilizers, herbicides, and pesticides to produce food. As such, pesticide residues may exist in the soil and groundwater on-site. Chlorinated hydrocarbons, including DDT, were commonly utilized as pesticides in the project area during the 1950s and early 1960s, until they were banned in 1965. A variety of chemicals could have been applied to the agricultural crops grown on the project site. Residues in the soil can leach into the groundwater and surface water bodies for many years. These residues may exist in the soil and groundwater within and under the project area. It is not known if environmentally persistent pesticides were applied to the subject site prior to the late 1949's when it was utilized for agricultural purposes. The only conclusive method to determine concentrations of pesticides in the soil would be to conduct soil sampling.

GS Lyon sampled near surface soil from four (4) locations throughout the project site. Analytical test results indicate the presence of pesticides in the near surface soils on the project site. Moreover, the analytical results show the pesticide DDE was found in each of the four soil samples. Other pesticides that were tested for were either below detectible limits or non-existent in the samples. The concentrations for the pesticide DDE in the soil encountered at the site are below the current threshold (action) limits (Preliminary Remediation Goals) as determined by the State Department of

Toxic Substance Control (DTSC). For specific sample locations and DDE concentrations, see Pesticide Scan report in Appendix G of this EIR.

The proposed development could minimally limit the use of pesticides on nearby agricultural land located west of the site across Austin Road should they remain undeveloped and under agriculture production. However, the use of pesticides and herbicides are essential at this time in order to minimize the impacts of weeds and insects on the crops, maximize harvesting efficiency, and to be competitive.

The project site is underlain by a subsurface agricultural tile drainage system (4-inch diameter plastic or clay perforated pipelines encapsulated by sand/gravel envelope) installed at a depth of 5.0 to 6.5 feet. The tile drains remove excess water to maintain groundwater below the root systems of crops and remove soluble salts and compounds leached from the soil during irrigation. The tile drain pipelines flow or are pumped into the open earthen drains/ditches along the north and west margins of the project site. According to the tile drain map (see Appendix G of this EIR), excess water is transferred to the Date Drain No. 3 at the northeast corner of the project site.

The U.S. Geological Survey, at the request of the Imperial Irrigation District (IID), performed a "one time" water quality study of 27 irrigation drains throughout the Imperial Valley during the summer of 1994. Review of the study results indicate that the drains sampled contained less than the regulatory limits of arsenic, selenium, and nitrates for drinking water.

Household Hazardous Wastes

Long-term activities on the developed project site will result in an increase in the use and storage of common household hazardous wastes, such as household cleaning and janitorial products, herbicides, insecticides, solvents, and fuel. However, Imperial County operates a household hazardous waste collection and reuse facility located at 702 East Heil Avenue in El Centro that allows residents to deliver and properly dispose of their household hazardous wastes.

School Activities

The project site is located within approximately 0.75 miles of Esther Huff School to the southwest, within approximately 0.85 miles of Desert Garden School to the north, and within approximately 0.93 miles of Gaede Preschool and Day Care to the northwest. The adjoining residential land uses would not result in the use, storage, and/or disposal of hazardous materials or wastes that would pose a serious health risk to school activities. As discussed earlier, the results of a Phase I ESA determined that there are no apparent environmental conditions affecting the site; therefore, the potential impact on nearby schools is at a level less than significant.

Emergency Services

In general, the City of El Centro's Standardized Emergency Management System (SEMS) Multihazard Functional Plan (MHFP) is to respond to emergency situations with a coordinated system of emergency service providers and facilities. The City Fire Department is responsible for

coordinating emergency service planning and preparation for response to and recovery from disasters. As stated in the City's General Plan - Safety Element (Disaster Preparedness - Policy 6.1), the City is responsible for the development of local preparedness plans and multi-jurisdictional cooperation and communication for emergency situations, consistent with the Multihazard Functional Planning Guidance. Additionally, the City is responsible for monitoring, enforcing, and updating, as appropriate, all emergency needs as conditions in the planning area change.

Wildland Fires

The project site is in an area that is quickly urbanizing with development approaching the site from the north and east, with SR-86 (4th Street) defining the eastern boundary and Interstate 8 (I-8) approximately 0.9 miles north of the project site. Therefore, due to the intensity of development in the project area, the project site is not located in an area that is considered to be subject to wildland fire hazards.

5.6.3 - Mitigation Measures

HM 5.6-1 Prior to any earth moving activities on the project site, debris consisting of a wood pallet, dry brush, Styrofoam, cardboard and automobile tires found at the northern portions of the project site shall be removed and properly disposed.

HM 5.6-2 Prior to the issuance of a grading permit, the project applicant shall coordinate with DTSC to review and approve the results of the pesticide scan. DTSC shall provide written verification that no further action is required in relation to the presence of DDE in near surface soils. If DTSC determines that the soils exceed the acceptable limits the soils shall be remediated and/or properly disposed of per DTSC requirements.

5.6.4 - Level of Significance After Mitigation

The implementation of the mitigation measures listed above will reduce potential project related hazardous materials impacts to less than significant.

5.7 - Noise

This section incorporates information contained in the Environmental Noise Assessment prepared for the proposed project by VRPA Technologies, Inc. (VRPA) in March 2006. The complete report is contained in Appendix H of this EIR.

5.7.1 - Existing Conditions

Regulatory Conditions

The U.S. Department of Housing and Urban Development (HUD) has set a goal of 65 dBA Ldn as a desirable maximum exterior standard for residential units developed under HUD funding. This level is also generally accepted within the State of California. While HUD does not specify acceptable interior noise levels, standard construction of residential dwellings constructed under Title 24 standards typically provides in excess of 20 dBA of attenuation with the windows closed. Based on this premise, the interior Ldn should not exceed 45 dBA Ldn. Additionally, the State Office of Noise Control has established acceptable noise limits for sensitive land uses such as dwelling units and schools, with 65 dBA CNEL being normally acceptable and 70 dBA CNEL being conditionally acceptable for exterior uses.

The City of El Centro has an exterior noise standard of 60 dB and an interior noise standard of 45 dB,

Physical Conditions

Noise Measurement Scales

The standard unit of measurement of the loudness of sound is the decibel (dB). Typical human hearing can detect changes in sound levels of approximately 3 dB under normal conditions. Changes of 1 to 3 dBA are detectable under quiet, controlled conditions, and changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is discernable to most people in an exterior environment while a change of 10 dBA is perceived as doubling the noise. Several rating scales exist to analyze the adverse effects of noise on a community. The following measurements are used to define noise levels:

Equivalent Noise Level (Leq) - The measurement of sound energy over a specified period (usually 1 hour). Leq represents the amount of variable sound energy received by a receptor over a timed interval in a single numerical value. For example, a 1-hour Leq noise level measurement represents the average amount of acoustical energy that occurred in one hour. In addition, variations in sound levels may be addressed by statistical methods. The simplest of these are the maximum (L_{max}) and minimum (L_{min}) noise levels, which are the highest and lowest levels observed. Other variations include the L_{50}, identifying percentage of time that the noise level standard is exceeded during fifty percent of an hour (i.e. 30 minutes) or the L_{25} identifying the percentage of time that the noise level standard is exceeded during twenty-five percent of an hour (i.e. 15 minutes), etc.

Community Noise Equivalent Level (CNEL) - The CNEL noise metric is based upon 24 hours of measurement, the CNEL measurement applies a time-weighted factor that is designed to emphasize noise events that occur during the evening (7 PM to 10 PM) and nighttime (10 PM to 7 AM) hours. Noise produced during the evening hours are penalized by 5 dBA while noise that occurs during the nighttime hours is penalized by 10 dBA.

Environmental Noise Descriptors

Most environmental noise sources produce varying amounts of noise over time, so the measured sound levels also vary. For example, noise produced during an aircraft overflight will vary from relatively quiet background levels before the overflight to a maximum value when the aircraft passes overhead, then returning down to background levels as the aircraft leaves the observer's vicinity. Similarly, noise from traffic varies with the number and types of vehicles, speed, and proximity to the observer. Table 5.7-1 identifies the typical sound level associated with various noise generators.

Table 5.7-1: Examples of A-Weighted Sound Levels

Sound	Sound Level (dBA)
Jet aircraft, 100 feet	130
Rock music with amplifier	120
Thunder, snowmobile (operator)	110
Boiler shop, power mower	100
Orchestral crescendo at 25 feet, noisy kitchen	90
Busy street	80
Interior of department store	70
Ordinary conversation, 3 feet away	60
Quiet automobile at low speed	50
Average office	40
City residence	30
Quiet country residence	20
Rustle of leaves	10
Threshold of hearing	0
Source: Michael Brandman Associates, March 2006.	

Sound Propagation and Attenuation

For purpose of sound propagation, noise sources may be classified as point sources or line sources. Point sources usually are localized, such as a piece of machinery, and are at a distance where sound will propagate in a spherical pattern. Sound levels from point sources attenuate or drop-off at the rate of 6 dB for each doubling of distance. Sound from line sources, such as a highway, propagate in a cylindrical pattern. Sound levels from line sources attenuate at the rate of 3 dB per doubling of distance.

In addition to attenuation by wave spreading, sound levels also may be attenuated by air and ground absorption, and from shielding by natural or man-made obstacles in the sound path. Noise barriers (walls or earth berms) are features that are commonly constructed to interrupt noise propagation and thereby reduce noise levels. Other factors that will also influence sound propagation are wind and atmospheric temperature inversions. Obviously, all of these factors can work together influencing sound propagation.

Existing Noise Sources

Traffic

Traffic volumes collected from Katz, Okitsu & Associates at speeds of 40 miles per hour along State Route (SR) 86 were entered into the noise model (Sound 2000[1]) to estimate noise levels at the proposed residential development. Additionally, VPRA staff conducted noise level measurements within the project site on November 17, 2005. The purpose of the measurements was to evaluate the accuracy of the noise model in describing traffic noise exposure within the project site. The locations described below and as shown on Exhibit 5.7-1, are representative of the approximate location of the closest proposed building setback from State Route 86.

- Location 1: 50 feet west of SR 86 center-line (North side of site plan)
- Location 2: 50 feet west of SR 86 center-line (South side of site plan)

As previously noted, the City of El Centro has an exterior noise standard of 60 dB and an interior noise standard of 45 dB. As shown in Table 5.7-2, the existing noise levels at each receptor are currently above the City of El Centro's General Plan standards for exterior noise.

Table 5.7-2: Existing Noise Conditions

Receptor	Existing Leq Measured
Receptor 1	60.7
Receptor 2	61.0
Source: VRPA, March 2006.	

5.7.2 - Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant noise impact if it would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

[1] Sound 2000 is the Caltrans version of FHWA's Stamina 2.0/Optima Traffic Noise Prediction Programs

- Expose persons to, or generate excessive groundborne vibration or groundborne noise levels. This impact will occur if groundborne vibration exceeds 100 vibration decibels (VdB) (a level usually perceived as annoying to building occupants);
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
- Expose persons residing or working in the project area to excessive noise levels as a result of activities at an airport.

Additionally, the proposed project is subject to the City of El Centro noise standards as outlined in the City's General Plan; thus the project would result in a significant noise impact if it would:

- Expose persons to an exterior CNEL that exceeds 60 dB at the proposed residential lots; or
- Expose persons to an interior CNEL that exceeds 45 dB at the proposed residences.

Impacts

Short-Term Impacts

Short-term noise impacts consist of noise associated with the construction for the proposed project. Construction noise impacts are short-term impacts in that they occur only during periods of project construction. Earthmoving, materials handling, stationary, and impact equipment and vehicles generate noise during clearing, excavation, grading, structure, roadway, and utility construction operations associated with the development of the proposed project.

Actual noise levels generated by equipment and experienced at nearby and adjacent residences during construction would vary hourly, daily, and weekly because the number and types of equipment used would vary. Noise could be produced by diesel powered motor graders, tractors, fork lifts, loaders, rollers, asphalt pavers, generators, flatbed trucks, delivery trucks, and rollers. The proposed project would generate two types of construction noise: equipment noise and traffic noise. During the construction of the project, noise from construction activities would potentially impact noise-sensitive land uses in the immediate area. Activities involved in construction would generate noise levels in the range of 80 dBA to 87 dBA. Construction activities will be temporary in nature and in accordance with City noise standards, which limits construction activities to between 7:00 AM and 7:00 PM. However, while short-term in nature and adherence to the City's standards reduces noise impacts, construction noise could result in annoyance for nearby sensitive receptors if the equipment is not properly muffled or maintained.

Groundborne Vibration. Groundborne vibration is measured by the velocity of the vibration oscillations. As with noise, a logarithmic decibel scale (VdB) is used to quantify vibration intensity. When groundborne vibration exceeds 75 to 80 VdB, it is usually perceived as annoying to building occupants. The degree of annoyance is dependent upon type of land use, individual sensitivity to vibration, and the frequency of the vibration events. Typically, vibration levels must exceed 100 VdB before building damage occurs.

The primary vibratory source during the construction of the project will be large bulldozers. Typical bulldozer activities generate an approximate vibration level of 87 VdB at a distance of 25 feet. This is below the threshold at which building damage occurs. As a bulldozer moves within about 100 feet of the residential property lines, it is possible that vibration will be perceived by the residents; however, the vibration level would be less than significant.

Long-Term Noise Impacts

In relation to residential projects, long-term noise impacts are generally associated with an increase in vehicle traffic in a project area. To analyze traffic noise levels, the Federal Highway Administration's (FHWA) Highway Traffic Noise Prediction methodology was used. Existing or "baseline" traffic noise levels are established based on previously collected traffic data (see Appendix I, Traffic Impact Study) and using Sound 2000 modeling. Once existing levels are established, project buildout noise levels, based on expected year 2008 traffic forecasts, were calculated and compared to both the existing noise level and the maximum allowable noise exposure based on the El Centro General Plan.

An analysis of the project impacts on sensitive receptors in the surrounding area was conducted to determine whether the project's traffic would have an impact on these sensitive receptors. Approximately 700 feet north of the proposed project is a home that is located about 50 feet from the centerline of SR 86. This home will be used to represent all sensitive receptors in the area because of its close proximity to SR 86. Table 5.7-3 shows the impacts of the proposed project traffic to offsite receptors. Results of the analysis indicate that the proposed traffic alone would not cause significant impacts to nearby receptors. It should also be noted that when the project traffic is added to the future no project conditions, there is only an increase of 1.4 Leq.

Table 5.7-3: Noise Impacts from Proposed Project (Leq)

Receptor	Project Traffic Impacts Predicted	Future (2008) No Project Predicted	Future (2008) Plus Project Predicted	Future (2008) No Project & Future Plus Project Difference
Receptor 1	59.5	65.1	66.5	1.4
Source: VRPA, March 2006.				

Aircraft Noise

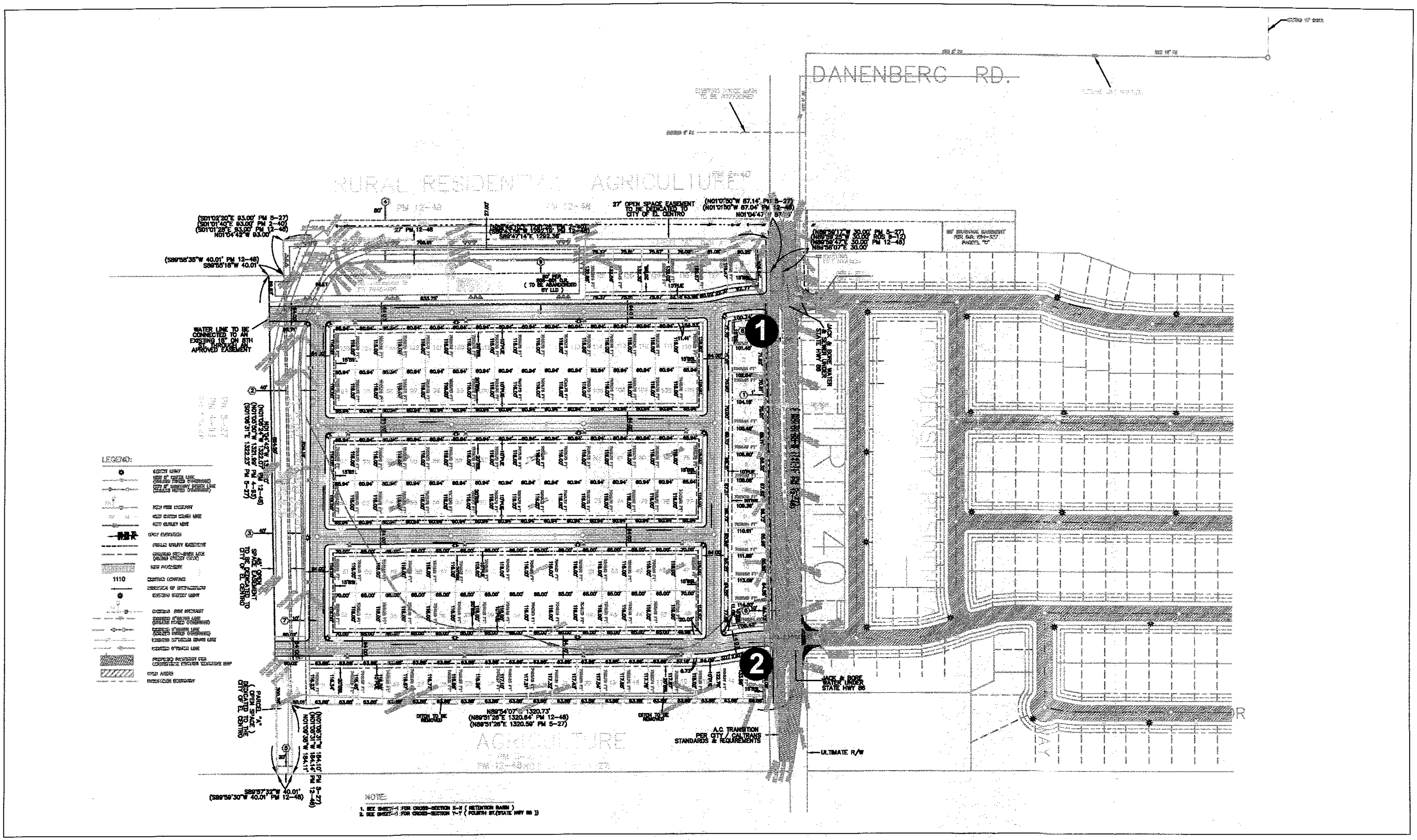
The CEQA Guidelines outline that a significant noise impact may occur if persons are exposed to excessive noise because of airport activities. The nearest airport, Imperial County Airport is located over 3.5 miles to the north of the project site and the project is not located in an area regulated by an airport land use plan; therefore, the proposed project is not anticipated to be affected by aircraft noise.

5.7.3 - Mitigation Measure

N 5.7-1 Prior to the issuance of grading permits, the grading plans shall state that all gas and diesel power equipment shall be properly muffled and maintained. Construction activities should be limited to the hours and days permitted by the City of El Centro.

5.7.4 - Level of Significance after Mitigation

After implementation mitigation measure 5.7-1, noise impacts are reduced to less than significant.



Source: Development Design & Engineering, Inc., June 2006.

Michael Brandman Associates

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Exhibit 5.7-1
Noise Receptor Locations

5.8 - Public Services and Utilities

This section is based upon consultation with the individual service providers that will service the project site. Additional information was provided by the El Centro Fire Department, the El Centro Police Department, the McCabe Union Elementary School District, the Central Union High School District, the El Centro Public Works Department, the California Integrated Waste Management Board, the Environmental Protection Agency, and the Imperial Irrigation District. Information was also provided by the City of El Centro General Plan. Specifically, this section will address fire protection and emergency medical services, police protection, public education, library services, health services, solid waste, potable water, wastewater, electricity, and gas.

5.8.1 - Fire Protection and Emergency Medical Services

Existing Conditions

Regulatory Conditions

The El Centro Code of Ordinances adopts the 1994 Uniform Building Code (2001 Edition) and the California Fire Code (2001 Edition) by reference. The Uniform Building Code prescribes performance characteristics and materials to be used to achieve acceptable levels of fire protection. The California Fire Code outlines fire protection standards for the safety, health, and welfare of the public and contains standards for building design, and water supply.

Physical Conditions

The El Centro Fire Department (ECFD) provides fire protection and emergency medical services to the City of El Centro. Additionally, the ECFD provides fire suppression, advanced life support, basic life support, fire prevention, consulting, and investigative services; community disaster preparedness, hazardous materials response and mitigation; confined space rescue services; and water rescue.

Staffing

The ECFD is staffed by 37 full time employees; 33 of whom are assigned to shift and the remaining four to administrative positions. All firefighters are trained emergency medical technicians and 12 are capable of providing advanced life support. In addition, the ECFD has 12 hazardous materials specialists, six confined space rescuers, and two bomb technicians.

Fire personnel work 56/112 shifts, in which they are on-duty for 24 hours and then off-duty for 24 hours. There are three shifts, with 11 persons assigned to each shift.

Apparatus

The ECFD fleet consists of the following apparatus:

- 4 Fire Engines (includes pumpers)
- 1 Ladder Truck
- 1 Rescue Squad
- 1 Mobile Air Compressor

- 1 Incident Command Vehicle
- 1 Hazardous Materials Unit

Stations

The ECFD operates two fire stations. The characteristics of each station are summarized in Table 5.8-1.

Table 5.8-1: Fire Station Summary

Station	Location	Distance from Project Site	Apparatus
Station 1	775 State Street	2.4 miles	1 Fire Engine; 1 Super Duty Rescue Squad; 1 Mobile Air Compressor; 1 Pumper (reserve)
Station 2	900 S. Dogwood Road	2.7 miles	1 Fire Engine; 1 Ladder Truck; 1 Pumper (reserve)
Source: El Centro Fire Department. Fleet and Facilities Maintenance, 2000.			

Response Times

The Fire Department uses the National Fire Protection Association standard 1710 (2001 edition) to measure service delivery. This standard requires that the fire engine company responding to a fire arrive at the fire in four minutes of less after receipt of the alarm. The standard further requires that the remainder of the first alarm assignment arrive less than eight minutes after the alarm. In addition, the standard requires the arrival of a Basic Life Support unit within four minutes to a medical emergency and the arrival of an Advanced Life Support unit with eight minutes. Table 5.8-2 summarizes the percent of time the Fire Department has met its response time standards.

Table 5.8-2: Response Time Summary

Response Time Metric	2003	2004	2005
% of Time Standard Has Been Met	62.3%	57.2%	55.6%
Source: El Centro Fire Department, December 2, 2005.			

Mutual Aid Agreements

The ECFD participates in mutual or automatic aid agreements with the Brawley, Calipatria, Calexico, Holtville, Imperial, Westmorland, Winterhaven, and Yuma fire departments.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicate that a project would result in a significant fire and/or emergency medical impact if it would:

- Result in a substantial adverse physical impact associated with the provision of new or physically altered fire service facilities; or

- Result in the need for new or physically altered fire service facilities in order to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

Impacts

Figures provided by the ECFD indicate that a typical 1 and 2 family unit generates an average of 0.252 alarm calls on an annual basis. Table 5.8-3 summarizes the estimated alarm calls the proposed project would create.

Table 5.8-3: Estimated Alarm Calls

Alarm Call Rate	Calculation	Project Estimated Alarm Calls
0.252 alarm calls per household per year	(131 dwelling units) x (0.252 alarm calls per household per year)	34 alarm calls per year
Source: El Centro Fire Department, December 2, 2005.		

The proposed project is estimated to generate 34 alarm calls per year.

The ECFD has indicated that it does not believe that estimated alarm calls per year provides an accurate representation of the proposed project's demand for fire protection and emergency medical services. The Fire Department has stated that it cannot currently meet the existing needs of the community and implementation of the proposed project would exacerbate this condition. In addition, the Fire Department indicates that it has identified a need for two new fire facilities to provide adequate fire protection for new development in El Centro.[1]

The developer will be required to enter into an agreement that will mitigate the operational impacts to fire services as a result of project approval and implementation.

Mitigation Measures

PSU 5.8-1 Prior to recordation of the final map, the applicant shall be required to enter into an agreement that will mitigate the operational impacts to fire services caused by the approval of the project. The description of the security for the agreement and the method of payment will be included in the agreement.

5.8.2 - Police Protection

Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory standards that are applicable to approval of the proposed project.

[1] Personal communication, Chief Chris Petree, December 2, 2005.

Physical Setting

The El Centro Police Department (ECPD) is the primary law enforcement agency in the City of El Centro. The ECPD headquarters is located at 150 N. 11th Street and is approximately 3 miles from the project site. The ECPD also operates substations at the El Centro Community Center, located at 375 S. 1st Street, and at Posada Del Sol, located at 1400 N. Imperial Avenue. The Community Center substation is used for community-oriented policing activities, while the Posada Del Sol substation is primarily used for report writing.

Staffing

The established staffing ratio set forth by the ECPD is 1.2 officers per 1,000 residents. The ECPD has a total of 49 sworn officer positions, of which, 47 are currently filled. Using the City's most recent population estimate of 40,030 residents[2], the ECPD has an existing officer-to-resident ratio of 1.14 officers per 1,000 residents. Broken down by rank, the ECPD's sworn personnel consists of:

- 1 chief of police
- 1 captain
- 3 lieutenants
- 6 sergeants
- 36 police officers

Included in the sworn ranks are two school resource officers, one assigned to the two high schools and the other assigned to the two junior high schools. In addition, the ECPD operates a traffic unit, an emergency response team, and a gang enforcement unit.

The ECPD also employs 23 non-sworn personnel assigned to various duties including animal control, communications, community oriented policing, computer information systems, crime analysis, crime prevention, evidence, parking enforcement, and records.

The ECPD has a minimum staffing requirement of four sworn officers plus one supervisor on duty per 12 hour shift.

Calls for Service

Between 2000 and 2004, calls for service ranged between 48,099 and 53,846. Calls for police services are summarized below in Table 5.8-4.

Table 5.8-4: Police Department Calls for Service

2000	2001	2002	2003	2004
48,340	48,099	50,368	53,846	46,830
Source: El Centro Police Department. 2004 Annual Report, 2005.				

[2] California Department of Finance. City/County Population and Housing Estimates, May 2005.

Reported Crime

FBI Crime Index crimes are summarized in Table 5.8-5. Serious and violent crimes per 1,000 persons ranged between 46.36 and 63.76 between 2000 and 2004.

Table 5.8-5: FBI Crime Index

Crime	Reported Crimes				
	2000	2001	2002	2003	2004
Homicide	2	2	1	0	0
Rape	5	10	14	7	17
Robbery	39	38	49	52	61
Assault	527	519	432	456	456
Burglary	632	638	564	584	642
Larceny	1,012	933	504	893	878
Grand Theft Auto	209	229	201	198	218
Total	**2,441**	**2,396**	**1,775**	**2,194**	**2,278**
Crimes Per 1,000 People	**63.76**	**62.58**	**46.36**	**57.31**	**56.60**
Source: El Centro Police Department. 2004 Annual Report, 2005.					

Response Times

The ECPD's most recent daytime and nighttime average response times are summarized in Table 5.8-6. The ECPD does not have prescribed response time standard. Note that response times are influenced by the distance an officer must travel to reach an incident and traffic conditions.

Table 5.8-6: Average Police Department Response Times

Daytime Response	Nighttime Response
5:06	3:12
Source: El Centro Police Department, November 17, 2005.	

Mutual Aid Agreements

For large scale emergencies, the ECPD adheres to the mutual aid agreement set forth by the State Office of Emergency Services Standardized Emergency Management System. For smaller incidents in the sphere-of-influence, the ECPD can request mutual aid from the Imperial ECPD, the Imperial County Sheriff's Office, and the California Highway Patrol.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant impact on police protection if it would:

- Result in a substantial adverse physical impact associated with the provision of new or physically altered police protection facilities; or
- Result in the need for new or physically altered police protection facilities in order to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

Impacts

The ECPD has indicated that the proposed project would increase demands for police protection and would have an adverse impact on response times and staffing ratios. The ECPD has stated that this would be a significant impact and implementation of the proposed project would exacerbate this condition[3].

The developer will be required to enter into an agreement that will mitigate the operational impacts to police services as a result of project approval and implementation.

Mitigation Measures

PSU 5.8-2 Prior to recordation of the final map, the applicant shall be required to enter into an agreement that will mitigate the operational impacts to police services caused by the approval of the project. The description of the security for the agreement and the method of payment will be included in the agreement.

5.8.3 - Public Education

Existing Conditions

Regulatory Conditions

Assembly Bill 2926, signed into law in September 1986, gave school district governing boards the authority to impose fees, charges, dedications or other form of requirement against any development project for the construction or reconstruction of school facilities. The State Allocation Board (SAB) adjusts the statutory level of fee (Level I Fees) that can be levied every two years.

In August 1998, Senate Bill 50 (SB 50) was signed into law, which includes, in part, the Leroy F. Greene School Facilities Act of 1998 (SFP). This bill made significant changes in the state school building program as well as addressing the level of permissible school fees assessed on construction.

Physical Conditions

Public education in the project area is provided by the McCabe Union Elementary School District and the Central Union High School District. A description of each district is provided below.

McCabe Union Elementary School District

The McCabe Union Elementary School District provides kindergarten through 8th grade education to the unincorporated areas around El Centro and areas that have recently annexed into the City of El

[3] Personal communication, Paul Longoria, November 17, 2005.

Centro. The Elementary School District operates one school: McCabe Elementary School. The school is summarized Table 5.8-7. The school is

Table 5.8-7: McCabe Elementary School Summary

School	Location	Distance from Project Site	Enrollment	Capacity	% of Capacity
McCabe Elementary School	701 W. McCabe Road	3.0 miles	824	455	181%
Source: McCabe Union Elementary School District, 2005.					

Future School Facilities

The Elementary School District has plans to build new and expand existing school facilities. A 900-student school adjacent to the existing school at 701 W. McCabe Road is under construction and scheduled to open in August 2007. Plans indicate that this school would ultimately become a middle school. In addition, a new 600-student school site is planned for the Miller Burson residential project, located west of Lotus Lane and north of Interstate 8 on the west side of El Centro.

Central Union High School District

The Central Union High School District provides 9th through 12th grade education to the City of El Centro and surrounding areas. Students from the El Centro Elementary School District, the Heber Elementary School District, the McCabe Union Elementary School District, the Meadows Elementary School District, and the Seeley Elementary School District attend the Central Union High School District for secondary education. The High School District operates two high schools and a continuation school. A summary of each school is provided in Table 5.8-8.

Table 5.8-8: High School Summary

School	Location	Distance from Project Site	Enrollment	Capacity	% of Capacity
Central Union High School	1001 Brighton Avenue	2.6 miles	1,740	1,440	121%
Southwest High School	2001 Ocotillo Drive	2.6 miles	2,147	2,200	98%
Desert Oasis High School (Continuation School)	1302 S. 3rd Street	1.7 miles	N/A	N/A	N/A
N/A = Not Available Source: Central Union High School District, November 17, 2005.					

Future School Facilities

The High School District has plans to build new and expand existing school facilities. A School Facilities Needs Analysis, dated November 11, 2004, analyzed planned development projects with the district boundaries and detailed the High School District's anticipated facilities needs through 2010.

Table 5.8-9 summarizes future enrollment growth and the facilities needed to accommodate these students.

Table 5.8-9: Anticipated Enrollment Growth and Facilities Needs

Planned Dwelling Units	Student Generation Factor	Calculation	Total Student Generation	Site Factor	Calculation	New School Sites Needed
8,587 dwelling units	0.38 student / dwelling unit	(8,587 dwelling units) x (0.38 student / dwelling unit)	3,264 students	2,000 students / 1 school site	(3,264 students) / (2,000 students / 1 school site)	1.63 sites
Planned Dwellings Units are for years 2005-2010 Source: Central Union High School District. School Facilities Needs Analysis, November 11, 2004.						

As shown above, the High School District would need to acquire 1.63 new school sites to meet anticipated enrollment growth through 2010.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant public education impact it would:

- Result in a substantial adverse physical impact associated with the provision of new or physically altered public education facilities; or
- Result in the need for new or physically altered public education facilities in order to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

Impacts

McCabe Union Elementary School District

The estimated student generation for the Elementary School District is summarized in Table 5.8-10.

Table 5.8-10: Student Generation Estimate

Student Generation Factor	Calculation	Estimated Student Generation
0.83 student per dwelling unit	(131 dwelling units) x (0.83 student per dwelling unit)	109 students
Source: McCabe Union Elementary School District, December 8, 2005.		

The Elementary School District's tentative plans indicate that students from the proposed project would attend the future Miller Burson 600-student school site.[4] Although this school site is being planned to accommodate growth within the district boundaries, the addition of the proposed project's 109 students would contribute to the need for new or expanded school facilities. Therefore, this is a potentially significant impact.

Central Union High School District

The estimated student generation for the High School District is summarized in Table 5.8-11.

Table 5.8-11: Student Generation Estimate

Student Generation Factor	Calculation	Estimated Student Generation
0.358 student per single-family dwelling unit	(131 dwelling units) x (0.358 student per dwelling unit)	47 students
Source: Central Union High School District, November 17, 2005.		

The Central Union High School District's two existing mainstream high schools are at or above capacity and the addition of the proposed project's 47 students would require the construction or expansion of existing facilities. This is a potentially significant impact.

In accordance with SB 50, the project proponent will be required to pay a school impact fee to each affected school district, to help fund new and expanded classroom and support facilities. Currently the McCabe Union Elementary School District and Central Union High School District impose fees of $2.57 and $2.01 per square foot of residential development respectively; however impact fees are determined by the findings of the annual School Facilities Needs Analyses prepared by each school district throughout the State. Therefore, homebuilders will be required to pay the school impact fee as published at the time of issuance of building permits. As cited in the Government Code Section 65995, the payment of this statutory fee, "is deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization.

Therefore, potential impacts on schools would be less than significant.

Mitigation Measures

No mitigation measures are required.

[4] Personal Communication, Amanda Brooke, Superintendent, McCabe Union Elementary School District. December 8, 2005.

5.8.4 - Library Services

Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory library services standards that are applicable to the proposed project.

Physical Setting

The main El Centro Public Library is located at 539 State Street and a branch is located at the El Centro Community Center at 375 S. 1st Street. The main library has more than 14,000 square feet of space and maintains a collection of more than 111,000 items. The libraries are open Monday through Saturday for a total of 48 hours a week. The libraries offer internet access, children's reading programs, and vocal theatrical workshops.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant library services impact if it would:

- Result in a substantial adverse physical impact associated with the provision of new or physically altered library facilities; or
- Result in the need for new or physically altered library facilities in order to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

Impacts

Using El Centro's average household size of 3.5[5], the proposed project's 131 dwelling units are projected to add 459 new residents to the City. These new residents would be expected to increase demands for library services, creating a need for new or expanded library facilities. This would be a potentially significant impact.

To reduce the proposed project's impact on library services, payment of development fees would be made to the City of El Centro at the time building permits are sought. This is considered a self-mitigating feature of the project and would reduce potentially significant impacts to a level of less than significant.

Mitigation Measures

No mitigation measures are required.

[5] El Centro General Plan, February 2004.

5.8.5 - Parks and Recreation

Existing Conditions

Regulatory Conditions

State of California Quimby Act

The State of California Quimby Act was instituted for the purpose of preserving open space and providing park facilities for California's growing population, and provides enabling authority to local governments to require land dedication or in-lieu fees in conjunction with approvals of residential subdivision projects, to help fund acquisition of public parkland. This legislation sets a planning standard of a minimum of three acres of parkland per 1,000 persons. Pursuant to the Quimby Act, the City of El Centro adopted a standard of three acres of parkland per 1,000 persons and establishes a formula by which parkland or in-lieu fees are exacted from new residential subdivision projects.

Physical Setting

Parks and Community Facilities

The City of El Centro has a total of 13 parks and recreational facilities. The parks and recreational facilities location, acreage, and amenities are summarized in Table 5.8-12.

Table 5.8-12: Park Summary

Park	Location	Area	Amenities
Adams Park	4th Street and 8th Street	9.33 acres	Open space, restrooms, shelter/picnic areas, children's playground, gymnasium, swimming pool, ramada, and roller hockey area
Bucklin Park	8th Street and W. Aurora Drive	20 acres	Open space, restrooms, shelter/picnic areas, children's playground, lake, pavilion area, horseshoe pit, and walking path
Carlos Aguilar Park	W. Pico Avenue and Imperial Avenue	4.75 acres	Open space, restrooms, shelter/picnic areas, children's playground, soccer fields, and basketball courts
Debbie Pittman Park	S. La Brucherie Road and Orange Avenue	4.73 acres	Youth softball fields and restrooms
Equestrian Center	W. Dannenberg Road	38 acres	Open space, picnic areas, roping area, restroom, charro arena, and boarding facility
Frazier Field	N. 6th Street and Villa Avenue	3.55 acres	Little League baseball fields and restrooms
Gomez Park	S. Hope Street	2.66 acres	Open space, restrooms, shelter/picnic areas, children's playground, jogging track, and picnic area
Leeper Park	W. Main Street and Lotus Lane	3.71 acres	Open space / No structures
Lotus Park	S. Lotus Lane	3.85 acres	Open space / No structures

Table 5.8-12 (Cont.): Park Summary

Park	Location	Area	Amenities
McGee Park	E. Brighton Avenue and S. Fairfield Drive	5.31 acres	Community center, shelter/picnic areas, children's playground, soccer field, and basketball courts
Stark Field	4th Street and Lenrey Avenue	11.44 acres	Baseball complex, practice fields, restrooms, shelter/picnic areas, and children's playground
Swarthout Field	4th Street and Euclid Avenue	15.49 acres	Shelter/picnic areas, children's playground, restrooms, adult softball fields, soccer fields, basketball courts, and volleyball area
Wildflower Park	E. Aten Road	3.96 acres	Open space / No structures
Total		**126.78 acres**	
Source: City of El Centro General Plan. Table PF-2, 2004.			

The parks are utilized for weekend activities such as children's fairs, circuses, and cultural events. Recreational programs sponsored by the City include summer recreation programs, senior programs, day camps, and many specialized classes including dance, art, and crafts, public swimming, swimming lessons, and life guarding.

Future Parkland Needs

Buildout of the City of El Centro General Plan would necessitate the provision of additional parkland acreage to maintain the City's 3.0 acres of parkland per 1,000 residents standard. Table 5.8-13 summarizes the baseline (2000) acreage and the General Plan Buildout (2025 acreage).

Table 5.8-13: Existing and Future Parkland Needs

Year	Population	Parkland/Resident Standard	Parkland Required	Existing Parkland	Difference
2000 (Baseline Year)	37,835	3.0 acres per 1,000 residents	133.5 acres	126.8 acres	+13.3 acres
2025 (General Plan Buildout)	134,238		402.7 acres	126.8 acres	-279.5 acres
Source: City of El Centro General Plan. Table PF-3, 2004.					

As indicated in Table 5.8-13, the City will need to provide an additional 276 acres of parkland to maintain the General Plan established parkland-to-resident standard at buildout. The General Plan indicates that new development will be conditioned to provide all the land and improvements required to achieve the parkland standard of three acres of developed parkland per 1,000 residents. The City encourages developers to meet the parkland requirements that by designing flood control basins that also provide open space.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant recreation services impact if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impacts

The proposed project would add an estimated 459 new residents to the City of El Centro. Table 5.8-14 summarizes the additional parkland the proposed project would need to provide to maintain the General Plan established standard of 3.0 acres per 1,000 residents.

Table 5.8-14: Parkland Required

Project Population	General Plan Parkland/Resident Ratio	Calculation	Parkland Required
459 residents	3.0 acres of parkland / 1,000 residents	(459 residents) x (3 acres of parkland / 1,000 residents)	1.4 acres
Source: Michael Brandman Associates, November 21, 2005.			

The proposed project would be required to dedicate a minimum of 1.4 acres of parkland or make in-lieu-of payments to acquire a similar acreage of parkland to the City of El Centro. The proposed project will provide 1.67 acres of parkland; therefore the project meets the standards set forth in the Quimby Act and thus the project will have no park or recreation impacts.

Mitigation Measures

No mitigation measures are required.

5.8.6 - Potable Water

Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory standards that are applicable to approval of the proposed project.

Physical Conditions

The City of El Centro provides potable water treatment and distribution services within the City limits, as well as to some adjacent unincorporated areas of Imperial County under special circumstances. Given that the project site would be annexed into the City's incorporated boundaries upon project approval, the project would be served by the City. The City operates a water distribution

system that totals more than 70 miles in length. The City's Public Works Department Utilities Division is responsible for maintenance and upkeep of the system.

Water Treatment Facility

The City owns and operates a potable water treatment facility at 310 S. 8th Street that processes, treats, and pumps an average of 244 million gallons of water per month. The water treatment plant provides clarification, filtration, and disinfections of water from the Colorado River, the primary source of potable water for El Centro. The untreated Colorado River water is delivered to the plant via the Imperial Irrigation District (IID) All American Canal and Date Canal. Treated water is then pumped from storage tanks to users via a grid of distribution pipelines and water mains.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant potable water services impact if it would:

- Require or result in the construction of new potable water facilities or the expansion of existing facilities; or
- Sufficient water supplies are not available to serve the project from existing entitlements and resources.

Impacts

Using a potable water consumption rate provided by the United States Environmental Protection Agency, the proposed project's daily and annual water consumption rates were calculated. The rates are summarized in Table 5.8-15.

Table 5.8-15: Potable Water Consumption

Consumption Rate	Consumption Calculation	Daily Consumption	Annual Consumption
107,000 gallons / household / year	(131 dwelling units) x (107,000 gallons)	36,644 gallons (0.11 acre-feet)	13.4 million gallons (41.1 acre-feet)
1 acre-foot = 325,581.43 gallons Source: United States Environmental Protection Agency. Water On Tap, 2003.			

The 41.1 acre-feet of water demanded by the proposed project on an annual basis would be less than one percent of the City of El Centro's current annual consumption of approximately 9,000 acre-feet. The City is expected to have adequate supplies to meet this demand. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

5.8.7 - Wastewater

Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory wastewater standards that are applicable to approval of the proposed project.

Physical Conditions

The City of El Centro provides wastewater collection, treatment, and disposal services within the City limits and in general, does not provide to adjacent unincorporated areas. Given that the project site would be annexed into the City's incorporated boundaries upon project approval, the project would be served by the City. The City owns and operates a wastewater collection and transmission system totaling more than 80 miles comprising of collector streets, trunk sewers, lift stations, and force mains. The City's Public Works Department Utilities Division is responsible for maintenance and upkeep of the system.

Wastewater Treatment Plant

The City operates a wastewater treatment plant at 2255 La Brucherie Avenue that provides secondary-level treatment. The plant currently operates at approximately 4.25 million gallons a day (MGD) and has a design capacity of 8 MGD. The plant is expandable to 200 MGD and would have the capacity to serve El Centro's Sphere-of-Influence areas at buildout. Treated affluent is discharged into the Alamo River.

The wastewater treatment plant was out of compliance with Federal water toxicity standards for three months in 2004. Subsequent testing revealed that the testing method itself was producing false positive results because of high salinity levels present in Imperial County groundwater. The City has requested to the Colorado River Basin Regional Water Quality Control Board to use a different testing method.

Infrastructure Improvements

The City is in the midst of a capital improvement program to upgrade its wastewater infrastructure system to serve planned development projects. Five new pump stations are slated to be constructed by the end of 2006.

The recently completed Alder Sewer project has established a direct line to the treatment plant and is designed to serve the entire east and southern portions of the City's sphere-of-influence.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant wastewater services impact if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new wastewater treatment facilities or the expansion of existing facilities; or
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand.

Impacts

Using a wastewater generation rate provided by the City of El Centro Public Works Department, the proposed project's daily and annual wastewater generation rates were calculated. The rates are summarized in Table 5.8-16.

Table 5.8-16: Wastewater Generation

Residential Wastewater Generation Rate	Consumption Calculation	Daily Generation	Annual Generation
100 gallons / occupant / day	(131 dwelling units) x (3.5 occupants / dwelling unit) x (100 gallons / occupant / day)	45,850 gallons	16.74 million gallons
Source: City of El Centro Public Works Department (2006).			

The proposed project is projected to add 45,850 additional gallons of wastewater to the City wastewater collection and treatment system on a daily basis. The La Brucherie Avenue Treatment plan has a capacity of 8 MGD and is currently operating at 4.25 MGD. The plant would have capacity to receive an additional 45,850 gallons and would not adversely impact the treatment plant's capacity. The proposed project would provide all on-site infrastructure and connections to the City wastewater system in accordance with City engineering standards and as required by the City, the sewer collection system will be reviewed and approved by the City Engineer prior to the issuance of grading permits. In addition, the proposed project would also pay connection fees to the City. The provision of wastewater infrastructure and the payment of connection fees are self-mitigating features of the proposed project and would reduce potential impacts to a level of less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

No mitigation measures are required for wastewater; impacts are considered less than significant.

5.8.8 - Solid Waste

Existing Conditions

Regulatory Conditions

California Integrated Waste Management Act

Signed into law in 1989, the California Integrated Waste Management Act set forth new requirements for solid waste management. The act required each jurisdiction in the state to set diversion requirements of 25 percent in 1995 and 50 percent in 2000, established a comprehensive statewide system of permitting, inspections, enforcement, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types or amounts of solid waste generated.

Physical Conditions

Solid Waste Collection

Allied Waste Services of Imperial contracts with the City of El Centro to provide residential solid waste collection service. Allied Waste Services transports residential solid waste from El Centro to the Valley Environmental Services Transfer Station in Imperial for processing.

Landfills

After processing, solid waste generated in the City of El Centro is disposed of at one of three landfills in Imperial County. A summary of each landfill is provided in Table 5.8-17.

Table 5.8-17: Landfill Summary

Landfill	Location	Operator	Permitted Daily Capacity	Remaining Capacity	Closure Date
Allied Imperial Landfill	Imperial, CA	Imperial Landfill, Inc.	1,135 tons	3.7 million cubic yards	2012
Imperial Solid Waste Site	Imperial, CA	County of Imperial Public Works	130 tons	87,000 cubic yards	2022
Calexico Solid Waste Site	Calexico, CA	County of Imperial Public Works	150 tons	1.9 million cubic yards	2142
Total			**1,415 tons**	**5.7 million cubic yards**	
Source: California Integrated Waste Management Board. Solid Waste Information System, 2005.					

Allied Imperial Landfill is the primary landfill for El Centro and the two smaller facilities provide additional capacity. In 2000, the most recent year information is available, approximately 45,000 tons of solid waste from El Centro was landfilled.

Waste Diversion

Waste diversion is a measurement of how much solid waste is diverted from landfills through recycling and waste prevention programs. To promote waste diversion, curbside green waste and recycling programs are provided to residential consumers in El Centro. The City of El Centro's waste diversion rates between 1995 and 2003, the most recent year information is available, are summarized

in Table 5.8-18. El Centro is currently in compliance with the State's requirement of at least 50 percent waste diversion for every jurisdiction.

Table 5.8-18: El Centro Solid Waste Diversion Rates

1995	1996	1997	1998	1999	2000	2001	2002	2003
39%	48%	43%	33%	N/A	60%	62%	62%	56%*

* Preliminary Data; subject to change.
N/A = Not Available
Source: California Integrated Waste Management Board. Jurisdictional Diversion and Disposal Profile, 2005.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines indicates that a project would result in a significant solid waste services impact if it would:

- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Comply with federal, state, and local statutes and regulations related to solid waste.

Impacts

Short-term Construction Waste Generation

Estimated construction waste generation is summarized in Table 5.8-19. For the purposes of this analysis, the average size of each dwelling unit was conservatively estimated to be 3,500 square feet. Multiplied by 131 dwelling units, the total development square footage is 458,500 square feet.

Table 5.8-19: Construction Waste Generation

Activity	Generation Rate	Calculation	Waste Generation
Residential Construction	4.38 pounds / sq ft	(458,500 sq ft) x (4.38 pounds/ sq ft)	1,004 tons

1 ton = 2,000 pounds
Source: Environmental Protection Agency. Characterization of Building Related Construction and Demolition Debris in the United States, June 1998.

The generation of approximately 1,004 tons of construction debris would be a significant short-term solid waste impact. Mitigation in the form of the retention of a certified construction and demolition debris recycler would reduce potential impacts on short-term landfill capacity to a level of less than significant.

Long-Term Operational Waste Generation

The estimated operational waste generation is summarized in Table 5.8-20. Two solid waste generation rates are shown: before diversion and after diversion. The after diversion figure applies in

the City of El Centro's 2003 diversion rate of 56 percent to account for recycling and waste reduction measures.

Table 5.8-20: Operational Waste Generation

Generation Rate	Waste Generation Calculation	Annual Waste Generation Before Diversion	Waste Diversion Calculation	Annual Waste Generation After Diversion
2.04 tons / unit / year	(131 units) x (2.04 tons / year)	267 tons	(255 tons) x (1-0.56)	112.2 tons
1 ton = 2,000 pounds Source: California Integrated Waste Management Board. Residential Sector Solid Waste Generation Rates, 2005.				

The three landfills summarized in Table 5.8-20 have more than 1,400 tons in permitted daily capacity available. The proposed project would generate 255 tons annually (0.70 ton daily) before diversion and 112.2 tons annually (0.31 ton daily) after diversion. The three landfills would all have capacity to accept the proposed project's before diversion daily generation. Therefore, impacts on long-term landfill capacity would be less than significant.

Mitigation Measures

PSU 5.8-3 At the time building permits are sought, the project applicant shall demonstrate to the satisfaction of the City of El Centro Public Works Department that a certified construction and demolition recycler has been retained and a Waste Management Plan has been prepared for the construction phase of the proposed project.

Level of Significance After Mitigation

After implementation of mitigation measure 5.8-3, solid waste impacts are reduced to less than significant.

5.8.9 - Energy

Existing Conditions

Regulatory Conditions

California Code of Regulations Title 24, Part 6, California's Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. New standards were adopted by the Commission in 2001 as mandated by Assembly Bill 970 to reduce California's electricity demand. The new standards went into effect on June 1, 2001. Title 24 prohibits the installation of new fixtures unless the manufacturer has been certified by the California Energy Commission (CEC) to be in compliance with the flow rate standards and addresses pipe insulation requirements.

Physical Conditions

Electricity

The Imperial Irrigation District (IID) provides electricity to more than 130,000 customers in Imperial County, including the City of El Centro, as well as parts of Riverside and San Diego counties.

The El Centro Generating Station is the primary source of IID's power. The Generating Station has two steam units and a combined cycle unit and can produce up to 233 megawatts of electricity. IID also operates eight hydroelectric plants on the All-American Canal. In 1993, IID purchased a 74-megawatt steam unit and a 22-megawatt gas turbine at the Yucca Power Plant in Yuma, Arizona. Arizona Public Service Company operates these units for IID.

In addition to its own generated power, IID purchases power from the Western Area Power Administration (Parker-Davis) and from the El Paso Electric Company. IID has joined with the Southern California Public Power Authority in purchasing interests in the Palo Verde Nuclear Generating Plant and San Juan Generating Station Unit 3. IID also participates, through the Western Systems Power Pool, in sales and purchases of both firm and non-firm energy.

The IID has also purchased an interest in the Palo Verde/San Diego 500-kilovolt transmission line, which allows IID access to cheaper imported energy.

The City of El Centro coordinates with IID to ensure that adequate rights-of-way, easements, and improvements are provided in new developments. Electricity consumers in Imperial County tend to consume more electricity than the national average because of the constant use of air conditioning during the hot summer months.

Natural Gas

The Southern California Gas Company (Gas Company) provides natural gas service to the City of El Centro. The Gas Company's primary sources are the El Paso Natural Gas Company and the Transwestern Pipeline Company that convey natural gas from the southwestern United States. Currently, the Gas Company meets the City of El Centro's demand for natural gas.

Project Impacts

Thresholds of Significance

Appendix G of the CEQA Guidelines does not include a threshold of significance for energy resources; however, a significant energy resource would occur if the project would:

- Result in a determination by the energy provider, which serves or may serve the proposed project that it does not have adequate capacity to serve the project's projected demand in addition to the providers existing commitment.

Impacts

Using an electricity consumption rate provided by IID and a natural gas consumption rate provided by the Southern California Gas Company, the proposed project's energy consumption is calculated in Table 5.8-21.

Table 5.8-21: Energy Consumption

Energy Type	Consumption Rate	Calculation	Annual Consumption
Electricity	14,440 kWh / dwelling unit / year	(131 dwelling units) x (14,440 kWh / dwelling unit / year)	**1.89 million kWh**
Natural Gas	799 therms / dwelling unit / year	(131 dwelling units) x (799 therms / dwelling unit / year)	**104,669 therms**

kWh = kilowatt hours
Source: Imperial Irrigation District, Personal Communication July 31, 2006.
Southern California Gas Company. Comment Letter, February 28, 2003.

The proposed project is consistent with the land use designations in the City of El Centro General Plan, and therefore, this growth has already been anticipated by the utility providers in their respective long-term service plans. Moreover, the proposed project would not contain any features that would create a demand for energy that would exceed these energy consumption projections. Therefore, impacts on energy consumption would be less than significant.

Level of Significance After Mitigation

All impacts would be less than significant after mitigation.

5.8.10 - Telecommunications

Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory standards that are applicable to approval of the proposed project.

Physical Setting

Imperial Valley Telecommunications Authority (IVTA) is a network of public agencies, including Imperial County school districts, county agencies, Imperial Community College and San Diego State University (Imperial Valley Campus). It provides community wide system access to the participating agencies through a fiber optic communications network. Currently there is an existing communication system within the project site.

Thresholds of Significance

Appendix G of the CEQA Guidelines does not include a threshold of significance for energy resources; however, a significant impact to telecommunications would occur if the project would:

- Result in a determination by the IVTA network administrator, that the proposed project would affect the ability of the IVTA to provide services to their member's demarcation points.

Impacts

The developer will be required to meet standards set by IVTA, that will mitigate the operational impacts to IVTA as a result of project approval and implementation.

Mitigation Measures

T 5.8-1 The developer will provide a preliminary conduit layout with respect to other infrastructure systems for the development. The IVTA Network Administrator will determine the size and number of conduits and fiber optic cables the developer will be required to install in order to serve IVTA needs.

Level of Significance

Less than significant.

5.9 - Transportation and Traffic

The analysis contained in this section is based on the Addendum Traffic Impact Study (TIS) prepared for the proposed project by Katz, Okitsu & Associates (KOA) in July 2006. The complete report is provided in Appendix I of this EIR.

5.9.1 - Existing Conditions

Regulatory Conditions

There are no federal, state, or local regulatory standards that are applicable to approval of the proposed project.

Physical Conditions

Roadway Circulation System

The following is a discussion of the principal roadways in the existing project study area circulation system. Exhibit 5.9-1 shows the existing circulation network and study area intersections within the project area.

Danenberg Drive - Danenberg Drive is classified as a collector street that runs east/west north of the project. It is currently configured as a two lane undivided roadway with no bike lanes and parking is generally permitted. The speed limit is posted at 40 miles per hour (mph) in the project area.

Horne Road - Horne Road is classified as a collector street that runs east/west north of the project. It is constructed as a two lane undivided roadway with no bike lanes and parking is generally permitted. The speed limit is posted at 35 mph in the project area.

Interstate 8 (I-8) - I-8 is an east/west freeway connecting the City of El Centro to the San Diego region west of the project and the City of Yuma, Arizona east of the project. It provides four lanes, with two travel lanes in each direction. Connections to the project area are possible via both eastbound and westbound ramps at its intersection with State Route (SR) 86.

McCabe Road - McCabe Road is classified as a major collector that runs east/west south of the project area. It is constructed as a two lane undivided roadway with no bike lanes and parking is generally prohibited in the project area. The speed limit is posted at 55 mph.

State Route 86 - SR 86 is classified as a state highway; it runs north/south and connects project traffic to I-8. South of the project area, SR-86 connects the City of El Centro to Calexico with connections to Mexicali south of the U.S. border. It is currently constructed as a four-lane arterial north of Wake Avenue. Between Wake Avenue and Countryside Drive, SR-86 is constructed as a three-lane arterial with two northbound lanes and one southbound lane; along this section there are raised medians and median breaks with left-turn pockets providing access to local streets. South of Countryside Drive, SR-86 transitions to a two-lane undivided roadway with a paved roadway width of 32 feet. The General Plan recommends a four-lane roadway along the SR 86 corridor at this

location. There are no bike lanes or bus stops and parking is generally prohibited in the project area. Sidewalks are missing on the west side of the roadway between Wake Avenue and McCabe Road and on the east side of the roadway between Danenberg Drive and McCabe Roads, with exception of the sidewalk improvements which were constructed along the adjacent Countryside Estates' frontage. The posted speed limit varies between 40 and 55 mph in the project area.

Wake Avenue - Wake Avenue: Runs east/west north of the project in the City of El Centro and intersects with both SR-86 and 8th Street. It is constructed as a four-lane roadway from 8th Street continuing east of SR-86. It has no raised or painted medians, bike lanes or bus stops. There are contiguous sidewalks along the corridor and parking is prohibited.

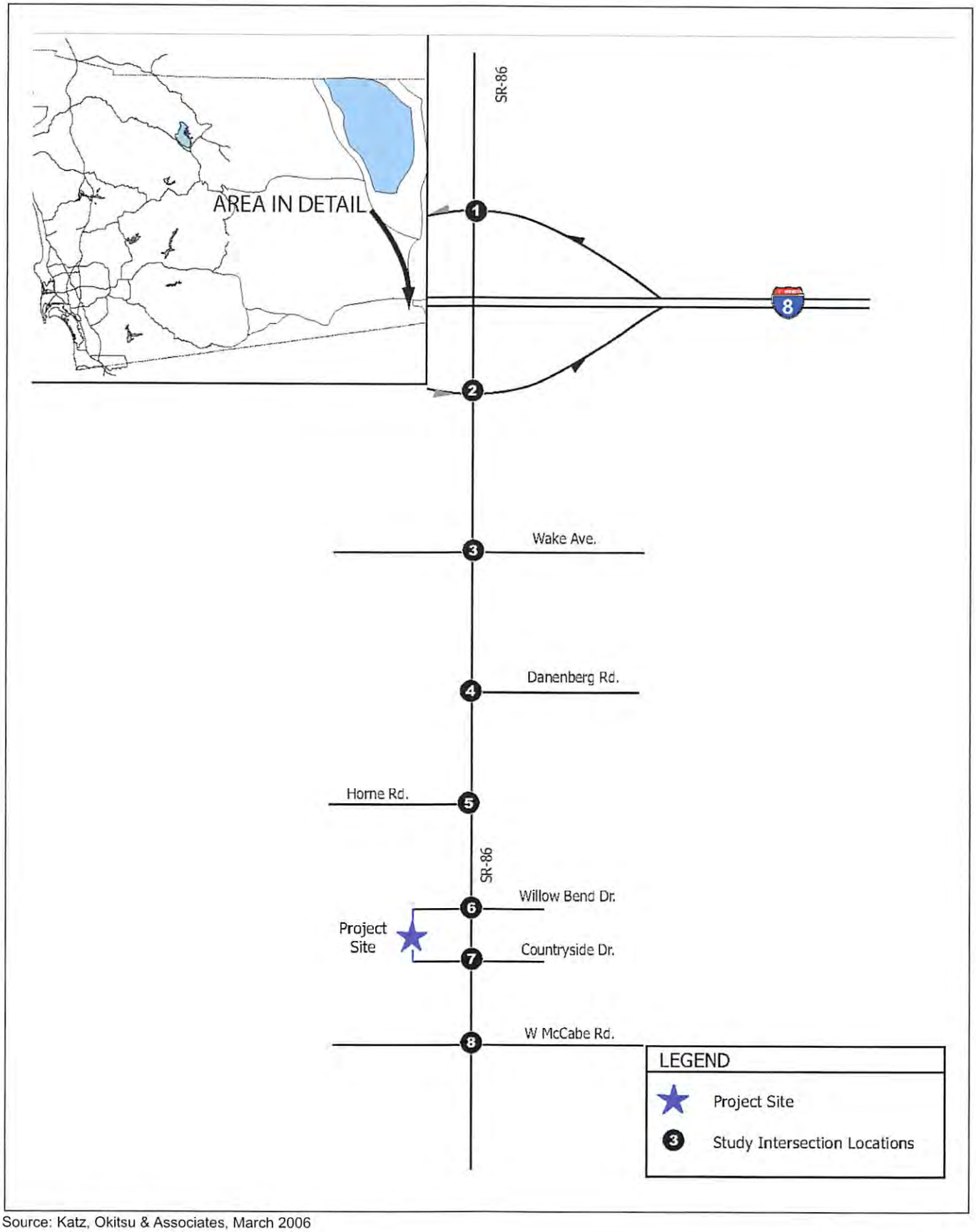
Level of Service Criteria

A level of service (LOS) designation is the generally accepted measure for determining the quality of operation of either an intersection or a roadway segment. The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. There are six LOS categories ranging from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion).

The objective of the City of El Centro's General Plan Circulation Element is to provide a roadway system with adequate capacity and acceptable LOS to accommodate projected travel demands associated with the buildout of the General Plan Land Use Element. This can be accomplished by establishing minimum LOS for the designated street and conventional state highway system. The performance criteria used for evaluating volumes and capacities on the City street system are based on average daily traffic (ADT) data and the classification system described in the Circulation Element. The City of El Centro considers LOS C to be acceptable. Table 5.9-1 identifies the City's current system of LOS evaluation criteria.

Table 5.9-1: Circulation System Performance Criteria

Roadway Classification	No. of Lanes	Level of Service with ADT and Volume/Capacity (V/C) Range				
		LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	30,000 (<0.43)	40,000 (0.44-0.57)	50,000 (0.58-0.71)	60,000 (0.72-0.86)	70,000 (0.87-1.00)
Four Lane Arterial	4	14,800 (<0.40)	24,700 (0.41-0.67)	29,600 (0.68-0.80)	33,400 (0.81-0.90)	37,000 (0.91-1.00)
Two Lane Arterial	2	2,000 (<0.11)	4,500 (0.12-0.26)	7,700 (0.27-0.44)	11,800 (0.45-0.67)	17,500 (0.68-1.00)
Collector	2	1,900 (<0.12)	4,100 (0.13-0.25)	7,100 (0.26-0.44)	10,900 (0.45-0.67)	16,200 (0.68-1.00)



Source: Katz, Okitsu & Associates, March 2006

NORTH

Not to Scale

Michael Brandman Associates

Exhibit 5.9-1
Project Study Area

Table 5.9-1 (Cont.): Circulation System Performance Criteria

Roadway Classification	No. of Lanes	Level of Service with ADT and Volume/Capacity (V/C) Range				
		LOS A	LOS B	LOS C	LOS D	LOS E
Residential Street	2	*	*	1,500 (NA)	*	*
Residential Loop Street or Cul-de-Sac	2	*	*	200 (NA)	*	*

* Note: LOS are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. LOS normally applies to roads carrying through traffic between major trip generators and attractors.
Source: Katz, Okitsu & Associates, July 2006.

Additionally, the City of El Centro has established performance criteria for daily traffic volumes for intersections and roadways within its jurisdiction. Table 5.9-2 and Table 5.9-3 identify the LOS criteria for both signalized and unsignalized intersections.

Table 5.9-2: Level of Service Criteria for Signalized Intersections

Control Stopped Delay (sec/veh)	Level of Service	Traffic Characteristics
<10	A	Describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay
10 - 20	B	Describes operations with generally good progression and/or short cycle lengths. More vehicle stops that for LOS A, causing higher levels of average delay.
20.1 - 35.0	C	Describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through intersection without stopping.
35.1 - 55.0	D	Describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
55.1 - 80.0	E	Considered to be the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80.0	F	Describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Katz, Okitsu & Associates, July 2006.

Table 5.9-3: Level of Service Criteria for Unsignalized Intersections

Average Stopped Delay (sec)	Level of Service	Traffic Characteristics
<5	A	Little or no delay
5 - 10	B	Short traffic delay
10 - 20	C	Average traffic delay
20 - 30	D	Long traffic delay
30 - 45	E	Very long traffic delay
>45	F	Extreme delays
Source: Katz, Okitsu & Associates, July 2006.		

Table 5.9-4 identifies LOS criteria for roadway segments. The volume to capacity ratio measures the percentage of actual traffic volume on a roadway compared to the total traffic capacity of that roadway and also corresponds with LOS designations.

Table 5.9-4: Level of Service Criteria for Roadway Segments

Congestion/Delay	Level of Service	Traffic Description
None	A	Free Flow.
None	B	Free to stable flow, light to moderate volumes.
None to minimal	C	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
Minimal to substantial	D	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
Significant	E	Extremely unstable flow, maneuverability, and psychological comfort extremely poor.
Source: Katz, Okitsu & Associates, July 2006.		

Existing Traffic Volumes

The existing circulation system within the project area currently provides transportation in an area of residential, vacant land, and agricultural land uses. Exhibit 5.9-1 illustrates existing and future intersections, interchanges, and SR segments. Traffic counts were taken at major intersections within the study area as required by the City of El Centro. Counts were used to determine the local peak hour, directional distribution, and existing operational level of service.

Peak hour counts were conducted at eight intersections (i.e., AM Peak Hour and/or PM Peak Hour) in the traffic study area. The intersection turning movement counts were conducted during the weekday morning peak period from 7 AM to 9 AM and during the weekday evening peak period from 4 PM to 6 PM. Existing peak hour turning movement volumes were field measured at all existing study intersections in October 2005 with exception of the intersection of SR-86 and Horne Road, at which turning movement volumes were field measured in 2004 by Linscott, Law & Greenspan Engineers. Based on the intersection peak hour volumes, the morning and evening peak hours levels of service at

each intersection was determined (see Table 5.9-5). As shown, all study area intersections currently operate at LOS C or better.

Table 5.9-5: Existing Unsignalized and Signalized Intersections Levels of Service

Intersections	Without Project	
AM Peak Hour	**Delay (sec)**	**LOS**
Unsignalized Intersections		
SR 86 and Horne Road	11.3	B
SR-86 and Willow Bend Drive (Project Access)	10.9	B
SR-86 and Countryside Drive (Project Access)	10.7	B
SR-86 and West McCabe Road	19.7	C
Signalized Intersections		
SR-86 and I-8 Westbound Ramp	19.0	B
SR-86 and I-8 Eastbound Ramp	19.9	B
SR-86 and Wake Avenue	17.2	B
SR-86 and Danenberg Drive	13.5	B
PM Peak Hour	**Delay (sec)**	**LOS**
Unsignalized Intersections		
SR-86 and Horne Road	13.7	B
SR-86 and Willow Bend Drive (Project Access)	11.3	B
SR-86 and Countryside Drive (Project Access)	11.1	B
SR-86 and West McCabe Road	19.7	C
Signalized Intersections		
SR-86 and I-8 Westbound Ramp	23.1	C
SR-86 and I-8 Eastbound Ramp	25.7	C
SR-86 and Wake Avenue	18.0	B
SR-86 and Danenberg Drive	14.8	B
Source: Katz, Okitsu & Associates, July 2006.		

Average daily traffic volumes were obtained through machine data collection for all roadway segments collected in 2005 with exception of the SR-86 south of I-8 eastbound ramps roadway segment, which was collected from the Caltrans *Traffic Data Systems Unit* 2004 databank. Again, the volume to capacity ratio (V/C) measures the percentage of actual traffic volume on a roadway compared to the total traffic capacity (i.e., LOS E) of that roadway and also corresponds with LOS designations. The existing LOS for the study area roadway segments are identified in Table 5.9-6. Currently, none of the five roadway segments analyzed within the TIS operate below the City of El Centro's performance criteria of LOS C.

Table 5.9-6: Existing Roadway Segment Capacity

Roadway Segment	Lanes/Class	LOS E Capacity	Without Project		
			ADT	V/C	LOS
SR-86					
McCabe Road to Project Access[1]	2/Arterial	17,500	7,631	0.436	C
Project Access to Danenberg Drive[1]	3/Arterial	27,750	7,631	0.275	A
Danenberg Drive to Wake Avenue[2]	3/Arterial	27,750	13,575	0.489	B
Wake Avenue to I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B
I-8 Westbound Ramps to Aurora Drive[3]	4/Arterial	37,000	13,576	0.367	A

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004).
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given the three-lane alignment with a raised median.
[3] Four Lane Arterial standards from the El Centro General Plan Circulation Element (2004).
Source: Katz, Okitsu & Associates, July 2006.

5.9.2 - Project Impacts

Thresholds of Significance Criteria

To determine roadway segment and intersection project impacts, KOA in concert with the City of El Centro has developed a series of thresholds based on allowable increases in volume-to-capacity ratios for roadway segments and increases in seconds of delay for intersections that become more stringent as levels of service worsens. Roadway segments and intersections operating at LOS C or better in the existing condition with the addition of the proposed project are not considered significantly impacted. Table 5.9-7 and Table 5.9-8 summarize the significance criteria for both intersections and roadway segments.

Table 5.9-7: Intersection Significance Criteria[1]

Existing with Project Traffic Scenario		
Existing	Existing + Project	Impact Type
LOS C or better	LOS C or better	None
LOS C or better	LOS C or worse	Direct
LOS C or worse	Project Traffic adds < 2.0 seconds of delay	None
LOS C or worse	Project Traffic adds > 2.0 seconds of delay	Direct

[1] Study area intersections are defined by the assignment of 500 daily trips or 50 peak hour direction trips along with guidance provided by the City staff.
Source: Katz, Okitsu & Associates, July 2006.

Table 5.9-8: Roadway Segment Significance Criteria

Existing with Project Traffic Scenario		
Existing	**Existing + Project**	**Impact Type**
LOS C or better	LOS C or better	None
LOS C or better	LOS C or worse	Direct[1]
LOS C or worse	Project Traffic adds < 0.02 V/C[2]	None
LOS C or worse	Project Traffic adds > 0.02 V/C[2]	Direct

Note: Study area intersections are defined by the assignment of 500 daily trips or 50 peak hour direction trips along with guidance provided by the City staff.
[1] Not a direct impact when with project segment operation is LOS D and intersections along the segment operate at LOS D or better.
[2] V/C = Volume-to-Capacity Ratio.
Source: Katz, Okitsu & Associates, July 2006.

Impacts

The analysis of project impacts included the following assumptions regarding the proposed project:

- The proposed project consists of a residential subdivision of approximately 38 acres of farmland into 133 lots, which will allow for the development of 131 single-family residential units 1.67 acres of parkland and a 3.02 acre retention basin.
- Full project build-out will be completed by 2008.
- Primary access to the project is proposed via SR-86.

Project Trip Generation

Vehicle traffic generation characteristics for projects are estimated based on established rates. These rates identify the probable traffic generation of various land uses based on studies of developments in comparable settings. The daily traffic volumes estimated to be generated by the proposed development were based on the data obtained from the Institute of Transportation Engineers (ITE) Trip Generation, 7th edition (2003). This publication provides standards and recommendations for the probable traffic generation of various land uses based upon local, regional, and nationwide studies of existing developments in comparable settings. As shown below in Table 5.9-9, at full project build-out, it is estimated that the project will generate a total of approximately 1,333 vehicular trip ends per day, of which 101 will be AM peak hour trips and 137 will be PM peak hour trips.

Table 5.9-9: Project Trip Generation

Land Use	Amount	Daily Trips	AM Peak Hour	AM In	AM Out	PM Peak Hour	PM In	PM Out
Trip Generation Rate								
Single-family Dwelling Unit	1	[1]	[2]	25%[3]	75%[3]	4	63%[3]	37%[3]
Project Generation Rate								
Single-family Dwelling Unit	131	1,333	101	25	76	137	86	51

[1] Ln(T) = 0.92Ln(x) + 2.71
[2] T = 0.70(x) + 9.43
[3] Percent of Peak Hour Trips
[4] Ln(T) = 0.90Ln(x) + 0.53
Source: Katz, Okitsu & Associates, July 2006.

Trip Distribution and Assignment

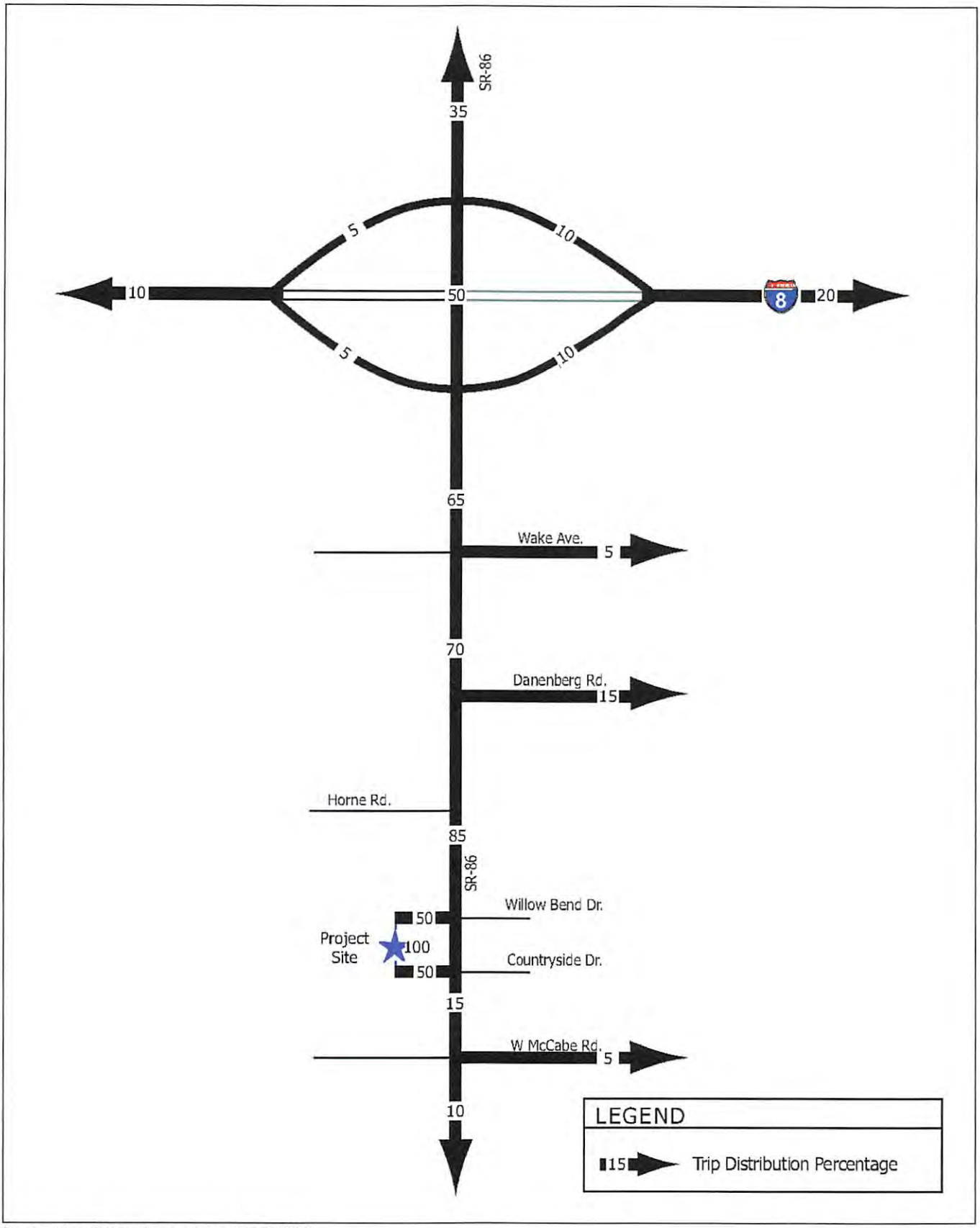
Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. The trip distribution and assignment assumptions for this project are based on observed traffic patterns and experience. The trip distribution and assignment for the project-related trips is shown in Exhibit 5.9-2.

Intersection Analysis

Table 5.9-10 shows the year 2008 LOS during the AM and PM peak hours for the intersections within the study area.

Table 5.9-10: Intersection Level of Service for Year 2008

Intersections	Without Project		With Project			
AM Peak Hour	Delay (sec)	LOS	Delay (sec)	LOS	Δ (Sec)	Sig
Unsignalized Intersections						
SR-86 and Horne Road	11.3	B	12.8	B	1.5	No
SR-86 and Willow Bend Drive (Project Access)	10.9	B	15.6	C	4.7	No
SR-86 and Countryside Drive (Project Access)	10.7	B	14.9	B	4.2	No
SR-86 and West McCabe Road	19.7	C	20.5	C	0.8	No
Signalized Intersections						
SR-86 and I-8 Westbound Ramp	19.0	B	19.2	B	0.2	No
SR-86 and I-8 Eastbound Ramp	19.9	B	19.9	B	0	No
SR-86 and Wake Avenue	17.2	B	17.2	B	0	No



Source: Katz, Okitsu & Associates, March 2006

NORTH

Not to Scale

Michael Brandman Associates

Exhibit 5.9-2
Project Trip Distribution

Table 5.9-10 (Cont.): Intersection Level of Service for Year 2008

Intersections	Without Project		With Project			
AM Peak Hour	**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**	**Δ (Sec)**	**Sig**
SR-86 and Danenberg Drive	13.5	B	12.8	B	-0.7	No
PM Peak Hour	**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**	**Δ (Sec)**	**Sig**
Unsignalized Intersections						
SR-86 and Horne Road	13.7	B	15.0	C	1.3	No
SR-86 and Willow Bend Drive (Project Access)	11.3	B	21.7	C	10.4	No
SR-86 and Countryside Drive (Project Access)	11.1	B	19.5	C	8.4	No
SR-86 and West McCabe Road	19.7	C	20.4	C	0.7	No
Signalized Intersections						
SR-86 and I-8 Westbound Ramp	23.1	C	24.4	C	1.3	No
SR-86 and I-8 Eastbound Ramp	25.7	C	26.5	C	0.8	No
SR-86 and Wake Avenue	18.0	B	18.8	B	0.8	No
SR-86 and Danenberg Drive	14.8	B	14.4	B	-0.4	No
Source: Katz, Okitsu & Associates, July 2006.						

As shown in Table 5.9-10, there are no intersections that will operate at a LOS D or worse after project implementation. All study intersections will operate at LOS C or better, which is the City's established standard. Additionally, there were no intersections that will degrade from LOS C or better to worse than LOS C, or degrade from LOS D or worse to a worse level of service. Therefore, no significant impacts are expected as a result of project implementation.

Roadway Segment Analysis

Table 5.9-11 shows the LOS for the roadway segments studied within the study area. As shown the roadway capacity analysis is provided for the year 2008.

Table 5.9-11: Year 2008 Roadway Segment Capacity

Roadway Segment	Lanes/Class	LOS E Capacity	Project Traffic	With Project			Comparison	
				ADT	V/C	LOS	Δ V/C	Sig
McCabe Road to Project Access[1]	2/Arterial	17,500	200	7,831	0.447	D	0.011	No

Table 5.9-11 (Cont.): Year 2008 Roadway Segment Capacity

Roadway Segment	Lanes/Class	LOS E Capacity	Project Traffic	With Project			Comparison	
				ADT	V/C	LOS	Δ V/C	Sig
Project Access to Danenberg Drive[1]	3/Arterial	27,750	1,133	8,764	0.316	A	0.041	No
Danenberg Drive to Wake Avenue[2]	3/Arterial	27,750	93	14,508	0.523	B	0.034	No
Wake Avenue to I-8 Eastbound Ramps[3]	4/Arterial	37,000	866	21,336	0.577	B	0.023	No
I-8 Westbound Ramps to Aurora Drive[3]	4/Arterial	37,000	467	14,093	0.380	A	0.013	No

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004).
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given the three-lane alignment with a raised median.
[3] Four Lane Arterial standards from the El Centro General Plan Circulation Element (2004).
Source: Katz, Okitsu & Associates, July 2006.

As shown in Table 5.9-11, there are no roadway segments that will operate at a LOS D or worse after project implementation. All study roadway segments will operate at LOS C or better, which is the City's established standard. Additionally, there were no roadway segments that will degrade from LOS C or better to worse than LOS C, or degrade from LOS D or worse to a worse level of service. Therefore, no significant impacts are expected as a result of project implementation.

5.9.3 - Mitigation Measures

Intersections

No mitigation measures are required.

Roadway Segments

No mitigation measures are required.

5.9.4 - Level of Significance After Mitigation

No significant project related transportation and traffic impacts will occur with project implementation.

SECTION 6: CUMULATIVE IMPACTS

6.1 - CEQA Requirements

Section 15130 of the CEQA Guidelines requires that the EIR discuss cumulative impacts of a project when the incremental effects of a project are cumulatively considerable. Cumulative impacts are defined as two or more individual effects which, when considered together, are considerable or which, compound or increase other effects. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impacts from several projects is the change in the environment, which results from the project when added to other closely related projects. In identifying projects, which may contribute to cumulative impacts the CEQA Guidelines allow the use of: (1) a list of past, present, and probable future projects producing related or cumulative impacts even if they are not in the jurisdiction of the lead agency; or (2) a summary of projection contained in an adopted General Plan or related planning document which is designed to evaluate regional or area-wide conditions.

6.2 - Cumulative Impact Setting

The cumulative analysis discussed in this section depends on the environmental component that is analyzed. The cumulative analysis for transportation and traffic includes both a near-term cumulative scenario, which examines the project plus cumulative projects impacts in the year 2008, at the time of project buildout (see Table 6-1) and a future year 2025 scenario. Additionally, the cumulative analysis for noise are based upon the Future 2025 scenario.

Consistent with Section 15130(b) of the CEQA Guidelines, the cumulative analysis for the Air Quality is based in part on a summary of projections. Project emissions compared to emissions in the San Joaquin Valley Air Basin as published by the California Air Resources Board (CARB). The cumulative air quality analysis also includes a discussion of the project's consistency with applicable air quality attainment plans and with the District's thresholds for cumulative impacts.

The cumulative analysis for agricultural resources, biological resources, cultural resources, geology and soils, hazards and hazardous materials, and public services and utilities is based on the list of projects identified in Table 6-1.

Table 6-1: Cumulative Project List

Project Name	Type	Size	Daily Trips	AM Trips	PM Trips
Buena Vista Park	Residential	465 SFDU	4,450	NA	NA
Calexico International Center - Phase I	Mixed Use	Hotel, Restaurant, Gas Station, and RV Park	5,130	84	420

Table 6-1 (Cont.): Cumulative Project List

Project Name	Type	Size	Daily Trips	AM Trips	PM Trips
Calexico Wal-Mart	Commercial	230 KSF[1]	1,960	80	157
Countryside Subdivision	Residential	330 SFDU	3,300	264	330
Desert Village Mixed-Use	Mixed Use	95 SFDU, 260 MFDU, 318 KSF Commercial	8,741	331	818
Farmer Estimates	Residential	89 SFDU	934	79	97
Heber Elementary School	Elementary School	600 Students	1,740	539	322
Heber Meadows	Residential	222 SFDU 476 MFDU	5,270	391	500
Imperial Center	Mixed Use	722 KSF (Gas Station, Hotel, and Shopping Center)	25,397	723	2,334
Imperial Valley Commons	Commercial	700 KSF[1]	21,603	441	1,979
Imperial Valley Mall	Commercial	1,460 KSF[1]	47,300	1,095	4,440
Lerno-Verhaegen Specific Plan	Mixed Use	680 AC	41,553	2,860	4,227
Linda Vista Mixed Use	Mixed Use	173 DU, 4.46 AC Commercial, 600 Students Elementary School	7,223	580	799
McCabe Ranch	Residential	428 SFDU	3,550	282	385
Smoketree Drive Apartments	Residential	5.23 AC	860	60	77
Wake Avenue Auto Park	Commercial	34.62	11,040	442	940

[1] Thousand square feet.
Source: Katz, Okitsu & Associates. Willow Bend Impact Study, July 2006.

6.3 - Cumulative Impact Analysis

Agricultural Resources

The proposed project will result in the conversion of Farmlands of Statewide Importance. Additionally, the proposed project will result in the conversion of lands zoned for agricultural land uses to non-agricultural land uses. Similar to the proposed project, those projects listed in Table 6-1 have or will result in the conversion of designated farmlands and/or lands zoned for agricultural land uses. As with the proposed project, this is considered a significant and unavoidable impact.

Mitigation Measures

No mitigation is available.

Level of Significance After Mitigation

The conversion of designated farmland and/or lands zoned for agricultural land uses to non-agricultural land uses would be significant and unavoidable after mitigation. This significant and unavoidable impact would require the adoption of a Statement of Overriding Considerations.

Air Quality

The domain for cumulative air quality impacts is the Salton Sea Air Basin because it is the area in which pollutants from the basin circulate and are trapped. While a list of projects in the project area was used and is suitable for other cumulative analysis such as infrastructure, the list does not encompass all reasonably foreseeable future air pollution sources within the air basin. Therefore, the cumulative analysis of air quality needs to be comprehensive to the air basin.

A comparison was made of the CARB emissions inventory for the Salton Sea Air Basin and the Imperial County portion of the Salton Sea Air Basin with those from the project. This comparison is made to illustrate the project's contribution to the projected emissions in the Imperial County portion of the Salton Sea Air Basin. The comparison of projections for the year 2025 in the Salton Sea Air Basin, Imperial County, and the project are shown in Table 6-2. As shown in the table, the project contributes a small portion of the projected emissions in the year 2025. Note that project emissions found in Table 6-2 reflect a buildout year of 2007[1]. Emissions in 2025 would be approximately 30% to 40% lower because less polluting vehicles would replace the vehicles with higher emissions.

It is important to note that the emission projections for the Basin and County do not come directly from the City's or County's general plan or zoning maps. The bulk of the emission inventory is derived from data provided by air districts, Council of Governments, and transportation authorities. The on-road mobile emission sources are estimated using vehicle data from vehicle registration from the California Department of Motor Vehicles, travel information from the California Department of Transportation, local governments, as well as through fleet monitoring projects (CARB 2004). The off-road emissions are determined by the OFF-ROAD model (CARB 2004b). The stationary sources are large, fixed sources of air pollution and include plants, refineries, and factories. The stationary source data is sent to CARB from the state's air districts (CARB 2005). Area-wide sources are determined for approximately 500 emission source categories and the methodologies differ by sources (CARB 2004c).

[1] It is recognized that project buildout is expected for the year 2008; however, given that vehicle fleets become less pollutant with the passing of time, the 2007 analysis is considered a worst-case scenario.

Table 6-2: Comparison of Year 2025 California Air Resources Board Projections and Project Emissions

Source	Emissions (tons per day)					
	ROG	NO_x	CO	SO_x	PM10	PM2.5
Total Emissions - Salton Sea Air Basin	41.8	38.7	130.8	1.8	272.2	63.8
Total Emissions - Imperial County Portion of Salton Sea Air Basin	30.4	28.4	76.2	1.4	245.6	57.4
Percent stationary sources	11%	24%	2%	7%	1%	3%
Percent area-wide sources	58%	2%	11%	4%	98%	95%
Percent mobile sources	31%	74%	87%	89%	1%	2%
Emissions- Operational Project	0.1	0.1	0.9	8E-5	0.01	0.002
Operational Project Percent of Salton Sea Air Basin	0.24%	0.26%	0.69%	0.00%	0.00%	0.00%
Operational Project Percent of Imperial County	0.33%	0.35%	1.18%	0.00%	0.00%	0.00%
Source: California Air Resources Board. 2004 Emission Projections 2005.						

The Imperial County Air Pollution Control District (Imperial County APCD) evaluated the Imperial County portion of the Salton Sea Air Basin in developing its Imperial County Air Quality Attainment Plan (Attainment Plan) and State Implementation Plan for PM_{10} in the Imperial Valley (PM_{10} Plan). The Attainment Plan and the PM_{10} Plan contain performance standards and emission reduction targets necessary to attain the state and federal ambient air quality standards. Note that the Attainment Plan and PM_{10} Plan were originally adopted in 1991 and 1993 respectively and are currently being revised with adoption of the revised plans anticipated in 2007. District Rules reflect the reduction targets in the revised plans currently under development. The project will comply with all District rules and regulations. As required, the project will follow all Best Available Control Measures (BACM) found in the District's Regulation VIII Fugitive Dust Rules including Rule 801 which in part requires the project to develop a dust control plan. Therefore, project compliance with this rule will provide consistency with the currently adopted and revised PM_{10} and Attainment Plans. However, as discussed in Section 5.2.2 the density of the proposed project was not contemplated in the land use and population projections for the project area in these currently adopted plans. Because the density of the project exceeds the population projections in the 1991 Attainment Plan and 1993 PM_{10} Plan, the project specific analysis found the project to be inconsistent with these plans.

District Threshold Consistency

According to the CEQA Air Quality Handbook (2005) published by the Imperial County APCD, a cumulative impact analysis should encompass all planned construction activities within one-mile of the project site. The CEQA Air Quality Handbook also requires that an EIR evaluate project consistency with the Clean Air Plans and the District's Rules and Regulations.

As noted above, the project will comply with all District Rules and Regulations, but the project specific analysis found that the project is not consistent with the 1991 Attainment Plan or the 1993 PM_{10} Plan because the density of the project is greater than that anticipated in those plans.

There is substantial development in the project area and in the Salton SSAB. Much of this new development was not contemplated in the population projections of the 1991 Attainment Plan and the 1993 PM_{10} Plan. These new development projects have the potential to increase the emissions in the basin. The project area is not in attainment for ozone, CO, or PM_{10}. Operational emissions of ROG, NO_x (ozone precursor pollutants) CO, and PM_{10} from the proposed project will incrementally contribute to a significant cumulative effect because the project emissions combined with emissions from all other projects in the Salton Sea Air Basin will form cumulatively considerable air quality impacts with regard to these pollutants.

Mitigation Measures

See mitigation measures AQ 5.2-1 through AQ 5.2-9, in Section 5.2, Air Quality of this EIR.

Level of Significance After Mitigation

The project along with cumulative development is not consistent with the land use projections in the currently adopted plans and therefore, the proposed project will contribute to a significant and unavoidable cumulative air quality impact.

Biological Resources

Implementation of the proposed project, in conjunction with future developments as identified earlier in this section would contribute to the ongoing loss of open space in the region, resulting in a decline of habitat for burrowing owls and nesting birds. Cumulative development would also result in an increase in traffic and human use of the project vicinity, which would increase human intrusion and activity levels in proximity to habitat areas and wildlife use areas and, therefore, further reduce the quantity and quality of wildlife habitat. This would be a significant impact.

Mitigation Measures

See mitigation measures BR 5.3-1 through BR 5.3-8, in Section 5.3, Biological Resources of this EIR.

Level of Significance After Mitigation

After implementation of mitigation measures BR 5.3-1 through BR 5.3-8, the project's contribution to cumulative biological resources impacts would be less than significant.

Cultural Resources

The project site does not contain any known archaeological resources; however, there is the potential for soils at a depth of eight feet below ground level to contain paleontological resources. These resources may be impacted during earth moving construction activities. It is likely that only during trenching for utilities will soils be disturbed at a depth of eight feet below ground level. As with the

proposed project, historically the project sites listed in Table 6-1 supported agricultural activities, which most likely would have destroyed any potential archeological resources. However, like the proposed project, undisturbed soils at a depth of 8 feet below ground level could contain paleontological resources. Trenching for utilities or other earth moving activities that disturb soils eight feet and below ground level could impact paleontological resources. This would be a significant impact

Mitigation Measures

See mitigation measures CR 5.4-1 through BR 5.4-7, in Section 5.4, Cultural Resources of this EIR.

Level of Significance After Mitigation

After implementation of mitigation measures CR 5.4-1 through CR 5.4-7, the project's contribution to cumulative cultural resources impacts would be less than significant.

Geology and Soils

Geologic and soil influences are site specific and there is little, if any cumulative relationship between the development of the proposed project and development within the greater cumulative project area. For instance, development at the project site will not result in the altering of geologic events or soil features/characteristics, such as groundshaking, seismic intensity, or soil expansion, to and residential development at the project site will not affect the level of intensity at which a seismic event on an adjacent site is experienced. However, future development within the project site and the project area, as outlined earlier in Section 5.5, Geology and Soils of this EIR, may expose future populations to seismic hazards; yet, seismic safety standards for new construction and ongoing provisions for emergency preparedness and response are anticipated to reduce such a risk to an acceptable level, on a project-by-project basis. Therefore, the project in conjunction with other projects or conditions will not result in cumulative impacts on geology and soils.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

No significant cumulative geology and soils impacts will occur with project implementation.

Hazards and Hazardous Materials

The presence of stored hazardous materials or the potential for the prior release and migration of hazardous materials tends to be site specific and is dictated primarily by historical and present land uses at the project site and surrounding sites. The ability of contaminants to migrate onto a site is determined in part by depth and flow of groundwater, the presence or absence of physical barriers, and other topographical conditions. As discussed in Section 5.6 of this EIR, groundwater was encountered at a depth of 8 feet; however, groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, drainage, and site grading. It should be noted that there is uncertainty in accuracy of short-term water level measurements, particularly in fine-grained soil, and

the referenced groundwater level should not be interpreted to represent an accurate or permanent condition. As discussed in Section 5.4, with the exception of trenching for utilities during construction, soils (and subsequently groundwater) at a depth of 8 feet or greater below ground level are not anticipated to be disturbed and residential development such as that proposed is not likely to result in activities that would introduce hazardous materials at such depths.

The proposed project will cumulatively increase the use of common Household Hazardous Wastes (HHWs) in the area as development intensifies within the greater project area. The use of HHWs is regulated federally, state-wide, and locally, and Imperial County operates a household hazardous waste collection and reuse facility, which allows residents to deliver and dispose of their household hazardous wastes in a manner which will not result in cumulative hazardous materials impacts. It is recognized that proper disposal is voluntary, and there is the possibility that some HHWs will be disposed of in an improper manner. However, the use of HHWs by a typical homeowner is not at such levels that the occasional improper disposal will result in a release that will pose a threat.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

No significant cumulative hazards and hazardous materials impacts will occur with project implementation.

Noise

In this scenario forecasted traffic volumes for the year 2025 were used in the model to analyze future year conditions. Results are identified in Table 6-3.

Table 6-3: Cumulative Noise Levels

Receptor	Future No Project Predicted	Future Plus Project Predicted	Future No Project & Future Plus Project Difference
Receptor 1	65.1	66.5	1.4
Receptor 2	65.3	66.6	1.3

Interior Noise Analysis

Residential construction methods complying with current building code requirements will reduce exterior noise levels by at least 20-25 dB if windows and doors are closed. An evaluation of predicted future noise levels indicate that this reduction will be sufficient for compliance with the City's 45 dB DNL interior standard.

Exterior Noise Analysis

Results of the analysis indicate that Receptors 1 and 2 (see Exhibit 5.7-1 of this EIR) will exceed El Centro's acceptability criterion of 60 dB L_{eq} within the outdoor activity areas of noise sensitive land

uses. For the undeveloped site, the future traffic noise exposure from State Route 86 at the closest proposed building setback is 66.6 L_{eq}.

An analysis of the projects impact on sensitive receptors in the surrounding area was conducted to determine whether or not the projects traffic would have an impact on these sensitive receptors. As discussed in Section 5.8 of the EIR, approximately 700 feet north of the proposed project is home that is located approximately 50 feet from the centerline of SR 86. This home is used to represent all sensitive receptors in the area because of its close proximity to SR 86. Under cumulative conditions, the proposed project contributes a 1.3 L_{eq}, which is less than the noticeably perceptible noise increase under laboratory conditions and therefore, the proposed project's contribution to the cumulative noise environment is not considered cumulatively considerable.

Mitigation Measures

N 6-1 A 6-foot high sound wall should be constructed along the project site. The sound wall must be continuous and constructed of a dense material such as masonry blocks or stucco on both sides of a wood/steel frame.

N 6-2 Mechanical ventilation or air conditioning must be provided for all homes so that windows and doors may remain closed for the required acoustical insulation.

Table 6-4 shows the noise levels at the receptor sites after mitigation.

Table 6-4: Mitigated Future Year Traffic Noise

Receptor	Sound Wall Height, Feet	Predicted Future L_{eq}, dB
1	6.0	59.3
2	6.0	59.6
Source: VRPA Technologies, Inc. Proposed Willow Bend Development Noise Impact Assessment, July 2006.		

Level of Significance After Mitigation

After implementation of mitigation measures N 6-1 and N 6-2, the project's contribution to cumulative noise impacts is less than significant.

Public Services and Utilities

The proposed project will result in an increased demand for public services and utilities. As discussed in Section 5.8 of this EIR, with the exception of solid waste impacts, the payment of development fees and/or in lieu fees, the project will not result in any significant public services and utilities impacts. Like the proposed project, those cumulative projects listed in Table 6-1 will increase the demand for public services and utilities; however, these projects have or will be required to pay development fees and/or in lieu fees as appropriate. Additionally, similar to the proposed project solid waste impacts would be mitigated on a project by project basis through compliance with AB 930 and other solid waste regulation. In addition to compliance with applicable regulations to

reduce public service and utilities impact the payment of development and/or in-lieu fees will assist in the financing for the construction of new facilities, purchase of new equipment, and/or the employment of additional staff needed to serve cumulative development.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

No significant cumulative public services and utilities impacts will occur with project implementation.

Transportation and Traffic

To evaluate the cumulative impact of the project and future growth on the transportation network, two cumulative scenarios have been prepared for the proposed project, the Near-Term (2008) and Horizon Year (2025) scenario.

Near-term Traffic Scenario

Near-term conditions represent the addition of the proposed project to the future near-term traffic volumes. Traffic growth on the study area network is a function of the expected land development, economic activity, and changes in demographics. For this analysis, traffic from proposed project and other cumulative projects were added to existing traffic counts to develop near-term traffic volumes. Other than the proposed project, cumulative projects consist of planned new developments that will add traffic to the study area roadway network. The type and size of each project are shown in Table 6-1, Cumulative Projects List. No circulation network alterations were assumed under the Near-term scenario.

As previously discussed in Section 5.9, to determine direct and cumulative roadway segment and intersection project impacts, Katz Okitsu & Associates in concert with the City of El Centro developed a series of thresholds based on allowable increases in volume-to-capacity ratios for roadway segments and increases in seconds of delay for intersections that become more stringent as levels of service worsens. Roadway segments and intersections operating at LOS C or better in the existing condition with the addition of the proposed project are not considered significantly impacted. Under the Near-term analysis, which includes the addition of all planned cumulative projects including the proposed project, roadway segments and intersections operating at a LOS D or better are not considered cumulatively impacted.

Intersection Analysis

The Near-term with project weekday AM and PM peak hour intersection volumes within the study area and corresponding LOS are shown in Table 6-5.

Table 6-5: Intersection Level of Service for Near-term Conditions

Intersections	Existing without Project		Existing with Project and Cumulative Projects			
AM Peak Hour	**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**	**Δ (Sec)**	**Significant**
Unsignalized Intersections						
State Route 86 & Horne Road	11.3	B	29.0	D	17.9	No
State Route 86 & Willow Bend Drive (Project Access)	10.9	B	25.0	C	14.0	No
State Route 86 & Countryside Drive (Project Access)	10.7	B	23.5	C	12.7	No
State Route 86 & West McCabe Road	19.7	C	OVR	F	N/A	Cumulative
Signalized Intersections						
State Route 86 & Interstate 8 Westbound Ramp	19.0	B	32.9	C	13.9	No
State Route 86 & Interstate 8 Eastbound Ramp	19.9	B	31.6	C	11.7	No
State Route 86 & Wake Avenue	17.2	B	26.1	C	8.9	No
State Route 86 & Danenberg Drive	13.5	B	13.5	B	0	No
PM Peak Hour	**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**	**Δ (Sec)**	**Significant**
Unsignalized Intersections						
State Route 86 & Horne Road	13.7	B	360.1	F	343.6	Cumulative
State Route 86 & Willow Bend Drive (Project Access)	11.3	B	61.9	F	48.9	Cumulative
State Route 86 & Countryside Drive (Project Access)	11.1	B	52.7	F	40.6	Cumulative
State Route 86 & West McCabe Road	19.7	C	OVR	F	N/A	Cumulative
Signalized Intersections						
State Route 86 & Interstate 8 Westbound Ramp	23.1	C	144.7	F	121.6	Cumulative
State Route 86 & Interstate 8 Eastbound Ramp	25.7	C	142.3	F	116.6	Cumulative
State Route 86 & Wake Avenue	18.0	B	75.3	E	57.3	Cumulative
State Route 86 & Danenberg Drive	14.8	B	27.9	C	13.1	No
Source: Katz, Okitsu & Associates, July 2006.						

As shown in Table 6-5, seven (7) of the eight study area intersections under the Near-term conditions will experience a significant cumulative impact. The addition of project traffic will cumulatively contribute to the degradation of these intersections resulting in an operational LOS E or worse. These intersections are:

- State Route 86 and West McCabe Road (AM - LOS F, PM - LOS F)
- State Route 86 and Horne Road (PM - LOS F)
- State Route 86 and Willow Bend Drive (Project Access) (PM - LOS F)
- State Route 86 and Countryside Drive (Project Access) (PM - LOS F)
- State Route 86 and Interstate 8 Westbound Ramp (PM - LOS F)
- State Route 86 and Interstate 8 Eastbound Ramp (PM - LOS F)
- State Route 86 and Wake Avenue (PM - LOS E)

Roadway Segment Analysis

The Near-term with project daily traffic volumes for the roadway segments studied within the study area and corresponding LOS are shown in Table 6-6.

Table 6-6: Roadway Segment Capacity for Near-term

Roadway Segment	Lanes/Class	LOS E Capacity	Existing without Project			Project Traffic	Existing with Project and Cumulative Projects			Comparison	
			ADT	V/C	LOS		ADT	V/C	LOS	Δ V/C	Significant
State Route 86											
McCabe Road to Project Access[1]	2/Arterial	17,500	7,631	0.436	C	200	14,731	0.842	E	0.406	Cumulative
Project Access to Danenberg Drive[1]	3/Arterial	27,750	7,631	0.275	A	1,133	15,664	0.564	B	0.289	No
Danenberg Drive to Wake Avenue[2]	3/Arterial	27,750	13,575	0.489	B	933	22,108	0.797	C	0.307	No
Wake Avenue to I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B	866	35,426	0.957	E	0.403	Cumulative
I-8 Westbound Ramps to Aurora Drive[3]	4/Arterial	37,000	13,576	0.367	A	467	24,743	0.669	C	0.302	No

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004).
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given the three lane alignment with a raised median.
[3] Four Lane Arterial standards from the El Centro General Plan Circulation Element (2004).

Source: Katz, Okitsu & Associates, July 2006.

As shown in Table 6-6 two (2) of the five roadway segments under the Near-term conditions will be significantly impacted by cumulative projects that include the proposed project. The addition of project traffic will cumulatively contribute to the degradation of these roadway segments resulting in an operational LOS E or worse. These roadway segments are:

- State Route 86 - McCabe Road to Project Access (South of Horne Road) (LOS E)
- State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps (LOS E)

Fair Share Calculation

Since the City of El Centro has not adopted a fair share percentage calculation formula; therefore with the agreement of the City of El Centro, the City of San Diego formula has been used. This is consistent with the fair share calculation methodology implemented for other approved projects within the City of EL Centro. The City of San Diego fair share formula is as follows:

$$\frac{\text{Project Traffic (ADT)}}{[\text{ Existing (ADT)} + \text{Project (ADT)} + \text{Cumulative (ADT) }] - \text{Existing (ADT)}} = \%$$

Mitigation Measures

The following roadway improvements are recommended to improve the operation of the impacted locations. The City Engineer shall make the determination of whether the payment of proportionate share or installation of the improvements is required. This shall be completed at the time of project approval. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for all cumulatively impacted locations.

As these roadway network improvements effect intersections and roadways under Jurisdiction of the State of California Department of Transportation (Caltrans) along State Route 86, the following improvements are in accordance with the Memorandum of Understanding (MOU) regarding State Route 86 between Caltrans and the City of El Centro. These improvements adhere to the guidelines as established within the MOU and mitigate all intersections and roadway segments to a LOS D or better.

Intersections

TT 6-1 State Route 86 and Interstate 8 Westbound Ramp - The project applicant shall contribute a fair share (4.9%) towards the construction of a westbound right-turn lane and a second northbound left-turn lane. LOS before/after mitigation: F/D.

TT 6-2 State Route 86 and Interstate 8 Eastbound Ramp - The project applicant shall contribute a fair share (4.6%) towards the construction of two eastbound right-turn lanes and a second southbound left-turn lane. LOS before/after mitigation: F/D.

TT 6-3 State Route 86 and Wake Avenue - The project applicant should contribute a fair share (4.7%) towards the construction of a second eastbound left-turn lane. LOS before/after mitigation: E/D.

TT 6-4 State Route 86 and Horne Road - The project applicant should contribute a fair share (10.6%) towards the signalization of the intersection. LOS before/after mitigation: F/B.

TT 6-5 State Route 86 and Willow Bend Drive - The project applicant should contribute a fair share (13.8%) towards the construction of a right turn in/right turn out island from the project driveway. LOS before/after mitigation: F/C.

TT 6-6 State Route 86 and Countryside Drive - The project applicant should contribute a fair share (9.0%) towards the signalization of the intersection. LOS before/after mitigation: F/A.

TT 6-7 State Route 86 and West McCabe Road - The project applicant should contribute a fair share (1.5%) towards the signalization of the intersection including the provision of dedicated eastbound and westbound left-turn pockets. LOS before/after mitigation: F/C.

Roadway Segments

TT 6-8 State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps - The project applicant should contribute a fair share (5.6%) towards the widening of SR 86 between Wake Avenue and I-8 to six lanes. LOS before/after mitigation: E/B.

TT 6-9 State Route 86 - McCabe Road to Project Access - The project applicant should contribute a fair share (2.7%) towards the widening of SR 86 between McCabe Road and Project Access to four lanes, including the widening of SR 86 to four lanes along the project frontage. LOS before/after mitigation: E/A.

Level of Significance After Mitigation

After implementation of mitigation measures TT 6-1 through TT 6-9, the project's contribution to significant transportation and traffic is less than significant.

Future-Year 2025 Traffic Scenario

Horizon Year conditions were obtained from the Imperial County Traffic Model (ICTM) provided by Caltrans District 11, which represents Year 2025. The proposed project traffic was assumed in the model and the effects of the long-term traffic including traffic associated with the proposed project on the study area circulation network was evaluated. The following table summarizes the results of this analysis. The long-term plus project daily traffic volumes including levels of service are shown in Table 6-6.

Horizon Year 2025 Circulation Network

No other circulation network changes were assumed under the Near-term scenario.

Table 6-7: Horizon Year 2025 Roadway Segment Conditions

Roadway Segment	Lane/Class	LOS E Capacity	Existing No Project			Project Traffic	Long-Term (Existing + Horizon Year Including the Proposed Project)			Comparison	
			ADT	V/C	LOS		ADT	V/C	LOS	Δ V/C	Significant
State Route 86											
Between McCabe Road and Project Access (South of Home Road)[1]	2/Arterial	17,500	7,631	0.436	C	193	22,400	1.280	F	0.844	Long-Term
Between Project Access and Danenberg Drive[2]	3/Arterial	27,750	7,631	0.275	A	1,093	22,400	0.807	D	0.532	No
Between Danenberg Drive and Wake Avenue[2]	3/Arterial	27,750	13,575	0.489	B	900	29,500	1.063	F	0.574	Long-Term
Between Wake Avenue and I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B	836	29,500	0.797	C	0.243	No

[1] Two Lane Arterial standards from El Centro General Plan Circulation (2004).
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given three lane alignment with raised median.
[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004).
Source: Katz, Okitsu & Associates. Willow Bend Traffic Impact Study, July 2006.

As shown in Table 6-1, no roadway segment within the study area included in the Imperial County Traffic Model will operate at an unacceptable level (LOS D or worse) under a Future Year 2025 cumulative traffic scenario.

Mitigation Measures

One new mitigation measure beyond those identified for the Near Term cumulative traffic scenario, which are to be implemented at the time of project buildout in year 2008 is required for the Future Year 2025 cumulative traffic scenario. [2]

Roadway Segment

TT 6-10 SR-86 between Danenberg Drive and Wake Avenue - The project applicant shall contribute a fair share (5.7%) towards the widening of the SR-86 between Danenberg and Wake Avenue to four lanes.

It should be noted that the City Engineer shall make the determination whether the payment of the proportionate share or installation of the improvements is required. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for a cumulatively impacted locations.

Level of Significance After Mitigation

With the implementation of mitigation measure TT 6-10, the project's contribution to cumulative transportation and traffic impacts is less than significant.

6.4 - Conclusions

With the inclusion of the mitigation measures identified in this EIR, with the exception of cumulative agricultural resources and air quality impacts, all cumulative impacts will be reduced to less than significant. The project will require the adoption of a Statement of Overriding Considerations for impacts to agricultural resources and air quality.

[2] Please note that TIS indicates that there is a 2025 Future Year Impact along SRj-86 between McCabe Road and the project access. The project's fair share contribution for the near-term conditions constitute full project mitigation for this roadway segment.

SECTION 7: ALTERNATIVES TO THE PROPOSED PROJECT

Section 15126.6 of the State CEQA Guidelines, as amended, mandates that an EIR include a comparative evaluation of a proposed project with the alternatives to the project. CEQA requires that this analysis explain why the alternatives and related mitigation measures would not be preferable to the proposed project. This must include a No Project Alternative. This section focuses on alternatives, as identified in Section 15126(d)(2) of the State CEQA Guidelines, to the Willow Bend project that are capable of avoiding or substantially lessening any significant adverse impacts associated with the proposed project—even if these alternatives would to some degree impede attainment of project objectives or be more costly. The alternatives may result in new impacts that would not result from the proposed project.

Case law suggests that discussion of alternatives need not be exhaustive, and that alternatives be subject to reasonable construction. CEQA Guidelines Section 15126(d)(3) states that impacts of the alternatives may be discussed "in less detail than the significant effects of the project as proposed."

This Draft EIR evaluates two alternatives:

- No Project/No Development Alternative; and
- No Project/Development in Accordance with the Existing Zoning Alternative

Additionally, a third alternative, an Alternative Site Alternative was considered but was eliminated from further analysis in this EIR as discussed in Section 7.3 below.

An Environmentally Superior Alternative will be selected from among the two alternatives evaluated in this Draft EIR. An alternative that is environmentally superior will result in the fewest or least significant environmental impacts and will achieve the project objectives of the planning effort.

As stated in Section 3, Project Description, of this Draft EIR, the project objectives are to:

- Supply single-family housing to meet the growth projections of the City of El Centro contiguous to similar development within the City's Sphere-of-Influence;
- Locate development to meet anticipated growth in areas of relatively lesser environmental sensitivity, accommodating growth while balancing environmental considerations;
- Provide public infrastructure improvements for the orderly expansion of urban development; and
- Locate housing adjacent to major highway arterials (Highway 86) and with convenient access to Interstate 8 to promote efficient traffic flows and minimize traffic demands on local and collector streets.

The analysis of the alternatives assumes that all applicable mitigation measures associated with the project will be implemented with the appropriate alternatives. However, applicable mitigation measures may be scaled to reduce or avoid a potential impact of the alternative under consideration and may not precisely match those identified for the Willow Bend project.

7.1 - No Project/No Development Alternative

Under the No Project/No Development Alternative (No Project Alternative) the entire project site would remain unchanged and no new development would occur on onsite. In general the Willow Bend project site would continue to support undeveloped agricultural land uses and the project site would not be annexed into the City of El Centro.

7.1.1 - Impact Analysis

Agricultural Resources

Historically, the project site supported agricultural land uses. However, presently, the site does not support agricultural land uses and the site remains undeveloped. As discussed in Section 5.1, Agricultural Resources, of this Draft EIR, the project site contains soils that are associated lands designated as Farmland of Statewide Importance. Project implementation will result in the conversion of the site from undeveloped land to a residential subdivision. This conversion will preclude the use of the site for future agricultural land uses and therefore, result in the loss of Farmland if Statewide Importance, which is considered a significant unavoidable impact. The No Project Alternative would not result in any development onsite and thus it would not result in the loss of Farmland of Statewide Importance and would not preclude future agricultural land uses at the project site. Therefore, the No Project Alternative is considered to have less agricultural resources impacts in relation to the proposed project.

Air Quality

Air quality impacts are primarily associated with vehicle emissions. In the short-term air emissions are generated through the operation of construction and earth moving vehicles and in the long-term air emissions are generated through by project-related traffic. No new short-term or long-term air emissions would be generated as a result of the No Project Alternative. However, as identified in Section 5.2, Air Quality, and Section 6, Cumulative Impacts, of this Draft EIR, with mitigation the proposed project will not result in any significant short-term or long-term air quality impacts; however, the proposed project is not consistent with the Air Quality Management Plan and therefore, in accordance with the air quality thresholds identified in Appendix G of the CEQA Guidelines, the proposed project will result in a significant unavoidable impact. The No Project Alternative would not generate any air emissions and will be consistent with the Air Quality Management Plan; therefore, the No Project Alternative is considered to have less air quality impacts in relation to the proposed project.

Biological Resources

In the short-term, impacts to burrowing owls will occur as a result of the open drainage facilities being undergrounded. In the long-term, development of the project site will result in permanent impacts to 38 acres of burrowing owl foraging, dispersing, and nesting habitat and two pair and one individual burrowing owl were observed onsite during field surveys. Additionally, the project site contains suitable nesting bird habitat. As identified in Section 5.3, Biological Resources, of this Draft EIR, with mitigation the proposed project will not result in any significant biological resources impacts. However, the No Project Alternative would not result in short-term or long-term impacts to burrowing owls or nesting birds. Therefore, the No Project Alternative is considered to have less biological resources impacts in relation to the proposed project.

Cultural Resources

The project site has the potential to contain paleontological resources, which could be disturbed during site preparation. As identified in Section 5.4, Cultural Resources, of this Draft EIR, with mitigation, the proposed project will not result in any significant cultural resources impacts. However, under the No Project Alternative, the project site would remain undisturbed and thus, would not result in potentially disturbing paleontological resources. Therefore, the No Project Alternative is considered to have less cultural resources impacts in relation to the proposed project.

Geology and Soils

As with most of southern California, the project site is located in a seismically active area and it is likely that the project site will experience strong groundshaking during the lifetime of the project. The project site may also be subject to impacts as a result differential settlement, expansive soils, and high groundwater. As identified in Section 5.5, Geology and Soils, of this Draft EIR, with mitigation, the proposed project will not result in any significant geology and soils impacts. However, the No Project Alternative would not introduce populations or structures in a seismically active area that is subject to geological impacts. Therefore, the No Project Alternative is considered to have less geology and soils impacts in relation to the proposed project.

Hazards and Hazardous Materials

In general, in relation to residential developments, hazardous materials impacts occur in the short-term during ground disturbance and construction activities and in the long-term as a result of the storage and disposal of household hazardous wastes (HHWs). Additionally, as with any ground disturbing activity, there is the potential for the discovery and disturbance of previously unknown hazardous materials during construction and earth moving. As discussed in Section 5.6, Hazards and Hazardous Materials, of the Draft EIR, the proposed project will not result in any hazards or hazardous materials impacts. However, since the No Project Alternative would not introduce any HHWs into the project area or result in ground disturbing activities. Therefore, the No Project Alternative is considered to have less hazards and hazardous materials impacts in relation to the proposed project.

Noise

Primarily, residential development creates short-term noise impacts through the operation of construction equipment and long-term noise impacts through increased vehicle traffic. As discussed in Section 5.7, Noise, with mitigation, the proposed project will not result in any significant noise impacts. However, the No Project Alternative would not result in any short-term construction activities or introduce new vehicle traffic into the project area. Therefore, the No Project Alternative is considered to have less noise impacts in relation to the proposed project.

Public Services and Utilities

Project implementation will generate a demand for public services and utilities and will require the extension of utility infrastructure to the site. The introduction of new residences and populations has the potential to place constraints on public services. However, as discussed in Section 5.8, Public Services, of the Draft EIR, in addition to mitigation measure PSU 5.8-1 the project applicant will be required to pay development fees and/or pay one-time presumptive payment fees, which reduce project public service and utilities impacts to less than significant. Yet, the No Project Alternative would not generate a demand for services or require the extension of infrastructure to the site. Therefore, the No Project Alternative is considered to have less public services and utilities impacts in relation to the proposed project.

Transportation and Traffic

Project implementation will result in generating 1,333 vehicle trips per day, of which 101 will be AM peak hour trips and 137 will be PM peak hour trips. The No Project Alternative would not result in generating any new vehicle trips within the project area. The proposed project is not anticipated to result in any project-related direct impacts and as discussed in Section 6, Cumulative Impacts, of this Draft EIR, all project related cumulative impacts can be mitigated to a level that is less than significant. Yet, since the No Project Alternative would not result in any new vehicle trips, this alternative is considered to have less transportation and traffic impacts in relation to the proposed project.

7.1.2 - Conclusions

The No Development Alternative would result in less agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, public services and utilities, and transportation and traffic impacts than the proposed project. The No Project Alternative would not meet the objectives of the proposed project.

7.2 - No Project/Development in Accordance with the Existing Zoning Alternative

The No Project/Development in Accordance with the Existing Zoning Alternative (Zoning Alternative) would result in the development of the project site under the existing zoning designation. Similar to the No Project Alternative, under this alternative scenario, the project would not be

annexed into the City of El Centro. Currently the project site is zoned by Imperial County as General Agriculture/Urban Overlay (A2U). Under this designation, agricultural land uses are allowed. The density permitted is one dwelling unit per 40 acres. Therefore, under the current County zoning designation, the 38-acre project would preclude residential development but allow agricultural production and associated activities.

7.2.1 - Impact Analysis

Agricultural Resources

Under this alternative, the project site would be utilized for agricultural land uses. As discussed in Section 5.1, Agricultural Resources, of this Draft EIR, the project site contains soils that are associated lands designated as Farmland of Statewide Importance. Project implementation will result in the conversion of the site from undeveloped land to a residential subdivision. This conversion will preclude the use of the site for future agricultural land uses and therefore, result in the loss of Farmland if Statewide Importance, which is considered a significant unavoidable impact. The Zoning Alternative would not preclude agricultural activities onsite and thus it would not result in the loss of Farmland of Statewide Importance. However, it should be noted, given the site's proximity to encroaching urban development, agricultural activities may be limited. However, the Zoning Alternative would not result in the conversion of designated farmlands; therefore, the Zoning Alternative is considered to have less agricultural resources impacts in relation to the proposed project.

Air Quality

Air quality impacts are primarily associated with vehicle emissions. In the short-term air emissions are generated through the operation of construction and earth moving vehicles and in the long-term air emissions are generated by project-related traffic. Under the Zoning Alternative air quality impacts would result from the operation of agricultural cultivation equipment, potentially soil erosion, and crop burning. The amount of air quality emissions that could occur under this alternative is speculative since it would vary with types of crops and farming methods. Additionally, currently agricultural operations are to have dust control plans available for review. As identified in Section 5.2, Air Quality, and 6, Cumulative Impacts, of this Draft EIR, with mitigation the proposed project will not result in any significant short-term or long-term air quality impacts; however, the proposed project is not consistent with the Air Quality Management Plan and therefore, in accordance with the air quality thresholds identified in Appendix G of the CEQA Guidelines, the proposed project will result in a significant unavoidable impact. The Zoning Alternative would be consistent with the Air Quality Management Plan; therefore, this alternative is considered to have less air quality impacts in relation to the proposed project.

Biological Resources

Two pair and one individual burrowing owl were observed onsite during field surveys The Zoning Alternative would not result in the undergrounding of drainage facilities. However, agricultural

activities may result in permanent impacts to 38 acres of burrowing owl foraging, dispersing, and nesting habitat. As identified in Section 5.3, Biological Resources, of this Draft EIR, with mitigation the proposed project will not result in any significant biological resources impacts. However, while the Zoning Alternative would result in the same long-term impacts as the proposed project (impacts to burrowing owl foraging, dispersing, and nesting habitat) it would not result in the undergrounding of drainage facilities, which would result in the destruction of burrowing owl habitat. Therefore, Zoning Alternative is considered to have slightly less biological resources impacts in relation to the proposed project.

Cultural Resources

As identified in Section 5.4 of this Draft EIR, it is likely that any near surface paleontological resources have been disturbed due to historical agricultural activities at the project site. However, paleontological resources may be present onsite at depths below 8 feet, which may be impacted during site preparation activities such as trenching for utilities. As identified in Section 5.4, Cultural Resources, of this Draft EIR, with mitigation, the proposed project will not result in any significant cultural resources impacts. However, the Zoning Alternative would not result in impacts to cultural resources. Therefore, the Zoning Alternative is considered to have less cultural resources impacts in relation to the proposed project.

Geology and Soils

As with most of southern California, the project site is located in a seismically active area and it is likely that the project site will experience strong groundshaking during the lifetime of the project. The project site may also be subject to impacts as a result differential settlement, expansive soils, and high groundwater. As identified in Section 5.5, Geology and Soils, of this Draft EIR, with mitigation, the proposed project will not result in any significant geology and soils impacts. However, the Zoning Alternative would not introduce populations or structures in a seismically active area that is subject to geological impacts. Therefore, the Zoning Alternative is considered to have less geology and soils impacts in relation to the proposed project.

Hazards and Hazardous Materials

In general, agricultural activities include the use of chemicals and pesticides; however, given the project site's proximity to urban uses, in particular residential land uses, the application of chemicals or pesticides would be limited under the Zoning Alternative. Under project implementation hazardous materials impacts would occur in the short-term during ground disturbance and construction activities and in the long-term as a result of the storage and disposal of household hazardous wastes (HHWs). Additionally, as with any ground disturbing activity, there is the potential for the discovery and disturbance of previously unknown hazardous materials during construction and earth moving. As discussed in Section 5.6, Hazards and Hazardous Materials, of the Draft EIR, the proposed project will not result in any hazards or hazardous materials impacts. Therefore, the Zoning Alternative would not introduce any HHWs into the project area but it could result in the limited use

or disposal of other hazardous materials. Therefore, neither the Zoning Alternative nor the proposed project is considered to be superior in relation to hazards and hazardous materials.

Noise

Under the Zoning Alternative, noise generation would be primarily associated with the operation of agricultural cultivation equipment. The proposed project would generate short-term noise impacts through the operation of construction equipment and long-term noise impacts through increased vehicle traffic. As discussed in Section 5.7, Noise and Section 6, Cumulative Impacts, with mitigation, the proposed project will not result in any significant noise impacts. However, the Zoning Alternative would not result in any short-term construction activities or introduce new vehicle traffic into the project area. Therefore, the Zoning Alternative is considered to have less noise impacts in relation to the proposed project.

Public Services and Utilities

Project implementation will generate a demand for public services and utilities and will require the extension of utility infrastructure to the site. The introduction of new residences and populations has the potential to place constraints on public services. However, as discussed in Section 5.8, Public Services, of the Draft EIR, in addition to mitigation measure PSU 5.8-1 the project applicant will be required to pay development fees and/or pay one-time presumptive payment fees, which reduce project public service and utilities impacts to less than significant. Yet, the Zoning Alternative would not generate a demand for services or require the extension of infrastructure to the site. Therefore, the Zoning Alternative is considered to have less public services and utilities impacts in relation to the proposed project.

Transportation and Traffic

Project implementation will result in generating 1,333 vehicle trips per day, of which 101 will be AM peak hour trips and 137 will be PM peak hour trips. The Zoning Alternative would not result in generating any new vehicle trips within the project area. The proposed project is not anticipated to result in any project-related direct impacts and as discussed in Section 6, Cumulative Impacts, of this Draft EIR, all project related cumulative impacts can be mitigated to a level that is less than significant. Yet, since the Zoning Alternative would not result in any new vehicle trips, this alternative is considered to have less transportation and traffic impacts in relation to the proposed project.

7.2.2 - Conclusions

The Zoning Alternative would result in less agricultural resources, air quality, biological resources, cultural resources, geology and soils, public services and utilities, and transportation and traffic impacts than the proposed project and similar level of hazards and hazardous materials impacts as the proposed project. The No Project Alternative would not meet the objectives of the proposed project.

7.3 - Alternative Site Alternative (Alternative Considered and Rejected)

An Alternative Site Alternative was initially considered for analysis within this Draft EIR; however after further consideration, it was determined that this alternative would not be feasible. Specifically, an examination of available parcels of land that could support the proposed project indicated that the inventory of available parcels consisted of agricultural lands and lands designated for agricultural land uses. Therefore, similar to the proposed project, the implementation of an Alternative Site Alternative would result in the conversion of agricultural lands and would not be consistent with the Air Quality Management Plan thus, an Alternative Site Alternative would not eliminate a significant unavoidable project impact. Additionally, while CEQA Guidelines do not require that an alternative meet the project objectives and may to some degree impede attainment of project objectives, there was no suitable alternative site that could avoid a project-related significant unavoidable impacts and partially meet the project objectives.

7.4 - Environmentally Superior Alternative

The environmentally superior alternative is selected from among the preceding alternatives and the Willow Bend project. An alternative that is environmentally superior would result in the fewest or least significant impacts and will feasibly attain most of the objectives of the planning effort. Based on the evaluation of the alternatives in this section, the No Project/No Development Alternative would result in fewer significant impacts than the Willow Bend project. CEQA states that if the environmentally superior alternative is the "No Project" alternative, the EIR shall also identify an environmentally superior alternative from other alternatives. The No Project Development Under the Existing Zoning Alternative is, thus, considered to be the environmentally superior alternative. However, this alternative would not meet any of the project objectives.

SECTION 8: OTHER CEQA CONSIDERATIONS

8.1 - Significant Unavoidable Impacts

According to CEQA Guidelines Section 15126, an EIR must disclose the significant unavoidable impacts that will result from a project. Moreover, these guidelines state that an EIR should explain the implications of such impacts and the reasons why the project is being proposed, notwithstanding such impacts. Implementation of the Willow Bend residential subdivision project will result in the alteration of the physical environment. Section 5, Project Impacts, Mitigation Measures, and Level of Significance After Mitigation and Section 6, Cumulative Impacts of this Draft EIR provide a description of the potential environmental impacts of the proposed project, as well as measures to reduce the environmental impacts to the maximum extent feasible. After implementation of the Willow Bend project and the project-related mitigation measures, it has been determined that with the exception of agricultural land use and air quality impacts, as summarized below, all project-related impacts can be feasibly mitigated to a level that is considered less than significant.

- The project site contains Soils of Statewide Importance, and therefore, the project site is considered to contain Farmland of Statewide Importance. Accordingly, the conversion of agricultural land to urban uses would constitute a significant loss of Prime Farmland or Farmland of Statewide Importance. Potential impacts in this regard would be significant and unavoidable under CEQA. No feasible measures are available for the project applicant to reduce this potential impact to a level less than significant. However, the project site meets LAFCO criteria to be converted from agricultural use to urban use, and impacts would be less than significant in this regard.

- Development of the proposed project and future development in accordance with the City's General Plan would result in inconsistencies with the Imperial County Air Quality Attainment Plan (Attainment Plan) and the State Implementation Plan for PM_{10} in the Imperial Valley (PM_{10} Plan). The Imperial County population projections for year 2020 used in the Attainment Plan and PM_{10} Plan for the City of El Centro assumes land use designations in the General Plan and includes build-out of the site. The project site under the current County General Plan land use designation (Urban) would accommodate approximately only 2 dwelling units (based on the 2 dwelling units per parcel). The proposed project accommodates a maximum of 131 single-family residential dwelling units. Clearly the proposed project would result in a higher density, and more vehicle trips and vehicle miles traveled than what was anticipated in the Attainment Plan and PM_{10} Plan. Because the project will result in more people and more traffic than what was considered in the plan, the project is not consistent with the Attainment Plan and PM_{10} Plan, and therefore would create a significant impact in this regard.

8.2 - Growth Inducing Impacts

This section evaluates the potential for the Willow Bend residential project to affect "economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment" (CEQA Guidelines, 15126.2[d]).

There are two types of growth inducing impacts a project may have: direct and indirect. To assess the potential for growth-inducing impacts, the project characteristics that may encourage and facilitate activities that individually or cumulatively may affect the environment must be evaluated.

Direct growth-inducing impacts occur when the development of a project imposes new burdens on a community that directly induces population growth or the construction of additional developments in the same area of the proposed project, thereby triggering related growth-associated impacts. Included in this analysis are projects that would remove physical obstacles to population growth (such as a new road into an undeveloped area or a wastewater treatment plant that could allow more construction in the service area). Construction of these types of infrastructure projects cannot be considered isolated from the development they trigger. In contrast, projects that physically remove obstacles to growth, projects that indirectly induce growth, are those which may provide a catalyst for future unrelated development in an area (such as a new residential community that requires additional commercial uses to support residents).

Implementation of the proposed project will result in growth inducement directly through the construction of new residential units However, the proposed residential land uses are in accordance with the planned development Tier II growth patterns for southern El Centro as outlined in the General Plan - Urban Development Program. The project does not introduce any new offsite roadways (arterials or collectors) or interchanges and it does not result in any extensions or upgrades of circulation facilities not already planned pursuant to the General Plan. Thus, the project is not introducing any new facilitations to growth inducement not already envisioned to be needed to accommodate planned future growth. Hence, while it is recognized that the project will induce growth in the project area, such growth is in concurrence with the planned growth patterns established by the City through its General Plan process.

8.3 - Irreversible and Irretrievable Commitment of Resource

The environmental effects associated with the development of the proposed project are summarized in Table 2-1 and in Sections 5 and Section 6 of this EIR. Implementation of the proposed project will require a long-term commitment of land as discussed below. More specifically, the primary effect of development under the proposed project would be the commitment of approximately 38 acres of undeveloped agricultural land to residential uses. The financial and material investments that would be required of the applicant and the City would result in further commitments of land resources

making it likely that the same or similar uses would continue in the future. Implementation of the proposed project represents a long-term commitment to urbanization.

Environmental changes associated with the implementation of the proposed project would result in alterations of the physical environment. In order to develop the proposed project, existing undeveloped/agricultural land would be irrevocably committed to residential uses. If the proposed project is approved, and subsequently implemented, new structures would be built, additional utilities would be constructed, and circulation improvements would be made. Nonrenewable resources would be committed, primarily in the form of fossil fuels, and would include fuel oil, natural gas, and gasoline used by vehicles and equipment associated with the construction of the proposed project. The consumption of other nonrenewable or slowly renewable resources would result from development of the proposed project. These resources would include, but not be limited to, lumber and other forest products, sand and gravel, asphalt, petrochemical construction materials, steel, copper, lead, and water. Because alternative energy sources such as solar or wind energy are not currently in widespread local use, it is unlikely that a real savings in nonrenewable energy supplies (i.e., oil and gas) could be realized in the immediate future.

SECTION 9: ORGANIZATIONS AND PERSONS CONSULTED

9.1 - Public Agencies

City of El Centro Planning Department ..... Oliver Alvarado
Norma M. Villicaña

City of El Centro Public Works Department ..... Danny Brammer
Terry Hagen
John Gay
Randy Hines

El Centro Fire Department ..... Chief Chris Petree

El Centro Police Department ..... Paul Longoria

El Centro Water Department ..... Paul Stewart

McCabe Union Elementary School District ..... Amanda Brooke

Imperial Valley Telecommunications Authority ..... Fernando Garcia

Imperial Irrigation District ..... Sam Marquez

SECTION 10: REPORT PREPARATION PERSONNEL

10.1 - EIR Preparation Personnel

Lead Agencies

City of El Centro ..... Oliver Alvarado, Planning Director
Norma Villicaña, Associate Planner

Local Agency Formation Commission ..... Jerg Heuberger, Executive Officer

Consultant Team

Environmental Impact Report

Michael Brandman Associates ..... Michael Houlihan, Project Director
Kara Palm, Project Manager
Lisa Fisher, Assistant Project Manager
Mikael Romich, Project Biologist
Grant Gruber, Environmental Planner
Steven Snyder, Environmental Analyst
Kristen M. Garcia, Environmental Analyst
Michael Hendrix, Air Quality Specialist
Michael Dice, Senior Archaeologist
Mike Serrano, Geographic Information Systems
Karlee Haggins, Graphic Artist
Angel Penatch, Word Processor
Sandra Tomlin, Senior Editor
Jose Morelos, Reprographics

Geological Investigation

Landmark Consultants, Inc ..... Jeffrey O. Lyon, President
Steven K. Williams, Senior Engineering Geologist

Phase I Environmental Site Assessment and Supplemental Pesticide Scan Report

GS Lyon Consultants, Inc ..... Jeffrey O. Lyon, Principal Engineer
Steven K. Williams, Senior Engineering Geologist

Noise Impact Assessment

VRPA Technologies, Inc ..... Jason Ellard, Transportation Planner

Traffic and Transportation

Katz, Okitsu and Associates ..... J. Arnold Torma, Principal Engineer
Phillip Trom, Associate Transportation Planner

SECTION 11: REFERENCES

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Appendix A: Initial Study / Notice of Preparation and Responses

NOTICE OF PREPARATION

To: Agencies, Organizations, and Interested Parties

Subject: Notice of Preparation of a Draft Environmental Impact Report In Compliance With Title 14, Section 15082(a) of the California Code of Regulations.

The City of El Centro, as Lead Agency and the Local Agency Formation Commission (co-lead) are the agencies under the California Environmental Quality Act in the preparation of an Environmental Impact Report (EIR) for the project defined below. We request the review of your agency as to the scope and content of the environmental information relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by the City of El Centro and the Local Agency Formation Commission when considering permits that your agency may issue, or other approval for the project. The project description, location, and probable environmental effects of the proposed project are contained in the attached Initial Study.

Due to the time limits mandated by State law, your response must be received no later than 30 days after the receipt of this notice. Please indicate a contact person in your response and send your response to the following:

Oliver M. Alvarado, AICP
Planning Director
City of El Centro
Planning Department
1275 Main Street
El Centro, CA 92243

Project Title..... Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)

Project Applicant..... Development Design & Engineering, Inc.

Date: October 27, 2005 Signature: _____

Oliver M. Alvarado, AICP
Planning Director

Telephone: 760.337.4545

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Sean Walsh
Director

Notice of Preparation

October 27, 2005

RECEIVED

NOV 03 2005

PLANNING DEPT.
CITY OF EL CENTRO

To: Reviewing Agencies

Re: Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
SCH# 2005101128

Attached for your review and comment is the Notice of Preparation (NOP) for the Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend) draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Oliver Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Rodriguez for.

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2005101128
Project Title Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
Lead Agency El Centro, City of

Type Neg Negative Declaration

Description Project implementation includes a zone change from County zoning, General Agriculture/Urban Overlay (A2U) to City zoning Single Family Residential (R-1). Project implementation will result in the subdivision of approximately 38 acres of farmland into 122 lots, which will allow for the development of 120 single-family residential units on 7,200 square foot lots and approximately 2.08 acres of parkland/retention basin. Project implementation will also require the extension and/or upgrade of public services and utilities and the internal circulation system. Primary access to the project is proposed via 4th Street (SR-86). It is the intent of the City of El Centro to annex the project site into the City's incorporated boundaries.

Lead Agency Contact

Name Oliver Alvarado
Agency City of El Centro
Phone 760 447-4545 **Fax**
email
Address 1275 Main Street
City El Centro **State** CA **Zip** 92243

Project Location

County Imperial
City El Centro
Region
Cross Streets McCabe Road, 8th Street & West of 4th Street (SR-86)
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways SR 86
Airports
Railways
Waterways
Schools
Land Use Rural residential homes and vacant/fallow agricultural land to the north and south of the project site. Fourth Street (SR-86) and the Countryside Estates residential subdivision are east of the project site, and fallow agricultural land that is being processed for residential subdivision is located to the west of the project site.

Project Issues Agricultural Land; Biological Resources; Archaeologic-Historic; Geologic/Seismic; Toxic/Hazardous; Noise; Public Services; Recreation/Parks

Reviewing Agencies Resources Agency; Colorado River Board; Department of Conservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 6; Department of Health Services; Office of Emergency Services; Native American Heritage Commission; Public Utilities Commission; California Highway Patrol; Caltrans, District 11; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 7

Date Received 10/27/2005 **Start of Review** 10/27/2005 **End of Review** 11/28/2005

Note: Blanks in data fields result from insufficient information provided by lead agency

NOP Distribution List

County: Imperial

SCH# _____

Resources Agency

- [x] **Resources Agency** Nadell Gayou
- [ ] **Dept. of Boating & Waterways** David Johnson
- [ ] **California Coastal Commission** Elizabeth A. Fuchs
- [x] **Colorado River Board** Gerald R. Zimmerman
- [x] **Dept. of Conservation** Roseanne Taylor
- [ ] **California Energy Commission** Roger Johnson
- [ ] **Dept. of Forestry & Fire Protection** Allen Robertson
- [ ] **Office of Historic Preservation** Wayne Donaldson
- [x] **Dept of Parks & Recreation** Environmental Stewardship Section
- [ ] **Reclamation Board** DeeDee Jones
- [ ] **S.F. Bay Conservation & Dev't. Comm.** Steve McAdam
- [x] **Dept. of Water Resources** Resources Agency Nadell Gayou
- [ ] _____ Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game** Scott Flint Environmental Services Division
- [ ] **Fish & Game Region 1** Donald Koch
- [ ] **Fish & Game Region 2** Banky Curtis
- [ ] **Fish & Game Region 3** Robert Floerke
- [ ] **Fish & Game Region 4** Mike Mulligan
- [ ] **Fish & Game Region 5** Don Chadwick Habitat Conservation Program
- [x] **Fish & Game Region 6** Gabrina Gatchel Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M** Tammy Allen Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M** George Isaac Marine Region

Other Departments

- [ ] **Food & Agriculture** Steve Shaffer Dept. of Food and Agriculture
- [ ] **Depart. of General Services** Public School Construction
- [ ] **Dept. of General Services** Robert Sleppy Environmental Services Section
- [x] **Dept. of Health Services** Veronica Rameriz Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission** Debby Eddy
- [x] **Office of Emergency Services** Dennis Castrillo
- [ ] **Governor's Office of Planning & Research** State Clearinghouse
- [x] **Native American Heritage Comm.** Debbie Treadway
- [x] **Public Utilities Commission** Ken Lewis
- [ ] **State Lands Commission** Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)** Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics** Sandy Hesnerd
- [ ] **Caltrans - Planning** Terri Pencovic
- [x] **California Highway Patrol** John Olejnik Office of Special Projects
- [ ] **Housing & Community Development** Lisa Nichols Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1** Rex Jackman
- [ ] **Caltrans, District 2** Marcelino Gonzalez
- [ ] **Caltrans, District 3** Katherine Eastham
- [ ] **Caltrans, District 4** Tim Sable
- [ ] **Caltrans, District 5** David Murray
- [ ] **Caltrans, District 6** Marc Birnbaum
- [ ] **Caltrans, District 7** Cheryl J. Powell
- [ ] **Caltrans, District 8** Dan Kopulsky
- [ ] **Caltrans, District 9** Gayle Rosander
- [ ] **Caltrans, District 10** Tom Dumas
- [x] **Caltrans, District 11** Mario Orso
- [ ] **Caltrans, District 12** Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects Jim Lerner
  - [ ] Transportation Projects Kurt Karperos
  - [ ] Industrial Projects Mike Tollstrup
- [ ] **California Integrated Waste Management Board** Sue O'Leary
- [ ] **State Water Resources Control Board** Jim Hockenberry Division of Financial Assistance
- [ ] **State Water Resources Control Board** Student Intern, 401 Water Quality Certification Unit Division of Water Quality
- [ ] **State Water Resouces Control Board** Steven Herrera Division of Water Rights
- [x] **Dept. of Toxic Substances Control** CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1** Cathleen Hudson North Coast Region (1)
- [ ] **RWQCB 2** Environmental Document Coordinator San Francisco Bay Region (2)
- [ ] **RWQCB 3** Central Coast Region (3)
- [ ] **RWQCB 4** Jonathan Bishop Los Angeles Region (4)
- [ ] **RWQCB 5S** Central Valley Region (5)
  - [ ] **RWQCB 5F** Central Valley Region (5) Fresno Branch Office
  - [ ] **RWQCB 5R** Central Valley Region (5) Redding Branch Office
- [ ] **RWQCB 6** Lahontan Region (6)
  - [ ] **RWQCB 6V** Lahontan Region (6) Victorville Branch Office
- [x] **RWQCB 7** Colorado River Basin Region (7)
- [ ] **RWQCB 8** Santa Ana Region (8)
- [ ] **RWQCB 9** San Diego Region (9)

- [ ] **Other** _____

Last Updated on 08/10/05

CITY OF EL CENTRO
Department of Public Works
Engineering Division

INTEROFFICE MEMORANDUM

TO: Oliver M. Alvarado, Director of Planning

FROM: Danny E. Brammer, Senior Engineer

RE: Notice of Preparation for Initial Study – Willow Bend

DATE: November 1, 2005

RECEIVED
NOV 04 2005
PLANNING DEPT.
CITY OF EL CENTRO

Public Works / Engineering have reviewed the referenced NOP and have only one comment. On page 2, the box for Transportation / Traffic was not checked but page 40 indicates that there are at least 3 items that have potentially significant impacts.

Danny E. Brammer, R.C.E.
Senior Engineer

LOCAL Agency Formation Commission
IMPERIAL COUNTY
EXECUTIVE OFFICER - JURG HEUBERGER,CEP

CERTIFIED MAIL #7002-3150-0004-6941-0138
FAXED (714) 508-4110

November 9, 2005

Michael Brandman Associates
220 Commerce Ave., Suite 200
Irvine, CA 92602

Attn: Kara E. Palm, Project Manager

Subject: Initial Study/ NOP for the Willow Bend Project

Dear Mrs. Palm:

I have received the above (NOP) Notice of Preparation dated October 27th; however I don't show anything in our records where we received a draft of this before it was submitted for public review.

Typically the protocol is for the City and Local Agency Formation Commission (LAFCO) to act as Co-Lead and therefore, to have an opportunity to review all documentation before it is submitted for public comment. At this juncture, the comments have to be submitted within the 30 day response time, which is something we typically try to avoid, since we are in essences Co-Lead.

Now to address to project:

On Page 1, under item # 3 contact, we appreciate that Jurg Heuberger be listed as Executive Officer to LAFCO.

On exhibit (3) three (site plan) we note that access from this project is directly onto 4th Street (Highway 86) does not appear that these entrances meet the minimum ½ mile spacing along Highway 86, nor is there clarity on how these intersections are planned to be constructed. Please provide a more detailed plan, and also show why the space required and how the impacts on Highway 86 cannot be accommodated.

On page 9, under Environmental Settings, the project should be listed as "Farm Land". If it is fallow it is by choice. However, this seems to indicate that the land is less then adequate for farming purposes.

On page 12, under item # 6 we request that item # 6 (a) (ii) be moved from (less then significant) to (less then significant with mitigation).

On page 17, item # 16 (b) we would requested that this be moved from (less then significant) to (potentially significant): likewise item # 16 (c).

Starting on page 37, under Public Services, we would request that in addition to the normal police, fire, etc... issues that you also address the need for extension of Imperial Valley Telecommunication Authority (IVTA) also be addressed.

Thank you for considering our comments, we look forward to seeing draft documents, including screen check, drafts, EIR's etc... before they are circulated for public comment.

If you have any questions or comments please feel free to contact me at (760) 353-4115 or by e-mail at jurgh@icoe.k12.ca.us

Sincerely,

Jurg Heuberger, CEP
Executive Officer

Cc: Joanne Yeager, LAFCO Counsel
Oliver M. Alvarado, City of El Centro, 1275 Main Street, El Centro, CA 92243
Ruben Duran, City of El Centro, 1275 Main Street, El Centro, CA 92243
Darrell Gardner, Assistant Planning & Development Services Director
File: 10.105, 10.130, 10.258, 50.009, 50.000, 50.004

JH/MI/S:/LAFCO/ El Centro/Willow Bend/Ltr to Kara Palm NOP_Initial Study

McCABE UNION SCHOOL DISTRICT

701 WEST McCABE ROAD • EL CENTRO, CALIFORNIA 92243
TELEPHONE (760) 352-5443 • FAX (760) 352-6812

AMANDA BROOKE
Superintendent/Principal

ARLYN ATADERO
Assistant Principal/Project Coordinator

BOARD OF TRUSTEES
Mark Larson, President
Michael McFadden, Clerk
Judy Tagg, Member
Chris Logakas, Member
Chip Corfman, Member

November 21, 2005

RECEIVED
NOV 22 2005
PLANNING DEPT.
CITY OF EL CENTRO

Mr. Oliver Alvarado
Planning Director
City of El Centro
1275 Main Street
El Centro, CA 92243

Subject: Comments on the Proposed Subdivision Map for ***Willow Bend***

Dear Mr. Alvarado:

Thank you for the opportunity to provide comments and recommendations regarding the proposed tentative map for the above referenced project.

An analysis of the project indicates that the project involves the development of a 38-acre site into 122 single-family homes. Based on the McCabe Union Elementary School District's State approved yield rate of .83 students per dwelling unit, it appears that this development has the potential to yield 101 students to the McCabe District.

The financial impact to the McCabe Union Elementary School District for providing facilities to house these students is $ 2,255,048. The financial impact is calculated by multiplying the number of dwelling units generated by this project (122) times the cost of facilities per dwelling unit, which is $18,484 for new construction.

Although the documentation received with your letter does not identify the square footage of each unit, using our State approved School Facilities Needs Analysis; we estimate that each unit will be approximately 2250 square feet. Based on this estimate it is anticipated that the development will yield $705,465 in developer fees, calculated as follows:

2250 sq. ft. x 122 units x $2.57 (McCabe Union Elementary School District residential developer fee rate) = $705,465. $705,464 Developer Fees + $961,848 State Apportionment = $1,667,312. Total Cost of Facilities minus Total Developer Fees and State Apportionment leaves a shortfall for the McCabe District of $587,736.

Because of the existing over-crowded conditions of the McCabe Union Elementary School District the projected enrollment increase will ***significantly adversely impact*** the District.

If you should have any questions, please do not hesitate to call me at 352-5443. We look forward to working with the City and the project applicant regarding the proposed project.

Sincerely,

Amanda L. Brooke

Amanda Brooke
Superintendent

cc: Ruben Duran, City Manager
Jurg Hueburger, LAFCO
Rita Noden, City Clerk
Robert Garcia, Nolte Engineering

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

Clear 11.28.05 Late

RECEIVED
DEC 02 2005
STATE CLEARING HOUSE

November 28, 2005

Mr. Oliver Alvarado
Planning Director
City of El Centro
1275 Main Street
El Centro, California 92243

NOTICE OF PREPARATION OF A ENVIRONMENTAL IMPACT REPORT FOR THE CHANGE OF ZONE 05-05 AND TENTATIVE TRACT SUBDIVISION MAP (WILLOW BEND) (SCH#2005101128)

Dear Mr. Alvarado:

The Department of Toxic Substances Control (DTSC) has received your submitted Initial Study Checklist for a Environmental Impact Report (EIR) for the above-mentioned project. The following project description is stated in your document: "Project Implementation includes a zone change from County zoning, General Agriculture/Urban Overlay (A2U) to City zoning Single Family Residential. Project implementation will result in the subdivision of approximately 38 acres of farmland into 122 lots, which will allow for the development of 120 single-family residential units on 7,200 square foot lots and approximately 2.08 acres of parkland/retention basin. Project implementation will also require the extension and/or upgrade of public services and utilities and the internal circulation system. Primary access to the project is proposed via 4th Street. "Based on the review of the submitted document DTSC has comments as follow:

1) The EIR should identify the current or historic uses at the project site that may have resulted in a release of hazardous wastes/substances.

2) The EIR should identify the known or potentially contaminated sites within the proposed Project area. For all identified sites, the EIR should evaluate whether conditions at the site may pose a threat to human health or the environment. Following are the databases of some of the regulatory agencies:

- National Priorities List (NPL): A list maintained by the United States Environmental Protection Agency (U.S.EPA).

Printed on Recycled Paper

- Site Mitigation Program Property Database (formerly CalSites): A Database primarily used by the California Department of Toxic Substances Control.

- Resource Conservation and Recovery Information System (RCRIS): A database of RCRA facilities that is maintained by U.S. EPA.

- Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS): A database of CERCLA sites that is maintained by U.S.EPA.

- Solid Waste Information System (SWIS): A database provided by the California Integrated Waste Management Board which consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations.

- Leaking Underground Storage Tanks (LUST) / Spills, Leaks, Investigations and Cleanups (SLIC): A list that is maintained by Regional Water Quality Control Boards.

- Local Counties and Cities maintain lists for hazardous substances cleanup sites and leaking underground storage tanks.

- The United States Army Corps of Engineers, 911 Wilshire Boulevard, Los Angeles, California, 90017, (213) 452-3908, maintains a list of Formerly Used Defense Sites (FUDS).

3) The EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may be contaminated, and the government agency to provide appropriate regulatory oversight. If hazardous materials or wastes were stored and used at the site, a Site Assessment could determine if a release had occurred. If so, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. It may be necessary to determine if an expedited response action is required to reduce existing or potential threats to public health or the environment. If no immediate threat exists, the final remedy should be implemented in compliance with state regulations and policies.

4) All environmental investigations, sampling and/or remediation for the site should be conducted under a Workplan approved and overseen by a regulatory agency that has jurisdiction to oversee hazardous substance cleanup. The findings of

any investigations, including Phase I and II investigations should be summarized in the document. All sampling results in which hazardous substances were found should be clearly summarized in a table.

5) Proper investigation, sampling and remedial actions overseen by a regulatory agency, if necessary, should be conducted at the site prior to the new development or any construction. All closure, certification or remediation approval reports by these agencies should be included in the EIR.

6) If any property adjacent to the project site is contaminated with hazardous chemicals, and if the proposed project is within 2,000 feet from a contaminated site, then the proposed development may fall within the "Border Zone of a Contaminated Property." Appropriate precautions should be taken prior to construction if the proposed project is within a Border Zone Property.

7) If buildings or other structures, asphalt or concrete-paved surface areas are being planned to be demolished, an investigation would be conducted for the presence of lead based paints or products, mercury, polychlorinated biphenyls (PCBs) and asbestos containing materials (ACMs). If lead-based paints or products, mercury, PCBs or ACMs were identified, proper precautions would be taken during demolition activities. Additionally, the contaminants should be remediated in compliance with California environmental regulations and policies.

8) The project construction may require soil excavation and soil filling in certain areas. Appropriate sampling is required prior to disposal of the excavated soil. If the soil is contaminated, properly dispose of it rather than placing it in another location. Land Disposal Restrictions may be applicable to these soils. Also, if the project proposes to import soil to backfill the areas excavated, proper sampling should be conducted to make sure that the imported soil is free of contamination.

9) Human health and the environment of sensitive receptors should be protected during the construction or demolition activities. A study of the site overseen by the appropriate government agency might have to be conducted to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment.

10) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code,

Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5).

11) If it is determined that hazardous wastes are or will be generated and the wastes are (a) stored in tanks or containers for more than ninety days, (b) treated onsite, or (c) disposed of onsite, then a permit from DTSC may be required. If so, the facility should contact DTSC at (714) 484-5423 to initiate pre application discussions and determine the permitting process applicable to the facility.

12) If it is determined that hazardous wastes will be generated, the facility should obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942.

13) Certain hazardous waste treatment processes may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.

14) If the project plans include discharging wastewater to storm drain, you may be required to obtain a wastewater discharge permit from the overseeing Regional Water Quality Control Board (RWQCB).

15) If during construction/demolition of the project, the soil and/or groundwater contamination is suspected, construction/demolition in the area would cease and appropriate health and safety procedures should be implemented.

16) Since the site was used for agricultural crops or similar activities and currently supports fallow farmland and undeveloped land, onsite soils and groundwater might contain pesticides, agricultural chemical, organic waste or other related residue. If pesticides, agricultural chemical, organic waste or other related residue are found to exist, proper investigation and remedial actions, if necessary, should be conducted under the oversight of and formally approved by the appropriate government agency prior to construction of the project.

DTSC provides guidance for cleanup oversight through the Voluntary Cleanup Program (VCP) for other parties. For additional information on the VCP, please visit DTSC's web site at www.dtsc.ca.gov.

If you have any questions regarding this letter, please contact Ms.Teresa Hom, Project Manager, at (714) 484-5477 or email at thom@dtsc.ca.gov.

Sincerely,

Greg Holmes
Unit Chief
Southern California Cleanup Operations Branch - Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

CEQA# 1243

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

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DEC 01 2005

PLANNING DEPT.
CITY OF EL CENTRO

November 29, 2005

Oliver Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

Subject: Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
SCH#: 2005101128

Dear Oliver Alvarado:

The State Clearinghouse submitted the above named Negative Declaration to selected state agencies for review. The review period closed on November 28, 2005, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2005101128
Project Title Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
Lead Agency El Centro, City of

Type Neg Negative Declaration
Description Project implementation includes a zone change from County zoning: General Agriculture/Urban Overlay (A2U) to City zoning Single Family Residential (R-1). Project implementation will result in the subdivision of approximately 38 acres of farmland into 122 lots, which will allow for the development of 120 single-family residential units on 7,200 square foot lots and approximately 2.08 acres of parkland/retention basin. Project implementation will also require the extension and/or upgrade of public services and utilities and the internal circulation system. Primary access to the project is proposed via 4th Street (SR-86). It is the intent of the City of El Centro to annex the project site into the City's incorporated boundaries.

Lead Agency Contact

Name Oliver Alvarado
Agency City of El Centro
Phone 760 447-4545 **Fax**
email
Address 1275 Main Street
City El Centro **State** CA **Zip** 92243

Project Location

County Imperial
City El Centro
Region
Cross Streets McCabe Road, 6th Street & West of 4th Street (SR-86)
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways SR 86
Airports
Railways
Waterways
Schools
Land Use Rural residential homes and vacant/fallow agricultural land to the north and south of the project site. Fourth Street (SR-86) and the Countryside Estates residential subdivision are east of the project site, and fallow agricultural land that is being processed for residential subdivision is located to the west of the project site.

Project Issues Agricultural Land; Biological Resources; Archaeologic-Historic; Geologic/Seismic; Toxic/Hazardous; Noise; Public Services; Recreation/Parks

Reviewing Agencies Resources Agency; Colorado River Board; Department of Conservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 6; Department of Health Services; Office of Emergency Services; Native American Heritage Commission; Public Utilities Commission; California Highway Patrol; Caltrans, District 11; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 7

Date Received 10/27/2005 **Start of Review** 10/27/2005 **End of Review** 11/28/2005

Note: Blanks in data fields result from insufficient information provided by lead agency.

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

December 2, 2005

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DEC 09 2005

PLANNING DEPT.
CITY OF EL CENTRO

Oliver Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

Subject: Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
SCH#: 2005101128

Dear Oliver Alvarado:

The enclosed comment (s) on your Negative Declaration was (were) received by the State Clearinghouse after the end of the state review period, which closed on November 28, 2005. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project.

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2005101128) when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Senior Planner, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

County of Imperial PUBLIC WORKS DEPARTMENT

Building Roads into the Next Century

TIMOTHY B. JONES
Director of Public Works, County Road Commissioner, County Surveyor, County Engineer, Solid Waste Operations, County-Wide Transit

January 4, 2006

RECEIVED
JAN 06 2006
PLANNING DEPT.
CITY OF EL CENTRO

Mr. Oliver Alvarado, Planning Director
Planning Department
City of El Centro
1275 Main Street
El Centro, CA 92243

SUBJECT: Notice of Preparation for Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)

Dear Mr. Alvarado:

This letter is in response to your letter and documentation for the above-mentioned project. Although the comment period has passed, please provide this Office with a copy of the Draft Environmental Impact Report when available so we may evaluate the Traffic/Transportation Impacts this project will have on surrounding and nearby county roads.

Recent proposed projects within your city have not demonstrated effective mitigations to county road as well as state highway impacts.

Should you have any questions, please do not hesitate to contact this office at (760) 482-4462.

Sincerely yours,

Frank Fiorenza
Acting Director of Public Works

JH/dm

cc: Jurg Heuberger, Director, Planning & Development Services Department

Appendix B: LESA Model

JOSE M. RODRIGUEZ, JR.
ASSESSOR

ROY D. BUCKNER
ASSISTANT ASSESSOR



940 W. MAIN ST., SUITE 115
EL CENTRO, CA 92243-2874
TEL: (760) 482-4244
FAX: (760) 482-4243

IMPERIAL COUNTY ASSESSOR

November 15, 2005

MICHAEL BRANDMAN, ASSOCIATES
Bishop Ranch 3
2633 Camino Ramon, Suite 460
San Ramon, CA 94583

ATTN: Grant Gruber, Environmental Planner

Assessor's Parcel Number APN:
Old APN: 05437011
05228008

New APN: 054-370-011-000
052-280-008-000

Dear Mr. Gruber,

Thank you for your inquiry about whether there are Williamson Act contracts on the above referenced parcels.

There are no Williamson Act contracts on these parcels.

Parcel 052-280-008-000 has an improvement which is a concrete irrigation ditch. There are no other structures or improvements on these parcels. They are open farmland.

I hope this response has fulfilled your request for information. If not, please feel free to contact me.

Sincerely,

Jose M. Rodriguez, Jr.
Imperial County Assessor

Jack L. Durrett

By: Jack Durrett
Appraisal Supervisor
Imperial County Assessor's Office

jackdurrett@imperialcounty.net
Tel. 1 –(760)-482-4574

Created by Jack Durrett
Created on November 15, 2005
Letter reply Michael Brandman Assoc 11 15 05

Willow Bend

Appendix A. California Agricultural LESA Worksheets

NOTES

Calculation of the Land Evaluation (LE) Score

Part 1. Land Capability Classification (LCC) Score:

(1) Determine the total acreage of the project.
(2) Determine the soil types within the project area and enter them in **Column A** of the **Land Evaluation Worksheet** provided on page 2-A.
(3) Calculate the total acres of each soil type and enter the amounts in **Column B**.
(4) Divide the acres of each soil type (**Column B**) by the total acreage to determine the proportion of each soil type present. Enter the proportion of each soil type in **Column C**.
(5) Determine the LCC for each soil type from the applicable Soil Survey and enter it in **Column D**.
(6) From the LCC Scoring Table below, determine the point rating corresponding to the LCC for each soil type and enter it in **Column E**.

LCC Scoring Table

LCC Class	I	IIe	IIs,w	IIIe	IIIs,w	IVe	IVs,w	V	VIe,s,w	VIIe,s,w	VIII
Points	100	90	80	70	60	50	40	30	20	10	0

(7) Multiply the proportion of each soil type (**Column C**) by the point score (**Column E**) and enter the resulting scores in **Column F**.
(8) Sum the LCC scores in **Column F**.
(9) Enter the LCC score in box <1> of the **Final LESA Score Sheet** on page 10-A.

Part 2. Storie Index Score:

(1) Determine the Storie Index rating for each soil type and enter it in **Column G**.
(2) Multiply the proportion of each soil type (**Column C**) by the Storie Index rating (**Column G**) and enter the scores in **Column H**.
(3) Sum the Storie Index scores in **Column H** to gain the Storie Index Score.
(4) Enter the Storie Index Score in box <2> of the **Final LESA Score Sheet** on page 10-A.

Land Evaluation Worksheet

Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
114	1.6	.042	IIIe	70	2.94	66	2.772
115	36.3	.958	IIIe	70	67.06	66	63.228
Totals		(Must Sum to 1.0)		***LCC Total Score***	70	***Storie Index Total Score***	66

Site Assessment Worksheet 1.

Project Size Score

I	J	K
LCC Class I - II	LCC Class III	LCC Class IV - VIII
	1.6	
	36.3	
Total Acres	37.9	
Project Size Scores	30	

Highest Project Size Score 30

NOTES

Calculation of the Site Assessment (SA) Score

Part 1. Project Size Score:.

(1) Using **Site Assessment Worksheet 1** provided on page 2-A, enter the acreage of each soil type from **Column B** in the **Column - I, J or K** - that corresponds to the LCC for that soil. (Note: While the Project Size Score is a component of the Site Assessment calculations, the score sheet is an extension of data collected in the Land Evaluation Worksheet, and is therefore displayed beside it).
(2) Sum **Column I** to determine the total amount of class I and II soils on the project site.
(3) Sum **Column J** to determine the total amount of class III soils on the project site.
(4) Sum **Column K** to determine the total amount of class IV and lower soils on the project site.
(5) Compare the total score for each LCC group in the Project Size Scoring Table below and determine which group receives the highest score.

Project Size Scoring Table

Class I or II		**Class III**		**Class IV or Lower**	
Acreage	Points	Acreage	Points	Acreage	Points
>80	100	>160	100	>320	100
60-79	90	120-159	90	240-319	80
40-59	80	80-119	80	160-239	60
20-39	50	60-79	70	100-159	40
10-19	30	40-59	60	40-99	20
10<	0	20-39	30	40<	0
		10-19	10		
		10<	0		

(6) Enter the **Project Size Score** (the highest score from the three LCC categories) in box <3> of the **Final LESA Score Sheet** on page 10-A.

NOTES

Part 2. Water Resource Availability Score:

(1) Determine the type(s) of irrigation present on the project site, including a determination of whether there is dryland agricultural activity as well.

(2) Divide the site into portions according to the type or types of irrigation or dryland cropping that is available in each portion. Enter this information in **Column B** of **Site Assessment Worksheet 2. - Water Resources Availability**.

(3) Determine the proportion of the total site represented for each portion identified, and enter this information in **Column C**.

(4) Using the Water Resources Availability Scoring Table, identify the option that is most applicable for each portion, based upon the feasibility of irrigation in drought and non-drought years, and whether physical or economic restrictions are likely to exist. Enter the applicable Water Resource Availability Score into **Column D**.

(5) Multiply the Water Resource Availability Score for each portion by the proportion of the project area it represents to determine the weighted score for each portion in **Column E**.

(6) Sum the scores for all portions to determine the project's total Water Resources Availability Score

(7) Enter the Water Resource Availability Score in box <4> of the **Final LESA Score Sheet** on page 10-A.

Site Assessment Worksheet 2. - Water Resources Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1				
2				
3				
4				
5				
6				
		(Must Sum to 1.0)	***Total Water Resource Score***	

Water Resource Availability Scoring Table

Option	Non-Drought Years			Drought Years			WATER RESOURCE SCORE
	RESTRICTIONS			RESTRICTIONS			
	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	
1	YES	NO	NO	YES	NO	NO	100
2	YES	NO	NO	YES	NO	YES	95
3	YES	NO	YES	YES	NO	YES	90
4	YES	NO	NO	YES	YES	NO	85
5	YES	NO	NO	YES	YES	YES	80
6	YES	YES	NO	YES	YES	NO	75
7	YES	YES	YES	YES	YES	YES	65
8	YES	NO	NO	NO	– –	– –	50
9	YES	NO	YES	NO	– –	– –	45
10	YES	YES	NO	NO	– –	– –	35
11	YES	YES	YES	NO	– –	– –	30
12	Irrigated production not feasible, but rainfall adequate for dryland production in both drought and non-drought years						25
13	Irrigated production not feasible, but rainfall adequate for dryland production in non-drought years (but not in drought years)						20
14	Neither irrigated nor dryland production feasible						0

NOTES

Part 3. Surrounding Agricultural Land Use Score:

(1) Calculate the project's Zone of Influence (ZOI) as follows:

(a) a rectangle is drawn around the project such that the rectangle is the smallest that can completely encompass the project area.

(b) a second rectangle is then drawn which extends one quarter mile on all sides beyond the first rectangle.

(c) The ZOI includes all parcels that are contained within or are intersected by the second rectangle, less the area of the project itself.

(2) Sum the area of all parcels to determine the total acreage of the ZOI.

(3) Determine which parcels are in agricultural use and sum the areas of these parcels

(4) Divide the area in agriculture found in step (3) by the total area of the ZOI found in step (2) to determine the percent of the ZOI that is in agricultural use.

(5) Determine the Surrounding Agricultural Land Score utilizing the Surrounding Agricultural Land Scoring Table below.

Surrounding Agricultural Land Scoring Table

Percent of ZOI in Agriculture	Surrounding Agricultural Land Score
90-100	100
80-89	95
70-79	90
65-69	85
60-64	80
55-59	70
50-54	60
45-49	50
40-44	40
35-39	30
30-34	20
20-29	10
<19	0

(5) Enter the Surrounding Agricultural Land Score in box <5> of the **Final LESA Score Sheet** on page 10-A.

Site Assessment Worksheet 3.

Surrounding Agricultural Land and Surrounding Protected Resource Land

A	B	C	D	E	F	G
Zone of Influence						
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (A/B)	Percent Protected Resource Land (A/C)	Surrounding Agricultural Land Score (From Table)	Surrounding Protected Resource Land Score (From Table)

NOTES

Part 4. Protected Resource Lands Score:

The Protected Resource Lands scoring relies upon the same Zone of Influence information gathered in Part 3, and figures are entered in Site Assessment Worksheet 3, which combines the surrounding agricultural and protected lands calculations.

(1) Use the total area of the ZOI calculated in Part 3. for the Surrounding Agricultural Land Use score.

(2) Sum the area of those parcels within the ZOI that are protected resource lands, as defined in the California Agricultural LESA Guidelines.

(3) Divide the area that is determined to be protected in Step (2) by the total acreage of the ZOI to determine the percentage of the surrounding area that is under resource protection.

(4) Determine the Surrounding Protected Resource Land Score utilizing the Surrounding Protected Resource Land Scoring Table below.

Surrounding Protected Resource Land Scoring Table

Percent of ZOI Protected	Protected Resource Land Score
90-100	100
80-89	95
70-79	90
65-69	85
60-64	80
55-59	70
50-54	60
45-49	50
40-44	40
35-39	30
30-34	20
20-29	10
<20	0

(5) Enter the Protected Resource Land score in box <6> of the **Final LESA Score Sheet** on page 10-A.

NOTES

Final LESA Score Sheet

Calculation of the Final LESA Score:

(1) Multiply each factor score by the factor weight to determine the weighted score and enter in Weighted Factor Scores column.
(2) Sum the weighted factor scores for the LE factors to determine the total LE score for the project.
(3) Sum the weighted factor scores for the SA factors to determine the total SA score for the project.
(4) Sum the total LE and SA scores to determine the Final LESA Score for the project.

	Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors			
Land Capability Classification	<1> 70	0.25	17.5
Storie Index	<2> 66	0.25	16.5
LE Subtotal		***0.50***	34
SA Factors			
Project Size	<3> 30	0.15	4.5
Water Resource Availability	<4> 80	0.15	12
Surrounding Agricultural Land	<5> 85	0.15	12.75
Protected Resource Land	<6> 60	0.05	3
SA Subtotal		***0.50***	32.25
		Final LESA Score	66.25

For further information on the scoring thresholds under the California Agricultural LESA Model, consult Section 4 of the Instruction Manual.

Section IV. California Agricultural LESA Scoring Thresholds - Making Determinations of Significance Under CEQA

A single LESA score is generated for a given project after all of the individual Land Evaluation and Site Assessment factors have been scored and weighted as detailed in Sections 2 and 3. Just as with the scoring of individual factors that comprise the California Agricultural LESA Model, final project scoring is based on a scale of 100 points, with a given project being capable of deriving a maximum of 50 points from the Land Evaluation factors and 50 points from the Site Assessment factors.

The California Agricultural LESA Model is designed to make determinations of the potential significance of a project's conversion of agricultural lands during the Initial Study phase of the CEQA review process. Scoring thresholds are based upon both the total LESA score as well as the component LE and SA subscores. In this manner the scoring thresholds are dependent upon the attainment of a minimum score for the LE and SA subscores so that a single threshold is not the result of heavily skewed subscores (i.e., a site with a very high LE score, but a very low SA score, or vice versa). Table 9 presents the California Agricultural LESA scoring thresholds.

Table 9. California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 Points	Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 Points	Considered Significant

Appendix C: Air Quality Study

URBEMIS 2002 For Windows 8.7.0
File Name: S:\Mike\Projects\Air Quality & Noise\Imperial County\Willow Bend\RevisedWillowBend.urb
Project Name: Willow Bend Residential Project
Project Location: Mountain Counties and Rural Counties
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)
Construction Start Month and Year: June, 2006
Construction Duration: 12
Total Land Use Area to be Developed: 38 acres
Maximum Acreage Disturbed Per Day: 9.5 acres
Single Family Units: 131 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	95.00	-	95.00
Off-Road Diesel	26.56	212.46	189.09	-	9.83	9.83	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.44	0.90	9.96	0.01	0.05	0.02	0.03
Maximum lbs/day	27.00	213.36	199.05	0.01	104.88	9.85	95.03
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	30.09	233.20	219.70	-	10.54	10.54	0.00
Bldg Const Worker Trips	0.62	0.37	7.84	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	133.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.62	0.37	7.84	0.00	0.16	0.01	0.15
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	165.17	233.94	235.38	0.00	10.86	10.56	0.30
Max lbs/day all phases	165.17	233.94	235.38	0.01	105.59	10.56	95.03
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	30.09	222.97	227.02	-	9.64	9.64	0.00
Bldg Const Worker Trips	0.57	0.35	7.37	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	133.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.57	0.35	7.37	0.00	0.16	0.01	0.15
Asphalt Off-Gas	1.45	-	-	-	-	-	-
Asphalt Off-Road Diesel	11.58	75.04	94.97	-	2.88	2.88	0.00
Asphalt On-Road Diesel	0.44	8.15	1.60	0.02	0.19	0.18	0.01
Asphalt Worker Trips	0.05	0.03	0.59	0.00	0.01	0.00	0.01
Maximum lbs/day	165.09	223.67	241.77	0.02	9.96	9.66	0.30
Max lbs/day all phases	165.09	223.67	241.77	0.02	9.96	9.66	0.30

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jun '06
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0
4	Rubber Tired Dozers	352	0.590	8.0
12	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jul '06
Phase 3 Duration: 10.7 months
Start Month/Year for SubPhase Building: Jul '06
SubPhase Building Duration: 10.0 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
5	Concrete/Industrial saws	84	0.730	8.0
10	Other Equipment	190	0.620	8.0
5	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Oct '06
SubPhase Architectural Coatings Duration: 4 months
Start Month/Year for SubPhase Asphalt: May '07
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 6.1
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Other Equipment	190	0.620	8.0
1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.13	1.64	0.70	0	0.00
Hearth	4.50	1.57	36.00	0.12	5.88
Landscaping - No winter emissions					
Consumer Prdcts	6.41	-	-	-	-
Architectural Coatings	4.46	-	-	-	-
TOTALS(lbs/day,unmitigated)	15.49	3.21	36.69	0.12	5.89

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	18.88	32.91	228.52	0.12	21.69
TOTAL EMISSIONS (lbs/day)	18.88	32.91	228.52	0.12	21.69

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES
Analysis Year: 2007 Temperature (F): 40 Season: Winter
EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	43.67	10.21 trips/dwelling unit	131.00	1,337.51
		Sum of Total Trips		1,337.51
		Total Vehicle Miles Traveled		14,290.09

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.20	1.80	97.80	0.40
Light Truck < 3,750 lbs	15.10	3.30	94.00	2.70
Light Truck 3,751- 5,750	16.10	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.10	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/43.67 to 10.21/43.67

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths

Changes made to the default values for Area

The wood stove percentage changed from 35 to 20.
The wood fireplace percentage changed from 10 to 0.
The natural gas fireplace percentage changed from 55 to 80.
The landscape year changed from 2005 to 2007.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2007.

URBEMIS 2002 For Windows 8.7.0

File Name: S:\Mike\Projects\Air Quality & Noise\Imperial County\Willow Bend\RevisedWillowBend.urb
Project Name: Willow Bend Residential Project
Project Location: Mountain Counties and Rural Counties
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: June, 2006
Construction Duration: 12
Total Land Use Area to be Developed: 38 acres
Maximum Acreage Disturbed Per Day: 9.5 acres
Single Family Units: 131 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	95.00	-	95.00
Off-Road Diesel	26.56	212.46	189.09	-	9.83	9.83	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.44	0.90	9.96	0.01	0.05	0.02	0.03
Maximum lbs/day	27.00	213.36	199.05	0.01	104.88	9.85	95.03
Phase 3 - Building Construction							

Bldg Const Off-Road Diesel	30.09	233.20	219.70	-	10.54	10.54

Bldg Const Worker Trips	0.62	0.37	7.84	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	133.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.62	0.37	7.84	0.00	0.16	0.01	0.15
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	165.17	233.94	235.38	0.00	10.86	10.56	0.30
Max lbs/day all phases	165.17	233.94	235.38	0.01	105.59	10.56	95.03

*** 2007***

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	30.09	222.97	227.02	-	9.64	9.64	0.00
Bldg Const Worker Trips	0.57	0.35	7.37	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	133.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.57	0.35	7.37	0.00	0.16	0.01	0.15
Asphalt Off-Gas	1.45	-	-	-	-	-	-
Asphalt Off-Road Diesel	11.58	75.04	94.97	-	2.88	2.88	0.00
Asphalt On-Road Diesel	0.44	8.15	1.60	0.02	0.19	0.18	0.01
Asphalt Worker Trips	0.05	0.03	0.59	0.00	0.01	0.00	0.01
Maximum lbs/day	165.09	223.67	241.77	0.02	9.96	9.66	0.30
Max lbs/day all phases	165.09	223.67	241.77	0.02	9.96	9.66	0.30

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jun '06
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0
4	Rubber Tired Dozers	352	0.590	8.0
12	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jul '06
Phase 3 Duration: 10.7 months
Start Month/Year for SubPhase Building: Jul '06
SubPhase Building Duration: 10.0 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
5	Concrete/Industrial saws	84	0.730	8.0
10	Other Equipment	190	0.620	8.0
5	Rough Terrain Forklifts	94	0.475	8.0

Start Month/Year for SubPhase Architectural Coatings: Oct '06
SubPhase Architectural Coatings Duration: 4 months
Start Month/Year for SubPhase Asphalt: May '07
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 6.1
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Other Equipment	190	0.620	8.0
1	Pavers	132	0.590	8.0

1	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.13	1.64	0.70	0	0.00
Hearth - No summer emissions					
Landscaping	0.65	0.02	4.56	0.05	0.02
Consumer Prdcts	6.41	-	-	-	-
Architectural Coatings	4.46	-	-	-	-
TOTALS(lbs/day,unmitigated)	11.65	1.66	5.26	0.05	0.02

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	14.77	27.50	193.04	0.12	21.69
TOTAL EMISSIONS (lbs/day)	14.77	27.50	193.04	0.12	21.69

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES
EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	43.67	10.21 trips/dwelling unit	131.00	1,337.51
		Sum of Total Trips		1,337.51
		Total Vehicle Miles Traveled		14,290.09

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.20	1.80	97.80	0.40
Light Truck < 3,750 lbs	15.10	3.30	94.00	2.70
Light Truck 3,751- 5,750	16.10	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.10	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/43.67 to 10.21/43.67

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths

Changes made to the default values for Area

The wood stove percentage changed from 35 to 20.
The wood fireplace percentage changed from 10 to 0.
The natural gas fireplace percentage changed from 55 to 80.
The landscape year changed from 2005 to 2007.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2007.

URBEMIS 2002 For Windows 8.7.0

File Name: S:\Mike\Projects\Air Quality\ImperialCounty\WillowBend\RevisedMitigatedWillowBend.urb
Project Name: Revised Willow Bend Residential Project
Project Location: Mountain Counties and Rural Counties
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)
Construction Start Month and Year: June, 2006
Construction Duration: 12
Total Land Use Area to be Developed: 38 acres
Maximum Acreage Disturbed Per Day: 9.5 acres
Single Family Units: 131 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	14.18	-	14.18
Off-Road Diesel	23.90	191.21	170.18	-	8.85	8.85	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.41	0.84	9.34	0.01	0.05	0.02	0.03
Maximum lbs/day	24.32	192.06	179.52	0.01	23.08	8.87	14.21
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.28	51.42	56.70	-	2.16	2.16	0.00
Bldg Const Worker Trips	0.58	0.35	7.35	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	46.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.58	0.35	7.35	0.00	0.16	0.01	0.15
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	55.29	52.12	71.40	0.00	2.48	2.18	0.30
Max lbs/day all phases	55.29	192.06	179.52	0.01	23.08	8.87	14.21
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.28	49.54	57.74	-	1.94	1.94	0.00
Bldg Const Worker Trips	0.54	0.33	6.91	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	46.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.54	0.33	6.91	0.00	0.16	0.01	0.15
Asphalt Off-Gas	1.45	-	-	-	-	-	-
Asphalt Off-Road Diesel	10.42	67.54	85.47	-	2.59	2.59	0.00
Asphalt On-Road Diesel	0.42	7.74	1.52	0.02	0.18	0.17	0.01
Asphalt Worker Trips	0.05	0.03	0.55	0.00	0.01	0.00	0.01
Maximum lbs/day	55.20	75.31	87.55	0.01	3.07	2.77	0.30
Max lbs/day all phases	55.20	75.31	87.55	0.01	3.07	2.77	0.30

Construction-Related Mitigation Measures
 Phase 2: Soil Disturbance: Apply soil stabilizers to inactive areas
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
 Phase 2: Soil Disturbance: Replace ground cover in disturbed areas quickly
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 15.0%)
 Phase 2: Soil Disturbance: Water exposed surfaces - 2x daily
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 34.0%)
 Phase 2: Stockpiles: Cover all stock piles with tarps
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 9.5%)
 Phase 2: Unpaved Roads: Water all haul roads 2x daily
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
 Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
 Phase 2: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 2: Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
   Percent Reduction(ROG 10.0% NOx 10.0% CO 10.0% SO2 10.0% PM10 10.0%)
 Phase 2: On-Road Diesel Exhaust: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 2: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 3: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 3: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 3: Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
   Percent Reduction(ROG 10.0% NOx 10.0% CO 10.0% SO2 10.0% PM10 10.0%)
 Phase 3: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Offgassing: HVLP Spray Equipment or Hand Application
   Percent Reduction(ROG 65.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 0.0%)
 Phase 3: Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
   Percent Reduction(ROG 10.0% NOx 10.0% CO 10.0% SO2 10.0% PM10 10.0%)
 Phase 3: On-Road Diesel Exhaust: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jun '06
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0
4	Rubber Tired Dozers	352	0.590	8.0
12	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jul '06
Phase 3 Duration: 10.7 months
  Start Month/Year for SubPhase Building: Jul '06
  Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0
5	Rough Terrain Forklifts	94	0.475	8.0

  Start Month/Year for SubPhase Architectural Coatings: Oct '06
  SubPhase Architectural Coatings Duration: 4 months
  Start Month/Year for SubPhase Asphalt: May '07
  SubPhase Asphalt Duration: 0.5 months
  Acres to be Paved: 6.1

Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Other Equipment	190	0.620	8.0
1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/43.67 to 10.2/43.67

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Phase 2 mitigation measure Soil Disturbance: Apply soil stabilizers to inactive areas
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 2x daily
has been changed from off to on.
Phase 2 mitigation measure Stockpiles: Cover all stock piles with tarps
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 2x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.
Phase 2 mitigation measure Worker Trips: Use shuttle to retail establishments @lunch
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
has been changed from off to on.
Phase 2 mitigation measure On-Road Diesel Exhaust: Traffic Control Plan
has been changed from off to on.
Phase 2 mitigation measure Worker Trips: Traffic Control Plan
has been changed from off to on.
Phase 3 mitigation measure Worker Trips: Use shuttle to retail establishments @lunch
Phase 3 mitigation measure Worker Trips: Use shuttle to retail establishments @lunch
has been changed from off to on.
Phase 3 mitigation measure Worker Trips: Use shuttle to retail establishments @lunch
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
has been changed from off to on.
Phase 3 mitigation measure Worker Trips: Traffic Control Plan
has been changed from off to on.
Phase 3 mitigation measure Worker Trips: Traffic Control Plan
has been changed from off to on.
Phase 3 mitigation measure Offgassing: HVLP Spray Equipment or Hand Application
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
has been changed from off to on.
Phase 3 mitigation measure On-Road Diesel Exhaust: Traffic Control Plan
has been changed from off to on.
Phase 3 mitigation measure Worker Trips: Traffic Control Plan
has been changed from off to on.

Changes made to the default values for Area

The wood stove percentage changed from 35 to 20.
The wood fireplace percentage changed from 10 to 0.
The natural gas fireplace percentage changed from 55 to 80.
The landscape year changed from 2005 to 2007.

Changes made to the default values for Operations
The operational emission year changed from 2005 to 2007.

URBEMIS 2002 For Windows 8.7.0

File Name: S:\Mike\Projects\Air Quality \ImperialCounty\WillowBend\RevisedMitigatedWillowBend.urb
Project Name: Revised Willow Bend Residential Project
Project Location: Mountain Counties and Rural Counties
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: June, 2006
Construction Duration: 12
Total Land Use Area to be Developed: 38 acres
Maximum Acreage Disturbed Per Day: 9.5 acres
Single Family Units: 131 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	14.18	-	14.18
Off-Road Diesel	23.90	191.21	170.18	-	8.85	8.85	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.41	0.84	9.34	0.01	0.05	0.02	0.03
Maximum lbs/day	24.32	192.06	179.52	0.01	23.08	8.87	14.21
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.28	51.42	56.70	-	2.16	2.16	0.00
Bldg Const Worker Trips	0.58	0.35	7.35	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	46.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.58	0.35	7.35	0.00	0.16	0.01	0.15
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	55.29	52.12	71.40	0.00	2.48	2.18	0.30
Max lbs/day all phases	55.29	192.06	179.52	0.01	23.08	8.87	14.21
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	7.28	49.54	57.74	-	1.94	1.94	0.00
Bldg Const Worker Trips	0.54	0.33	6.91	0.00	0.16	0.01	0.15
Arch Coatings Off-Gas	46.84	-	-	-	-	-	-
Arch Coatings Worker Trips	0.54	0.33	6.91	0.00	0.16	0.01	0.15
Asphalt Off-Gas	1.45	-	-	-	-	-	-
Asphalt Off-Road Diesel	10.42	67.54	85.47	-	2.59	2.59	0.00
Asphalt On-Road Diesel	0.42	7.74	1.52	0.02	0.18	0.17	0.01
Asphalt Worker Trips	0.05	0.03	0.55	0.00	0.01	0.00	0.01
Maximum lbs/day	55.20	75.31	87.55	0.01	3.07	2.77	0.30
Max lbs/day all phases	55.20	75.31	87.55	0.01	3.07	2.77	0.30

Construction-Related Mitigation Measures
 Phase 2: Soil Disturbance: Apply soil stabilizers to inactive areas
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
 Phase 2: Soil Disturbance: Replace ground cover in disturbed areas quickly
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 15.0%)
 Phase 2: Soil Disturbance: Water exposed surfaces - 2x daily
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 34.0%)
 Phase 2: Stockpiles: Cover all stock piles with tarps
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 9.5%)
 Phase 2: Unpaved Roads: Water all haul roads 2x daily
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
 Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
 Phase 2: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 2: Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
   Percent Reduction(ROG 10.0% NOx 10.0% CO 10.0% SO2 10.0% PM10 10.0%)
 Phase 2: On-Road Diesel Exhaust: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 2: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 3: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 3: Worker Trips: Use shuttle to retail establishments @lunch
   Percent Reduction(ROG 1.0% NOx 1.3% CO 1.3% SO2 1.3% PM10 1.3%)
 Phase 3: Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
   Percent Reduction(ROG 10.0% NOx 10.0% CO 10.0% SO2 10.0% PM10 10.0%)
 Phase 3: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Offgassing: HVLP Spray Equipment or Hand Application
   Percent Reduction(ROG 65.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 0.0%)
 Phase 3: Off-Road Diesel Exhaust: Time Tune Engines & Reduce Idle Time
   Percent Reduction(ROG 10.0% NOx 10.0% CO 10.0% SO2 10.0% PM10 10.0%)
 Phase 3: On-Road Diesel Exhaust: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
 Phase 3: Worker Trips: Traffic Control Plan
   Percent Reduction(ROG 5.0% NOx 5.0% CO 5.0% SO2 5.0% PM10 5.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jun '06
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0
4	Rubber Tired Dozers	352	0.590	8.0
12	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jul '06
Phase 3 Duration: 10.7 months
  Start Month/Year for SubPhase Building: Jul '06
  SubPhase Building Duration: 10.0 months
  Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0
5	Rough Terrain Forklifts	94	0.475	8.0

  Start Month/Year for SubPhase Architectural Coatings: Oct '06
  SubPhase Architectural Coatings Duration: 4 months
  Start Month/Year for SubPhase Asphalt: May '07
  SubPhase Asphalt Duration: 0.5 months
  Acres to be Paved: 6.1

07/07/2006 2:30 PM

Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Other Equipment	190	0.620	8.0
1	Pavers	132	0.590	8.0
1	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0

Appendix D: Biological Field Notes

9/22 8 30 - Interchange Business Center.
KILL, AMKE, WEME, HOFI, MODO, BL

buck, CASA, denseweed, mustard, doveweed,

weedy vegetation → thistle, ambrosia, buck, CASA, bl

10/1
11/2 6:20 - 7:40
surveying Willow Bend

BUOW, GTGR, ~~HOLA~~, EUST, WEME, BNST, YRWA, AMKE, SNEG, SAVS, BLPH, SAPH,

BUOW pair = 635539, 3625805 (OWL A) pic 1
↳ sitting above burrow w/ white wash feathers, pic 2
↳ flushed approx 20m W but ~~was~~ still on dyke (see pg 3)
23 (+10m N)

BUOW pair #2 = 635433, 3625802 (owl B) pic 4
↳ sitting above burrow w/ white wash feathers ~~pic~~ pic 5
flushed to E side of home to N of dyke.

ag Field has been is fallow → Russian thistle, NNG,
some isolated patches of wetland habitat (sedges) in channel (see pic); has water running north + east.

BUOW (single) sitting at entrance to burrow (in buffer zone)
↳ flushe ~ 40m N → 635322, 3625301
↳ 635325, 3625253 (BURROW C) pic 7

BUOW pair → 635328, 3625164 (OWL D) (outside in buffer zone)
↳ sitting just above and at base of a lg burrow w/ a lot of BUOW sign (pic E)

Tamarisk, Euc., pine surround residence
+ 2 palms along road small cottonwood @ road entrance

Rural homes to N, Subdivision to E, open ag to W+S

Appendix E: Cultural Resources Assessment

Phase I Cultural Resources Assessment and Paleontological Records Review Zone Change 05-02 El Centro, Imperial County, California

APN 054370012001
El Centro, California, USGS 7.5-minute topographic quadrangle map
Section 83, Township 16 South, Range 14 East

Prepared for:

The City of El Centro Planning Department
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March 14, 2006

Keywords: Irrigation canals, El Centro
El Centro, CA, USGS topographic quadrangle map

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SUMMARY PUBLIC INFORMATION STATEMENT

At the request of the City of El Centro Planning Department, Michael Brandman Associates (MBA) has conducted a cultural resource block-transect survey for the proposed development on Assessors Parcel Number (APN) 054370012001 (project area). The project area is located on about 38 acres of irrigated and fallow agricultural land south of Interstate 8 (I-8) adjacent to the intersection of the Date Drain 3D and State Route 86 (SR-86), in the City of El Centro. The proposed use of the project area is for residential development.

The purpose of this report is to delineate the location of the project area, identify all potentially significant cultural and paleontological resources located within the project area, evaluate any detected cultural resources and, if they will be impacted by the proposed development, propose recommendations for mitigation. Completion of this investigation fulfills the requirements of the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA) as Amended, and Executive Order 11593 requirements. Published California State Office of Historic Preservation (OHP) procedures for cultural resource surveys, as found on their website, and the Archaeological Resource Management Reports (ARMR) reporting format were followed.

A sacred lands search with the Native American Heritage Commission (NAHC) has taken place as part of this study, but this was associated with fact-finding only. We note that the City may be required to undertake Native American consultations to fulfill processes associated with SB18 (Burton). This document can assist the City in that effort, should an SB18 consultation be required.

This report is organized into sections and appendices, which are summarized as follows:

- Section 1 reviews the goals of this study.
- Section 2 summarizes the environmental and cultural setting.
- Section 3 presents the investigative methods and reviews background information.
- Section 4 provides cultural resource survey and paleontological records search results.
- Section 5 summarizes the project and provides management recommendations.
- Section 6 presents a reference list.
- Section 7 contains the project certification.
- Appendix A provides personnel qualifications.
- Appendix B provides required cultural resource compliance documents.
- Appendix C provides recent photographs of the project area.

MBA contracted with Karen Collins, Assistant Coordinator of the Southeastern Information Center (SIC), to conduct a cultural resource records search in late January 2006. These research efforts indicated that no known cultural resource sites are located on the project area but ditches and canals are located near the project area and the general area. The entirety of the project area has never been surveyed previously.

MBA staff archaeologist Kurt McLain and J. David Coble surveyed the site on February 5, 2006. The project area has been used for agriculture for many decades, having been served by a local historic canal complex since the early 20th century. Despite a careful and thorough examination of the lands within the project area, no cultural resources within the confines of the parcel were observed. The Site is, however, partially surrounded by the Date Drain 3D water control feature, which is an element of the Imperial Irrigation District (IID). This ditch was likely constructed during the historic era (pre-1961). Although this water feature is regarded as an unrecorded historic property that might be considered a significant cultural resource by the OHP, the IID has continually modified the ditch since construction and no historic elements of the ditch, save for the location, remain. Lastly, a section of SR-86 adjacent to the project area may be considered a historic resource by Caltrans. Should Caltrans find that modifications to the roadway will take place during construction of the Tract and should Caltrans also find that the roadway is historical, additional non-CEQA related cultural resource studies may be needed.

Cultural resource monitoring is not recommended during earthmoving phases of site development, because there is a low chance that buried cultural resources will be uncovered during grading. However, it is always possible that cultural resources will be uncovered without a monitor present. In this case, should potentially significant buried cultural resources be uncovered during construction, such resources, excluding isolated artifacts, should be tested for historical significance prior to continued impact. In addition, California State Health and Safety Code Section 7050.5 dictate that if human remains are discovered during construction, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to CEQA regulations and Public Resources Code (PRC) Section 5097.98.

The paleontological records check took place in mid-February 2006 by Kesler Randall under the auspices of Dr. Tom Deméré of the San Diego Natural History Museum (SDNHM). The paleontological review showed that the project area is located entirely upon Pleistocene/Holocene Lake Cahuilla and Playa deposits. Although these rock units have high potential for significant fossil deposits to be uncovered during grading, the project area has been under intensive agriculture for many years making it unlikely fossils will be uncovered during grading until some depth below the present ground surface is reached. For this reason, limited monitoring for impacts to buried paleontological resources is recommended once excavations reach 8 feet in depth.

SECTION 1:
INTRODUCTION

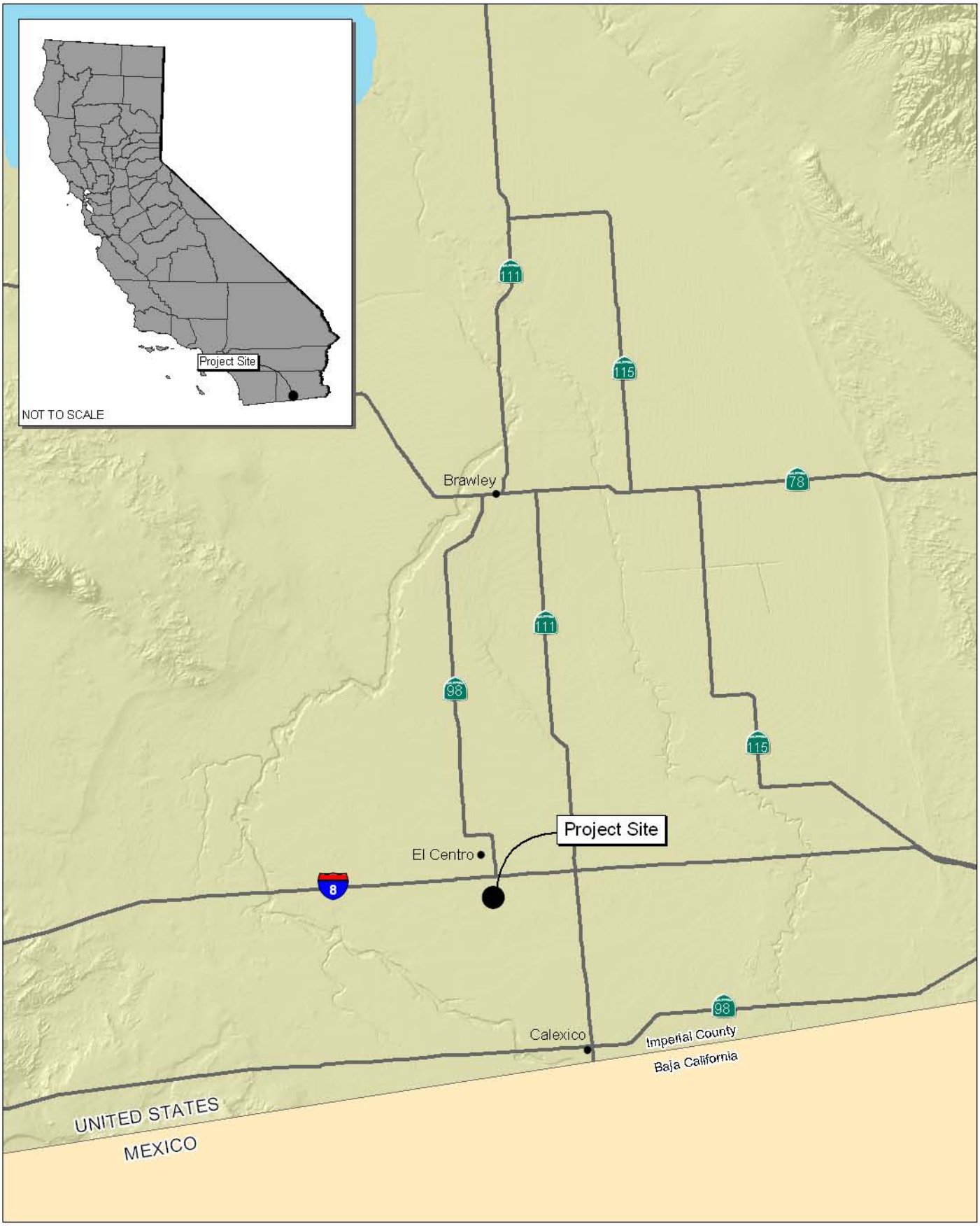
At the request of the City of El Centro Planning Department, MBA has conducted a cultural resources survey and paleontological records search on a parcel of land in the southern portion of the City of El Centro, Imperial County, California (Exhibit 1). The project area is located on one parcel, APN 054370012001, which totals about 38 acres per the Imperial County assessor. The project area surveyed is shown on the 1976 El Centro, California, USGS 7.5-minute topographic quadrangle map, and is located in Section 83 of Township 16 South, Range 14 East, San Bernardino Base Meridian (SBBM) (Exhibit 2).

The cultural resource survey was performed to comply with certain cultural resource guidelines, among them CEQA implementing regulations found in NHPA, NRHP, and NEPA. This report closely follows the ARMR cultural resource report format as is currently recommended by the OHP.

1.1 - RESOURCE ASSESSMENT GOALS

The goal of this study was to determine whether cultural or paleontological resources are located within the project area, determine whether or not any existing cultural resources should be considered 'significant' resources, and develop specific mitigation measures that will address potential impacts to existing or potential resources. A project-level assessment of paleontological sensitivity is also required following CEQA guidelines. Thus, this study consisted of six distinct efforts:

1. Review of previous studies and cultural resource sites in the region.
2. Phase I cultural resource survey and results.
3. Evaluation of cultural resource sensitivity.
4. Review of existing paleontological records and assessment of paleontological sensitivity.
5. Development of recommendations associated with mitigation-monitoring following CEQA guidelines.
6. NAHC consultation and fact-finding.



Source: Census 2000 Data, The CaSIL, MBA GIS 2006.

NORTH

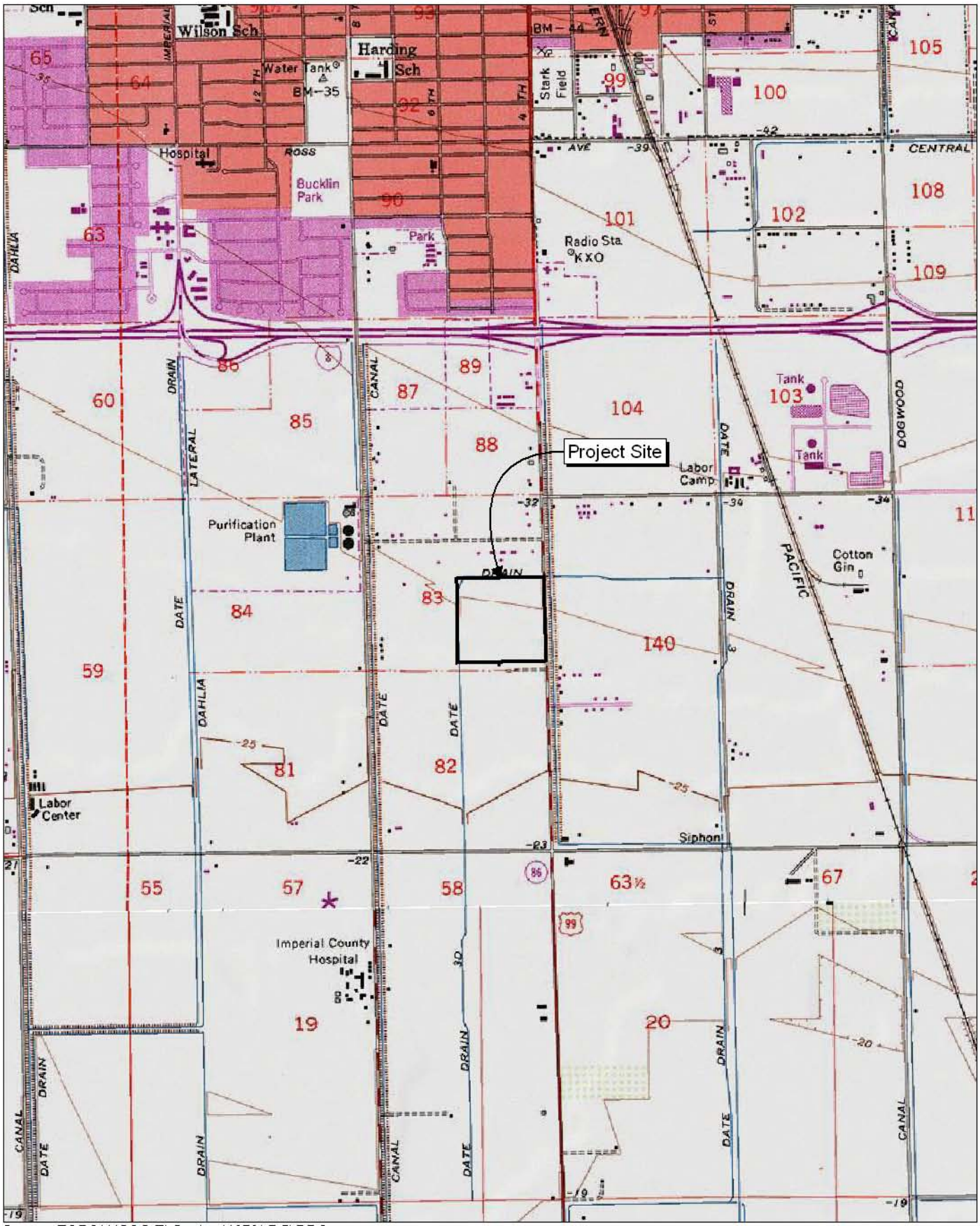
5 2.5 0 5 Miles

Michael Brandman Associates

27990002 • 03/2006 | 1_regional.mxd

Exhibit 1
Regional Location Map

CITY OF EL CENTRO • ZONE CHANGE 05-02
PHASE I CULTURAL RESOURCES ASSESSMENT



Source: TOPO! USGS El Centro (1979) 7.5' DRG.

NORTH

Michael Brandman Associates

27990002 • 03/2006 | 2_local_usgs.mxd

Exhibit 2
Local Vicinity USGS Map

CITY OF EL CENTRO • ZONE CHANGE 05-02
PHASE I CULTURAL RESOURCES ASSESSMENT

SECTION 2:
ENVIRONMENTAL AND CULTURAL SETTING

2.1 - PROJECT LOCATION AND DESCRIPTION

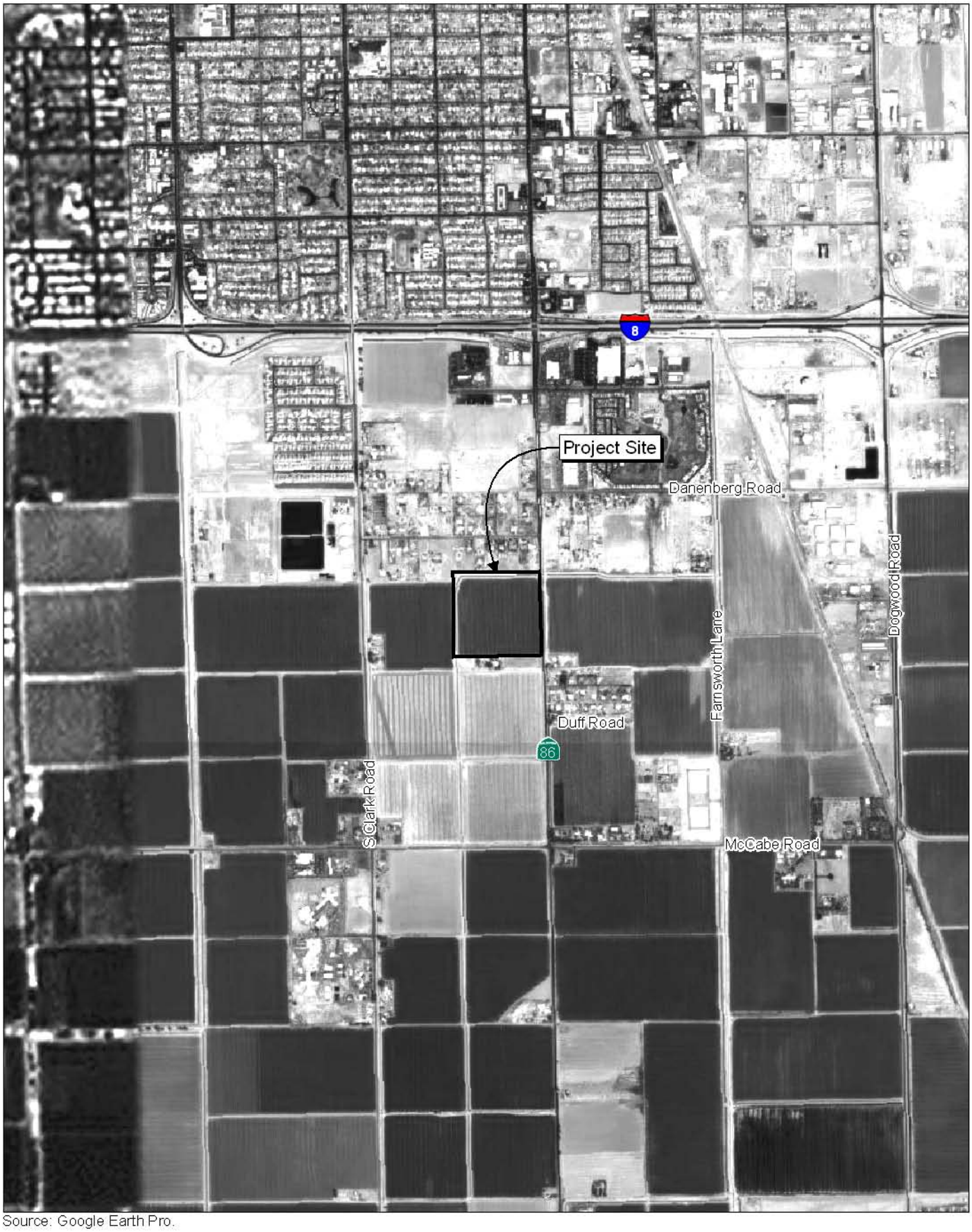
The project area is located several miles south of the center of the City of El Centro (Exhibit 3). Located on a gently sloping alluvial fan which leads north-northwest eventually into the Salton Sink, the Site is located roughly 10 feet below sea level and lies several miles northeast of the plotted banks of the New River. The Imperial fault zone is located several miles east of the project area and has produced several significant earthquakes in the last 100 years. Flat and rectangular, the project area is located on ground bordered on two sides of the Date Drain 3D a water control structure associated with the regional Central Main Canal District, and to the east by SR-86. At the time of survey, the project area was fallow, but is clearly irrigated when in use.

2.2 - PHYSIOGRAPHY, GEOLOGY, VEGETATION

The entire parcel has been extensively disturbed since about the 1890's because of agricultural development. The project area is located in a region of extreme heat. Before canals brought water from the Colorado, the property likely held a mesquite-dominated shrub environment. The project Site rests on deposits from the extinct Lake Cahuilla. The soils consist of the Imperial wet silt clays and the Imperial-Glenbar silty clay loam (USDA http://websoilsurvey.nrcs.usda.gov/app/ WebSoilSurvey.aspx).

2.3 - PREHISTORIC AND ETHNOGRAPHIC BACKGROUND

Moratto (1984) and Chartkoff and Chartkoff (1984) provide recent overviews of California archaeology and historical reviews of the inland southern California and the coast, among other locales. Existing California Colorado desert chronology is mostly attributed to Malcom Rogers (1939, 1945 and 1966) with revisions by Crabtree (1981) and Gallegos (1986). Kroeber (1925) and Gifford (1931) provide early insight to indigenous peoples of Imperial County from the perspective of the 19th century. Contributions on the filling of Lake Cahuilla by Waters (1982, 1983) have led to revisionist theories to account for changes to the cultural sequence as forced by filling of the Lake. This latter sequence appears appropriate in light of the fact that sediments in the Lake can and have been radiocarbon dated, and are loosely tied to pottery assemblages at key cultural sites.



Source: Google Earth Pro.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

27990002 • 03/2006 | 3_local_aerial.mxd

Exhibit 3
Local Vicinity Aerial Map

CITY OF EL CENTRO • ZONE CHANGE 05-02
PHASE I CULTURAL RESOURCES ASSESSMENT

2.3.1 - Paleo-Indian (San Dieguito) Period

Spanning a period from ~15000 to 7000 B.C., archaeological assemblages attributed to this horizon are characterized by large projectile points and scrapers. Neither groundstones nor pottery was used at this time. The very limited data available suggests that prehistoric populations focused on hunting of megafauna with lesser emphasis on plant gathering. These people likely moved about the region in small nomadic groups. Sites consist of rock scatters near major drainages or near desiccated Pleistocene lakes. Few early assemblages can be directly attributed to this period in the Colorado Desert biosphere.

2.3.2 - Archaic Period

Characterized by increased apparent complexity of toolkits and an increase in the amount of inhospitable land in the region, the period represents a continuation of Paleoindian Period lifestyles, but without the megafauna that went extinct at the end of the former Period. The period is little studied in the Colorado Desert area, but a few known Archaic sites suggest that Lake Cahuilla was filled and that Archaic peoples were utilizing the resources along the margins of the lake. The Pinto and Amargosa Complexes are associated with distinctive projectile point styles, point materials and settings. The Period dates between 7000 B.C. and A.D. 500.

2.3.3 - Patayan Period

Dating between A.D. 500 and Spanish contact, researchers believe that the Coachella Valley Patayan represent an incursion of Lower Colorado peoples or Mexican cultures onto the Lake Cahuilla shorelines, and that they may represent the prehistoric precursors to the modern Cahuilla. For the first time, pottery is locally manufactured and cremations rather than burials are the norm. Likely representing small extremely mobile groups, the Patayan culture is divided into three phases, each possibly associated with individual re-fillings of Lake Cahuilla and subsequent changes in pottery type signatures. Little concrete information is known about the prehistoric Patayan, and most of the recent studies have been undertaken on sites in the Imperial Valley and along the Lower Colorado River. Little is known about the interaction between Coachella Valley Patayan groups and Cahuilla groups. Given that the Coachella Valley was the primary thoroughfare between the coastal areas of southern California and the Colorado River/Arizona Deserts, trade and communication was probably extensive.

Patayan peoples relied on Lake Cahuilla shoreline resources, and Patayan III was associated with the last major desiccation of Lake Cahuilla roughly 50 years before Europeans explored the Colorado River, about A.D. 1500. When the Desert Cahuilla and Kumeyaay peoples were first contacted by American explorers, several of the elders described a filled Lake Cahuilla as part of the cultural

traditions of their people. A large infilling of the Lake occurred between 1700 and 1750, but it is unlikely that this infilling caused the lake to rise much above the current level of the Salton Sea. In 1774, de Anza led explorers through the Salton Sink to Mission San Gabriel, and the entire sink was a dry playa at that time. Historians recorded numerous fillings of the Salton Sink during the 1800's, suggesting that smaller infilling events were commonplace, and the formally designated Salton Sea was formed between 1905 and 1907 after Colorado flooding shattered flimsy canals in 1905.

2.3.4 - Indigenous Native American Presence

Kumeyaay (Kamia) or Southern Diegueño

The desert Kumeyaay groups, known as the Kamia by Gifford (1931), were highly mobile hunter-gatherers who generally relied on acorn harvests in the nearby western mountains, and the mesquite bean harvest on the desert flats. Yuman speakers, this group also made and use of pottery on a consistent basis and undertook a limited amount of agriculture. Although the use of pottery and agriculture may have "diffused" in from lower Colorado River cultures, the Alamo and New floodplain rivers were located in the El Centro area and these potentially unreliable water sources could have provided incentives for ceramic production since water might have needed to be stored.

The interior groups shot or trapped small game and lived in simple huts or ramadas made of brush. Kamia groups were likely attracted to the shore of Lake Cahuilla, at least along its southern extent. As noted above, once the ancient lake completely evaporated by about A.D. 1500, drastic changes for Southern California interior cultures were in store. White (1963) estimated that roughly 50 percent of the Kumeyaay diet in the 1800's was acorns, while the mesquite was the major staple of the Kamia (Bean 1972). Yucca and goosefoot (*Chenopodium sp.*) were also used as a food source. Among others, Bean and Saubel (1979) provide an important description of the resources and processes utilized by people living in the Coachella and Upper Imperial valleys. Since most of these foodstuffs require some level of grinding processing, portable millingstones were a necessary part of the Kamia way of life.

2.3.5 - The Central Canal

Floodwater lakes in the Coachella Valley and strings of small lakes in the Imperial Valley were created by Colorado River flooding during the last several millennia. The New River and the Alamo River are old Colorado River channels that lead into the Salton Sink. In the 19th Century, at least eight flood events were recorded. In 1901, the Imperial Canal first brought water to the Imperial Valley from the Colorado River. Heavy silt loads prevented the original canal from fulfilling the desired irrigation goal and, in 1904; a diversion on the Colorado was built, bypassing the silt-blocked Imperial Canal ingress. Flooding in 1905 broke through the breach and the entirety of the Colorado River flowed into the Salton Sink until 1907. The Southern Pacific Railroad was able to close the

breach but by then the Salton Sea was created with a high water mark of about 190 feet below sea level, mirroring the ancient Lake Cahuilla.

A document (Dowd 1956) provided to MBA by Karen Collins of the SIC provides hints of the history of the canal system located between El Centro and the Mexican border. In 1900, construction began on the Alamo Canal. This brought water from the Colorado into Mexico and then back into California using part of the old Alamo River channel. Gates were required at important junctions, and the level of complexity in the canal system increased as additional irrigation lands were brought into agricultural production. The Boundary Canal was also constructed. It brought water along the border and joined the Central Main Canal as it headed north. Eventually, the canal brought waters due north into the El Centro region, passing west of the project Site. Many of these early systems were wiped out during the 1905 flooding, only to be rebuilt in a far more effective manner soon after. Most of the canal systems in south El Centro were routed before 1950, but it is not certain, which portions were built in the modern era and which were not. The drains and small feeder canals near the project Site are all part of the regional IID water control system. Ms. Collins stated that OHP considers the canal system part of a CR eligible district.

SECTION 3:
INVESTIGATIVE AND ANALYTICAL METHODS

MBA's archaeological survey of the project area was undertaken by MBA staff archaeologists Kurt McLain and J. David Coble on February 5 2006. The project area was examined using a block-transect technique, where the surveyors walked transects spaced 10 meters apart. No cultural resources were detected inside the project area.

3.1 - PROCEDURES FOR CULTURAL SIGNIFICANCE DETERMINATIONS

In most cases prior to impact, CEQA and OHP protocols require that a cultural resource record search and a cultural resource survey take place on a property that exhibits some potential for cultural resources. According to federal NHPA/NRHP (NPS 2005, CHRIS 2005) and state protocol, if such a survey detects cultural sites or artifactual remains, the jurisdictional agency, whose role is to fulfill Section 106 requirements, must be able to determine whether the cultural resources are eligible for inclusion in the CR and/or the NRHP. A step-by-step Section 106 process has been developed and implemented per 36CFR800, revised December 12, 2000. As a part of this procedure, the resource must be evaluated to determine whether it is "significant." Eligibility must be determined using the four evaluative criteria, A, B, C, and D quoted below, found in implementing regulations 36CFR part 63. At the state level, the eligibility criteria are almost identical to federal protocols (PRC5024.1 - 14 CCR Section 4852). The federal criteria include the following:

A. Is associated with events that have made a significant contribution to the broad patterns of our history;

B. Is associated with the lives of persons significant in our past;

C. Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield, information important in prehistory or history.

If avoidance of a site cannot occur as a result of an action, the project developmental plans must be evaluated in order to determine whether the action would cause a "substantial adverse change" in the significance of the resource using the criteria above. Adverse changes to such resources are defined in 36CFR800.5. All archaeological or historical sites must be carefully evaluated relative to the effects of the action, even if they have been or have not been listed at the time the proposed action

will take place. Although avoidance of cultural resources is always the best choice, where necessary, impacts to previously listed or potentially listed resources must be mitigated for.

If it is determined that a cultural resource is or could potentially be listed on the CR or NRHP, a testing and/or historical evaluation of the resource must take place, prior to impact. If it is determined that the resource is significant and that impacts will cause a substantial adverse change in its significance that resource must undergo data collection prior to impact. Under CEQA, if testing results determine that the resource will not qualify for listing in the CR or the NRHP, no further mitigation of any kind is required. At the federal level, a Section 106 consultation determines the level of mitigative needs once data collection has taken place.

3.2 - CULTURAL RESOURCES RECORD SEARCH PROCEDURE

On January 25 2006, SIC Assistant Coordinator Karen Collins performed a records search at the SIC, Imperial Valley College Desert Museum, Ocotillo, CA. Ms. Collins examined an approximately 1-mile distant search radius buffer zone surrounding the project area. To identify any historic properties, Ms. Collins examined the current inventories of the NRHP, the CR, the California Historical Landmarks (CHL) list, and the California Points of Historical Interest (CPHI) list. She also reviewed the California State Historic Resources Inventory (HRI) for El Centro and Imperial County to determine the existence of previously documented local historical resources. Archival maps were examined to help locate any previously plotted historic resources in the area.

3.3 - NATIVE AMERICAN HERITAGE COMMISSION AND CONSULTATION

On February 9 2006, MBA sent a letter to the NAHC in an effort to determine whether any sacred sites are listed on their Sacred Lands List for this portion of the City of El Centro. Since the NAHC did not respond to our first inquiry, a new letter was sent to the NAHC on March 10, 2006. The response from the NAHC has not been received by MBA as of the date of this report. Once received, MBA will send letters to each tribal representative named for comment on sacred sites that may be located near the project area. This information and any responses will be stored at MBA's Irvine office for future use as needed.

Based on our experience with other projects in this area, the NAHC typically reports that that no sacred sites are known for this area, but that individual tribal agencies and individuals could be contacted for further information. Our effort does not represent concurrence with the regulations set forth in SB18 in terms of Native American consultation. Formal consultation efforts must be initiated by the City under certain conditions. Whether those consultation efforts are triggered by the development of the Willow Bend project is not known at this time.

SECTION 4:
RESEARCH AND FIELDWORK RESULTS

4.1 - CULTURAL RESOURCES RECORDS SEARCHES

The records search disclosed that no portions of the search radius have been surveyed or researched in the recent past by professional archaeologists. A few cultural resource sites are known for this region. The following Table lists the cultural sites known within 1-mile from the project area on the El Centro, California, USGS 7.5 minute topographic quadrangle map.

The Date Drain 3D is part of a larger system of canals and drains maintained by the IID. Per Karen Collins of the SIC, OHP has indicated that the irrigation complex in the El Centro area is an eligible Historic District. Unfortunately, no factual information about this District is available at the present time. Thus, it is possible that the Date Drain 3D is an element of an eligible Historic District.

On March 13, 2006, the author interviewed IID Staff Ecologist Bruce Wilcox about the process of maintaining the drains. The IID cleans out and rebuilds the shallow walls of these drains once every five years. In addition, any head gates or weirs associated with these drains are regularly replaced. Since MBA's staff archaeologists did not observe any historical elements during the survey, and since the IID process is to rebuild and replace any old elements, we believe that the Date Drain 3D is located on the original footprint, but is entirely modern in appearance and construction. Therefore, this drain should not be considered a historic resource for the purposes of CEQA.

Table 1: Known Cultural Resource Sites, *El Centro, CA.* USGS Map

Site Name	Location	Type	Potentially Directly Affected?
none	various	Date Canal	No
none	Section 83	Date Drain 3D	Yes
none	various	Canal/drain located along east edge of SR-86	Probably not
none	Section 83	Residence built south of southern parcel margin and west of SR-86 as shown on El Centro topographic map.	No

4.2 - CULTURAL RESOURCES SURVEY

No cultural resources were detected during the survey. The whole of the project area has been heavily impacted by irrigated hay agriculture, which tends to obscure signatures of prehistoric deposits.

Given the above facts, MBA concludes that the potential for impacts to buried cultural deposits is "low." As stated in Section 5 below, MBA recommends that no archaeological monitoring take place within the project area.

4.3 - PALEONTOLOGICAL RESULTS

Kesler Randall of the SDNHM undertook a literature review and records search of the paleontology of the project area (Appendix B-2). A search of the museums records indicates that no paleontologic resource localities are recorded within the boundaries of the project area or within 1 mile in any direction (Randall 2006). The project area is located entirely upon surface exposures of Pleistocene/Holocene Lake Cahuilla and Playa deposits. According to research in similar deposits elsewhere in the Imperial Valley, we regard the potential for impacts to fossils as "high."

The project area has been utilized for agriculture for many years. Subsequently, there is little chance that fossils will be encountered unless depth is reached during construction-related earthmoving. Because there is some potential for impacts to buried paleontological resources, a program to mitigate impacts to significant nonrenewable paleontologic resources is recommended for this project. Monitoring for paleontological resources is recommended once grading reaches 8 feet in depth. Only virgin soils should be monitored. The fossil recovery plan for this project is located in Section 5.2 of this report.

SECTION 5:
SUMMARY AND RECOMMENDATIONS

5.1 - CULTURAL RESOURCES RECOMMENDATIONS

The primary purpose of this cultural resources analysis is to determine what cultural resources more than 45 years old are located within the project area and whether such resources will be or could be impacted be development of the project. The records search and pedestrian survey show that the potential for impacts to prehistoric cultural resources is "unknown" and "low."

We have determined that the Date Drain 3D is part of potentially eligible Historic District, but is inherently modern in construction. Thus, if the drain is buried below ground as part of Tract construction, it is not considered a direct impact to any CR-eligible historical resource.

In the event of an accidental discovery or recognition of any human remains, PRC section 5097.98 must be followed. In this instance, once project-related earthmoving begins and if there is accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

1. *There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the Riverside County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the remains to be Native American, then the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98, or*
2. *Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the recommendations of the most likely descendant or on the property in a location not subject to further subsurface disturbance:*
    - *The NAHC is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission.*
    - *The descendant identified fails to make a recommendation; or*

- *The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the NAHC fails to provide measures acceptable to the landowner.*

5.2 - PALEONTOLOGICAL RECOMMENDATIONS

The primary purpose of the paleontological analysis is to determine the potential for impacts to significant paleontological resources in the project area. MBA has concluded that the property has a high chance of containing significant paleontological resources, but only at depth. MBA therefore recommends that paleontological monitoring should take place during all construction-related excavations within the project area once 8 feet below grade has been reached. This depth will likely be reached only during trenching for sewer and water. The project area should be re-evaluated for sensitivity once 50 percent of the monitoring has been completed.

Table 2: Recommended Paleontological Resource Mitigation Measures

Mit. No.	Mitigation Text
PA-1	Prior to any clearing and grubbing and/or earthmoving activities on the project area, a qualified Project Paleontologist retained by the Proponent and approved by the City shall review the approved development and construction plans. The paleontologist shall participate in a pre-construction project meeting with the development staff to ensure an understanding of the mitigation measures required during construction.
PA-2	Paleontologic monitoring of any earthmoving will be conducted by a qualified monitor, under direct guidance of a Project Paleontologist. Earthmoving in areas of the parcel where previously undisturbed sediments will be buried but not otherwise disturbed will not be monitored. Monitoring shall begin once earthmoving reaches 8 feet below the original ground surface. Non-virgin soils need not be monitored.
PA-3	If too few fossil remains are found after 50 percent of earthmoving is complete, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction. If fossil remains are found during monitoring, up to 6,000 pounds of fossiliferous sediments will be recovered from the fossil site and processed to allow for the recovery of smaller fossil remains. The total weight of all processed samples from the fossil-bearing rock unit will not exceed 6,000 pounds at any one site.

Table 2 (cont.): Recommended Paleontological Resource Mitigation Measures

Mit. No.	Mitigation Text
PA-4	If fossil remains are found, the Project Paleontologist must develop a storage agreement with a museum repository acceptable within the City to allow for the permanent storage and maintenance of any fossil remains recovered in the project area as a result of the mitigation program, and for the archiving of associated specimen data and corresponding geologic and geographic site data. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then will be curated, assigned and labeled with museum repository fossil specimen numbers and corresponding fossil site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards, and catalogued. Associated specimen data and corresponding geologic and geographic site data will be archived, specimen and site numbers and corresponding data entered into appropriate museum repository catalogs and computerized databases, at the museum repository by a laboratory technician. The remains then will be accessioned into the museum repository fossil collection, where they will be permanently stored and maintained. The associated specimen and site data will be made available for future study by qualified investigators.
PA-5	A final report of findings will be prepared by the Project Paleontologist for submission to the City, and the museum repository following accessioning of the specimens into the museum repository fossil collection. The report will describe parcel geology/stratigraphy, summarize field and laboratory methods used, include a faunal list and an inventory of curated/catalogued fossil specimens, evaluate the scientific importance of the specimens, and discuss the relationship of any newly recorded fossil site in the parcel to relevant fossil sites previously recorded from other areas.

5.3 - NATIVE AMERICAN COMMENTARY

A recently adopted bill, SB18 (Burton) requires that Lead Agencies undertake consultations with Native American tribal entities. We have attempted to gather official information associated with Native American sacred sites as part of a scoped-for data collection process. Our efforts are associated with fact-finding only.

On February 9 2006, MBA sent a letter to the NAHC in an effort to determine whether any sacred sites are listed on their Sacred Lands List for this portion of the City of El Centro. Since the NAHC did not respond to our first inquiry, a new letter was sent to the NAHC on March 10, 2006. The response from the NAHC has not been received by MBA as of the date of this report. Once received, MBA will send letters to each tribal representative named for comment on sacred sites that may be located near the project area. This information and any responses will be stored at MBA's Irvine office for future use as needed.

SECTION 6:
REFERENCES

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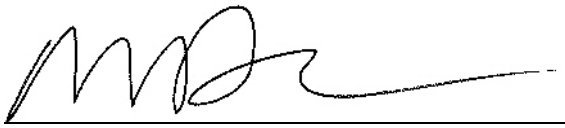
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SECTION 7:
CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: March 10, 2006 Signed:



Michael Dice, M.A.
Michael Brandman Associates
Irvine, CA

Appendix A:
Personnel Qualifications

MICHAEL H. DICE, M.A.
PROJECT SCIENTIST/SENIOR ARCHAEOLOGIST

EDUCATION

M.A., Anthropology - Arizona State University, Tempe, Arizona
B.A., Anthropology - Washington State University, Pullman, Washington
Anthropology Track, University of Washington, Seattle, Washington

PROFESSIONAL AFFILIATIONS

Member, California Historical Society
Member, National Trust For Historic Preservation
Registered Professional Archaeologist (RPA 2000)

PROFESSIONAL HISTORY

Michael Brandman Associates, Irvine, California - Senior Archaeologist
L&L Environmental, Inc. Corona, California - Senior Archaeologist
National Park Service (Pipe Spring National Monument) - Archaeologist
National Park Service (Mesa Verde National Park) - Archaeologist
CRMC, Inc., Farmington, New Mexico - Archaeological Project Manager
LaPlata Archaeological Consultants, Dolores, Colorado - Archaeologist
CASA, Inc. Cortez, Colorado - Archaeologist, Human Skeletal Analyst

Mr. Dice is a Certified Archaeologist with more than 16 years of experience performing records searches, archaeological surveys, archaeological site testing (Phase II) and data collection (Phase III) projects on private and public lands in the Southwestern United States and Southern California. During his career, he has authored or co-authored more than 50 CEQA and/or NEPA level documents including several manuscripts for the National Park Service. Mr. Dice is a member of the California Historical Society, a Registered Professional Archaeologist (RPA), and is a member of the National Trust For Historic Preservation.

PROFESSIONAL EXPERIENCES

Project Scientist/Archaeologist for CEQA-level Phase I, Phase II and Phase III archaeological mitigation for the Temecula Marketplace Project in the City of Temecula, California. Performed the field survey, recorded a large historic ranch complex remnant, developed testing procedures for the historic and prehistoric components of the site, then gathered a crew and performed the Phase II test in the field. Responsible for developing the Phase III data collection plan.

Project Scientist/Archaeologist for Section 106 level review of archaeological testing at Pipe Spring National Monument, Fredonia, Arizona. Produced complete report synthesizing a series of excavations (1996-1998) on an historic Mormon Fort within the Monument. Also wrote a draft plan for any future archaeological mitigation.

Project Archaeologist/Database Manager for the emergency Chapin-5 Fire Rehabilitation Project, Mesa Verde National Park, Colorado (1996-1999). Began as field crew chief (GS-7) and finished with the Park as a GS-9 Database manager. Created an ACCESS 6.0 database for the recordation or re-recordation of more than 500 archaeological sites within the rehabilitation area.

Project Scientist/Archaeologist for CEQA-level Phase I and Phase IV archaeological mitigation for the "The Club at Big Bear Lake" Project in the City of Big Bear Lake, California. Performed the field survey, recorded a large historic tourist complex remnant, wrote mitigation-monitoring recommendations for the City, then supervised the monitoring, analyzed the historic artifacts and wrote the final report.

Performed more than 100 CEQA-level Phase I archaeological surveys in Southern California, which included evaluating more than 50 historic and prehistoric archaeological sites per California SHPO protocol. The reports fulfill ARMR reporting guidelines, while the County of Riverside reports fulfilled both ARMR and County of Riverside protocols.

Appendix B:
Cultural Resource Compliance Documents

B-1: Sacred Lands Search

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

March 10, 2006

Native American Heritage Commission
915 Capitol Mall, Suite 364
Sacramento, CA 95814-4801

Via fax: 916-657-5390

Subject: **Re-Request for a Sacred Lands Records Search for the El Centro "Willow Bend Project" located on about 38 acres in the City of El Centro, County of Imperial, California. (USGS *El Centro, CA.* quad)**

To Whom It May Concern:

Michael Brandman Associates (MBA) would like to determine whether any listed sacred sites are located within or near a project footprint found in the El Centro area. This is our second request for this project.

As seen in the attached topo, the project area is located in the southeastern portion of Section 83 of T16S/R14E, as found on the USGS *El Centro*, CA. 7.5' topographic quadrangle.

Please notify us of any sacred Native American sites that may be affected by the undertaking. A full description of this project can be found in our archaeological survey report, which is forthcoming.

Sincerely,

Michael Dice M.A., Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

Fax 714-508-4110

S:\MDice\Projects New For 2006\27990000 El Centro jobs\NAHC request letter.doc

B-2: Paleontological Records Search

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

February 13, 2006

Dr. Tom Deméré
San Diego Natural History Museum, Department of Paleontology
1788 El Prado, Balboa Park
San Diego, CA 92101

Via email: paleo@sdnhm.org

Subject: **Request for a Paleontological Resources Records Search for Two Residential Projects located on a total of 160 acres in El Centro, County of Imperial, California. (USGS *El Centro, CA*. quad)**

Dr. Deméré:

I am in need of a paleo records search on two block project areas located in the town of El Centro. According to the project footprint maps provided, the projects are located in Section 82 and Section 74, as found on the USGS El Centro, CA. 7.5' topographic quadrangle.

We have attached a topographic map showing the project search locations for your convenience. Please let me know if there shall be any depth restrictions with regard to monitoring. Monitor below 7 feet…5 feet????

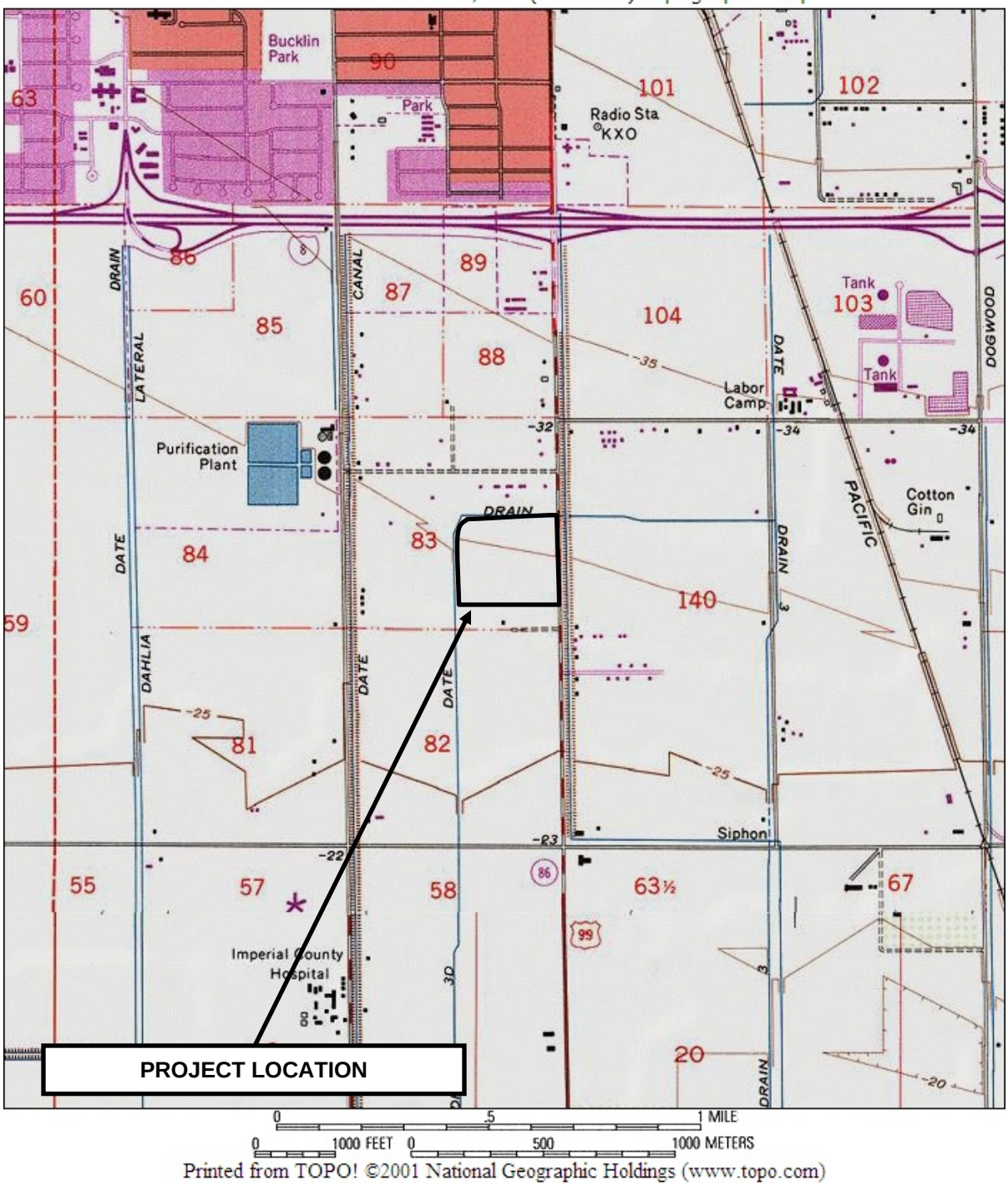
Once the results have been determined, please fax the results to our office 714.508.4110 and mail the MBA Irvine office (address below) a hard copy with invoice. If you have any more questions or need to speak with me, please feel free to call me at 714.742.0468. Thank you for your time and effort.

Sincerely,

Michael Dice M.A.
Senior Archaeologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

S:\MDice\Projects New For 2006\27990000 El Centro jobs\Paleo request letter.doc

27990003: USGS El Centro, CA. (1979 rev) topographic map

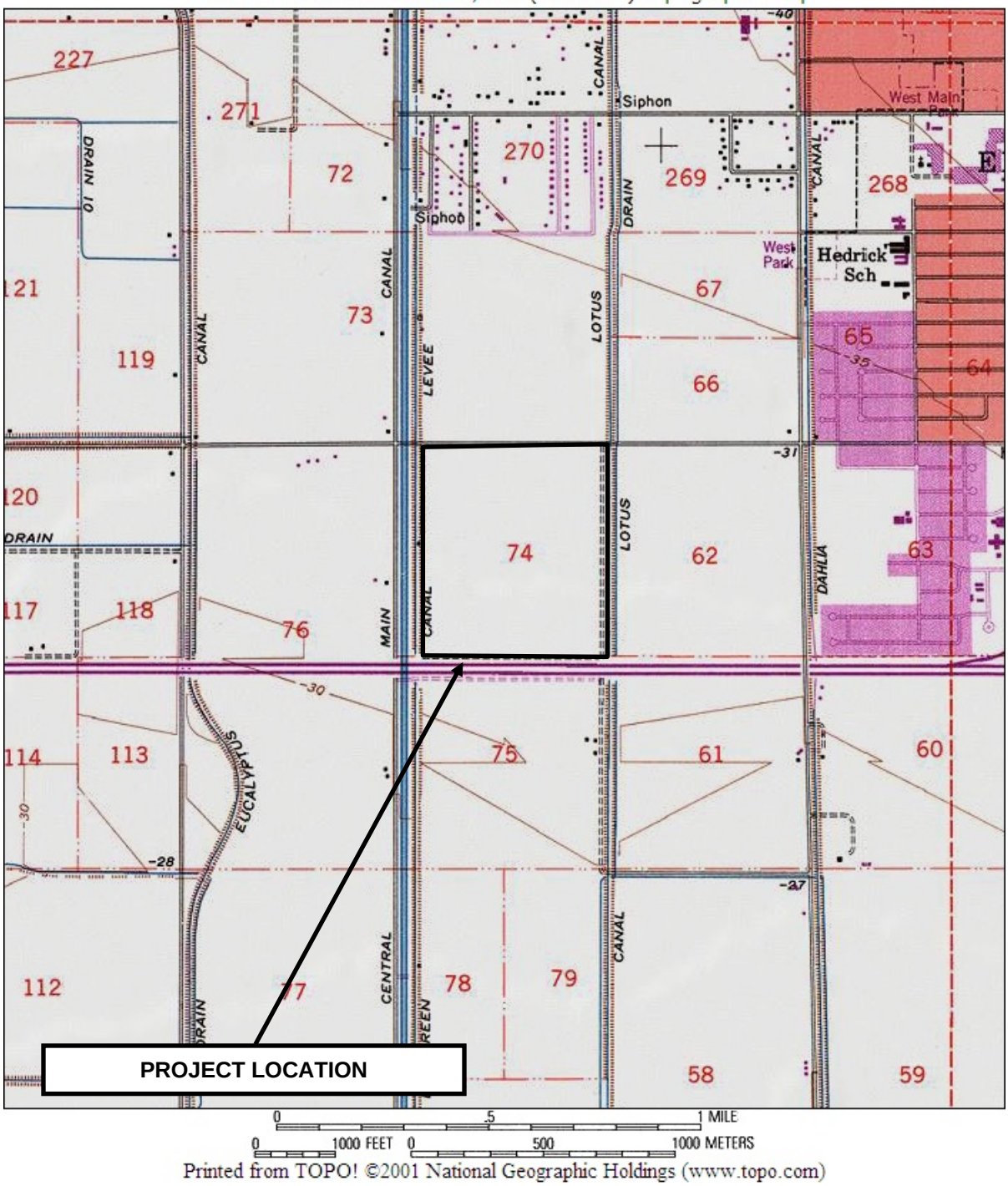


Source: Topo! @National Geographic Holdings.

Michael Brandman Associates

Exhibit 2
Project Footprint Map

27990003: USGS El Centro, CA. (1979 rev) topographic map



Source: Topo! @National Geographic Holdings.

Michael Brandman Associates

Exhibit 2
Project Footprint Map

SAN DIEGO NATURAL HISTORY MUSEUM
BALBOA PARK - SAN DIEGO SOCIETY OF NATURAL HISTORY - ESTABLISHED 1874

February 16, 2006

Mr. Michael Dice
Michael Brandman Associates
220 Comerce, Suite 200
Irvine, CA 92602

RE: Paleontological resources: El Centro Project

Dear Mr. Dice:

This letter presents the results of a record search conducted for the El Centro Project sites. The first site is in southern El Centro, southwest of the intersection of Corfman and West Dannenberg roads. The second site is in southwestern El Centro, northwest of the intersection of Interstate 8 and Lotus Avenue. The rocks underlying the project areas are mapped by Strand (1962) as Pleistocene/Holocene Lake Cahuilla and Playa Deposits. The museum has no recorded localities within a one mile radius of the project sites (see attached map). However, one locality was discovered within these Lake Cahuilla deposits, but outside of the mile radius. Fossils from this locality include freshwater invertebrates (e.g. snails and clams), freshwater vertebrates (e.g. fish), and terrestrial vertebrates (e.g. deer mice).

If you have any questions concerning my findings please feel free to contact me at 619-255-0310 or krandall@sdnhm.org.

Sincerely,

Kesler A. Randall
Collections Manager, Fossil Vertebrates
Department of Paleontology

Strand, Rudolph G. 1962. Geologic Atlas of California: San Diego - El Centro Sheet . California Department of Conservation, Division Mines and Geology.

Appendix C:
Site Photographs



Photograph 1: View of the cut hay field from the northeast corner of the parcel to the south.



Photograph 2: View of the western edge of the property toward the east. The object pictured is a portion of the Date Drain 3D.

Source: Michael Brandman Associates, 2006.

Michael Brandman Associates

Appendix C
Site Photographs 1 and 2



Photograph 3: View to the east from the south-center of the project area.

Source: Michael Brandman Associates, 2006.

Michael Brandman Associates

Appendix C
Site Photograph 3

Appendix F: Geotechnical Study

Geotechnical Report

Willowbend Subdivision

El Centro, California

Prepared for:

DR Horton
5927 Preistly Drive, Suite 200
Carlsbad, CA 92008



LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Prepared by:

Landmark Consultants, Inc.
780 N. 4th Street
El Centro, CA 92243
(760) 370-3000

February 2005

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

780 N. 4th Street
El Centro, CA 92243
(760) 370-3000
(760) 337-8900 fax

77-948 Wildcat Drive
Palm Desert, CA 92211
(760) 360-0665
(760) 360-0521 fax

February 17, 2005

Mr. David Thorne
D.R. Horton
5927 Priestly Drive, Suite 200
Carlsbad, CA 92008

Geotechnical Investigation
80-acres Willowbend Subdivision
SWC Willowbend Drive and State Hwy 86
El Centro, California
LCI Report No. LE05030

Dear Mr. Thorne:

This geotechnical report is provided for design and construction of the proposed Willowbend Residential Subdivision located at the southwest corner of Willowbend Drive and State Hwy 86 in southern El Centro, California. Our geotechnical investigation was conducted in response to your request for our services. The enclosed report describes our soil engineering investigation and presents our professional opinions regarding geotechnical conditions at the site to be considered in the design and construction of the project.

This summary presents ***selected*** elements of our findings and recommendations only. It ***does not*** present crucial details needed for the proper application of our findings and recommendations. Our findings, recommendations, and application options are related ***only through reading the full report,*** and are best evaluated with the active participation of the engineer of record who developed them.

The findings of this study indicate that the site is, in general, predominantly underlain by clays of high expansion potential that will require foundations and slabs-on-grade designed to resist expansive soil heave (CBC Section 1815 and 1816). The CBC design method requires grade-beam stiffening of floor slabs at a maximum spacing of 17 feet on center, grade-beam stiffened post-tensioned slabs or flat-plate structural slabs. Design and construction of site improvements (concrete flatwork, curbs, patios, etc.) should include provisions to mitigate clay soil movement. Additionally, the weak clay subgrade soil requires thickened structural sections for pavements.

The soil is highly corrosive to metals and contains sufficient sulfates and chlorides to require special concrete mixes (4,500 psi with a 0.45 maximum water cement ratio and Type V cement) and protection of embedded steel components when concrete is placed in contact with native soil. If the native soils are replaced with imported granular soils with low sulfate and chloride content, no special concrete mixes are required.

Evaluation of liquefaction potential at the site indicates that thin (1 to 4 feet thick), isolated, interbedded layers of silty sand and silt at a depth between 10 to 40 feet may liquefy under seismically induced groundshaking potentially resulting in an estimated ½ to 1 inch of deep seated settlement. There is a 10 to 24-foot layer of non-liquefiable soils above any potentially liquefiable soil; therefore, it is unlikely that there will be rapid deformation or punching bearing failures of the surface soils should liquefaction occur. Deep ground improvement to mitigate liquefaction is not required; however, special foundation designs are recommended to mitigate the potential for differential settlement.

Structural designs should anticipate differential movement of about 1.0 inch. Typically, structural flat plate mats, grade-beam reinforced foundations, and stiffened post-tensioned foundations supporting loads typical to lightly loaded residential structures will limit settlements to acceptable levels.

We did not encounter soil conditions that would preclude implementation of the proposed project provided the recommendations contained in this report are implemented in the design and construction of this project.

We appreciate the opportunity to provide our findings and professional opinions regarding geotechnical conditions at the site. If you have any questions or comments regarding our findings, please call our office at (760) 370-3000.

Respectfully Submitted,
Landmark Consultants, Inc.

PROFESSIONAL GEOLOGIST
STEVEN K. WILLIAMS
CERTIFIED ENGINEERING GEOLOGIST
CEG 2261
STATE OF CALIFORNIA

Steven K. Williams, CEG
Senior Engineering Geologist

Julian R. Avalos
Staff Engineer

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JEFFREY O. LYON
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CIVIL
STATE OF CALIFORNIA

Jeffrey O. Lyon, PE
President

Distribution:
Client (4)

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Section 1
INTRODUCTION

1.1 Project Description

This report presents the findings of our geotechnical investigation for the proposed 80 acre Willowbend Subdivision located at the southwest corner of Willowbend Drive and State Hwy 86 (South 4th Street) in southern El Centro, California (See Vicinity Map, Plate A-1). A site plan for the proposed development was provided by the client prior to site exploration.

The structures are planned to consist of slabs-on-grade foundations and wood-frame construction. Footing loads at exterior bearing walls are estimated at 0.5 to 2.0 kips per lineal foot. Column loads are estimated to range from 5 to 25 kips. If structural loads exceed those stated above, we should be notified so we may evaluate their impact on foundation settlement and bearing capacity. Site development will include site grading, building pad preparation, underground utility installation, street construction, and concrete driveway and sidewalk placement.

1.2 Purpose and Scope of Work

The purpose of this geotechnical study was to investigate the upper 50 feet of subsurface soil at selected locations within the site for evaluation of physical/engineering properties. From the subsequent field and laboratory data, professional opinions were developed and are provided in this report regarding geotechnical conditions at this site and the effect on design and construction. The scope of our services consisted of the following:

- Field exploration and in-situ testing of the site soils at selected locations and depths.
- Laboratory testing for physical and/or chemical properties of selected samples.
- Review of the available literature and publications pertaining to local geology, faulting, and seismicity.
- Engineering analysis and evaluation of the data collected.
- Preparation of this report presenting our findings, professional opinions, and recommendations for the geotechnical aspects of project design and construction.

This report addresses the following geotechnical issues:

- Subsurface soil and groundwater conditions
- Site geology, regional faulting and seismicity, near source factors, and site seismic accelerations
- Liquefaction potential and its mitigation
- Expansive soil and methods of mitigation
- Aggressive soil conditions to metals and concrete

Professional opinions with regard to the above issues are presented for the following:

- Site grading and earthwork
- Building pad and foundation subgrade preparation
- Allowable soil bearing pressures and expected settlements
- Concrete slabs-on-grade
- Excavation conditions and buried utility installations
- Mitigation of the potential effects of salt concentrations in native soil to concrete mixes and steel reinforcement
- Seismic design parameters
- Pavement structural sections

Our scope of work for this report did not include an evaluation of the site for the presence of environmentally hazardous materials or conditions.

1.3 Authorization

Mr. David Thorne of D.R. Horton provided verbal authorization to proceed with our work on January 20, 2005.

Section 2
METHODS OF INVESTIGATION

2.1 Field Exploration

Subsurface exploration was performed on January 21, 2005 using Holguin, Fahan, & Associates, Inc. of Cypress, California to advance six (6) electric cone penetrometer (CPT) soundings to approximate depths of 50 feet below existing ground surface. The soundings were made at the locations shown on the Site and Exploration Plan (Plate A-2). The approximate sounding locations were established in the field and plotted on the site map by sighting to discernable site features.

CPT soundings provide a continuous profile of the soil stratigraphy with readings every 2.5cm (1 inch) in depth. Direct sampling for visual and physical confirmation of soil properties has been used by our firm to establish direct correlations with CPT exploration in this geographical region.

The CPT exploration was conducted by hydraulically advancing an instrumented Hogentogler $10cm^2$ conical probe into the ground at a rate of 2cm per second using a 23-ton truck as a reaction mass. An electronic data acquisition system recorded a nearly continuous log of the resistance of the soil against the cone tip (Qc) and soil friction against the cone sleeve (Fs) as the probe was advanced. Empirical relationships (Robertson and Campanella, 1989) were then applied to the data to give a continuous profile of the soil stratigraphy. Interpretation of CPT data provides correlations for SPT blow count, phi (ϕ) angle (soil friction angle), undrained shear strength (S_u) of clays and over-consolidation ratio (OCR). These correlations may then be used to evaluate vertical and lateral soil bearing capacities and consolidation characteristics of the subsurface soil.

Interpretive logs of the CPT soundings were produced and presented in final form after review of field data and are presented on Plates B-1 through B-6 in Appendix B. A key to the interpretation of CPT soundings is presented on Plate B-11. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

Additional subsurface exploration was performed on February 8, 2005 by using a backhoe to excavate four (4) test pits to an approximate depth of 10 feet below the existing ground surface. The test pit locations are shown on the Site and Exploration Plan (Plate A-2). Bulk samples were obtained at selected depths in the test pits.

A nuclear densometer (ASTM D2922) was used to evaluate in-situ densities and natural moisture content at selected depths in the upper 5 feet of the backhoe pits. The test pits were located by taped or paced measurements and should be considered approximate.

After logging and sampling the soil, the exploratory test pits were backfilled with the excavated material. The backfill was loosely placed and was not compacted to the requirements specified for engineered fill. The backhoe pits shall be located during rough grading of the site to properly recompact the backfill.

A senior geotechnician maintained logs of the test pits during exploration. The logs were edited in final form after a review of retrieved samples and the field and laboratory data. The test pit logs are presented on Plates B-7 through B-10 in Appendix B. Soils encountered have been classified according to the Unified Soil Classification System. A key to the test pit logs is presented on Plate B-12. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

2.2 Laboratory Testing

Laboratory tests were conducted on selected bulk soil samples obtained from hand auger borings made adjacent to the CPT locations to aid in classification and evaluation of selected engineering properties of the near surface soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

- Plasticity Index (ASTM D4318) – used for soil classification and expansive soil design criteria
- Chemical Analyses (soluble sulfates & chlorides, pH, and resistivity) (Caltrans Methods) – used for concrete mix evaluations and corrosion protection requirements.

The laboratory test results are presented on Plates C-1 and C-2 in Appendix C. Engineering parameters of soil strength, compressibility and relative density utilized for developing design criteria provided within this report were either extrapolated from correlations with the subsurface CPT data or from data obtained from the field and laboratory testing program.

Section 3
DISCUSSION

3.1 Site Conditions

The 80-acre project site is a vacant, flat-lying agricultural field which is currently fallow. The site is bisected north-south by the Date Drain No. 3, an open earthen irrigation water run-off ditch. The Date Drain No. 3 is approximately 8 to 10 feet deep. Adjacent properties are flat-lying and approximately the same elevation with this site, consisting of agricultural land to the south and single family homes to the north. Residential subdivision are currently under construction to the east across Hwy 86 (Countryside Estates) and the west across Clark Road (Miramontes and Buena Vista). Clark Road and State Hwy 86 lies to the west and east side, respectively. Rural residences are located south of the southwest and southeast corners of the site.

The project site lies at an elevation of approximately 35 feet below mean sea level (MSL) (El. 965 local datum) in the Imperial Valley region of the California low desert. The surrounding properties lie on terrain which is flat (planar), part of a large agricultural valley, which was previously an ancient lake bed covered with fresh water to an elevation of 43± feet above MSL. Annual rainfall in this arid region is less than 4 inches per year with four months of average summertime temperatures above 100 °F. Winter temperatures are mild, seldom reaching freezing.

3.2 Geologic Setting

The project site is located in the Imperial Valley portion of the Salton Trough physiographic province. The Salton Trough is a geologic structural depression resulting from large scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The Imperial Valley is directly underlain by lacustrine deposits, which consist of interbedded lenticular and tabular silt, sand, and clay. The Late Pleistocene to Holocene lake deposits are probably less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed a fresh water lake (Lake Cahuilla). Older deposits consist of Miocene to Pleistocene non-marine and marine sediments deposited during intrusions of the Gulf of California. Basement rock consisting of Mesozoic granite and Paleozoic metamorphic rocks are estimated to exist at depths between 15,000 - 20,000 feet.

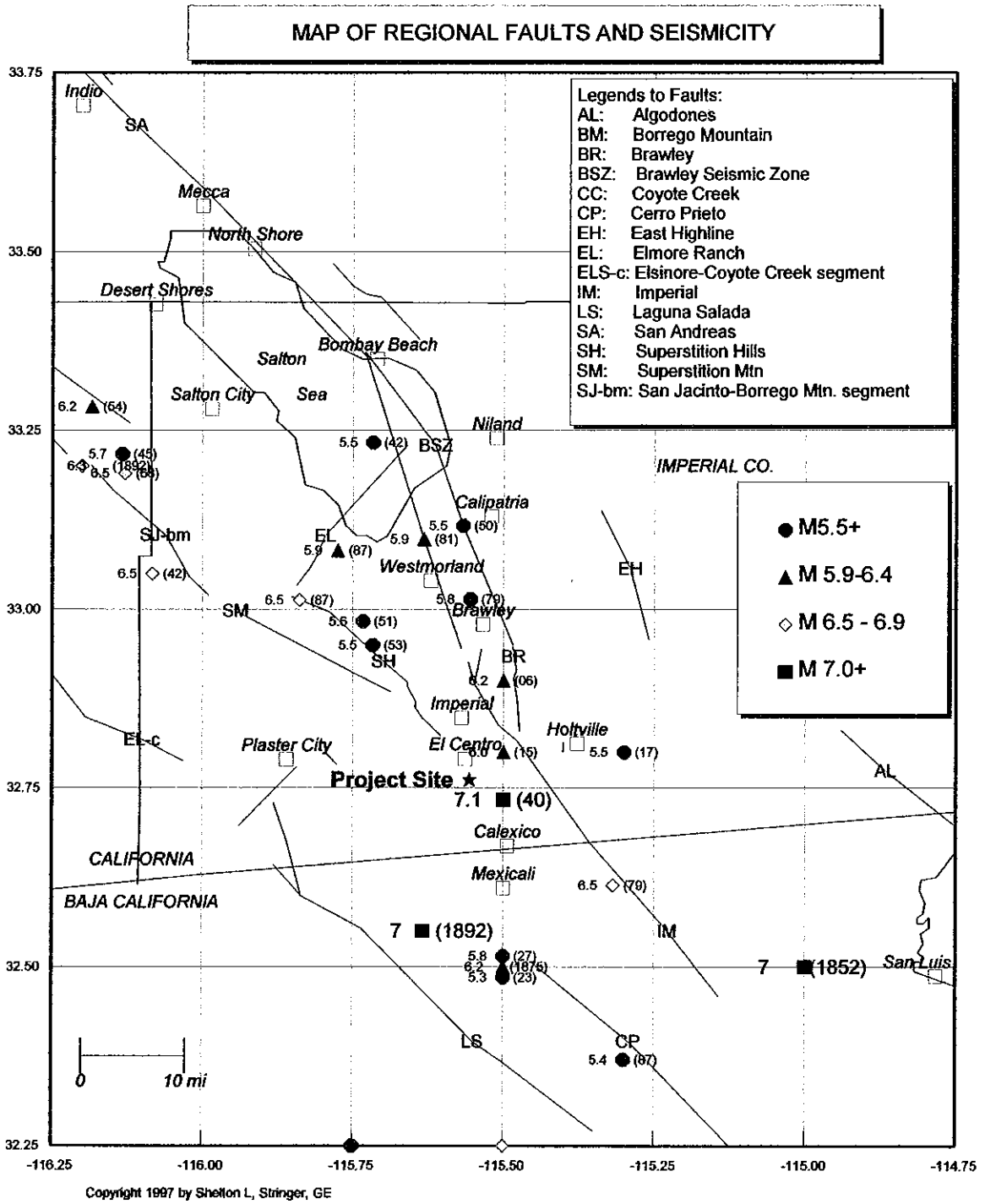
3.3 Seismicity and Faulting

Faulting and Seismic Sources: We have performed a computer-aided search of known faults or seismic zones that lie within a 62 mile (100 kilometers) radius of the project site as shown on Figure 1 and Table 1. The search identifies known faults within this distance and computes deterministic ground accelerations at the site based on the maximum credible earthquake expected on each of the faults and the distance from the fault to the site. The Maximum Magnitude Earthquake (Mmax) listed was taken from published geologic information available for each fault (CDMG OFR 96-08 and Jennings, 1994).

Seismic Risk: The project site is located in the seismically active Imperial Valley of southern California and is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. The proposed site structures should be designed in accordance with the Uniform Building Code (UBC) for near source factors derived from a "Design Basis Earthquake" (DBE). The DBE is defined as the motion having a 10 percent probability of being exceeded in 50 years. The DBE generally corresponds to the Mmax magnitude discussed here.

Seismic Hazards.

- **Groundshaking.** The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the Imperial, Brawley and Cerro Prieto Faults. A further discussion of groundshaking follows in Section 3.4.
- **Surface Rupture.** The project site does not lie within a State of California, Alquist-Priolo Earthquake Fault Zone. Surface fault rupture is considered to be unlikely at the project site because of the well-delineated fault lines through the Imperial Valley as shown on USGS and CGS maps.



Faults and Seismic Zones from Jennings (1994), Earthquakes modified from Ellsworth (1990) catalog.

Figure 1. Map of Regional Faults and Seismicity

Table 1
FAULT PARAMETERS & DETERMINISTIC
ESTIMATES OF PEAK GROUND ACCELERATION (PGA)

Fault Name or Seismic Zone	Distance (mi) & Direction from Site	Fault Type		Fault Length (km)	Maximum Magnitude Mmax (Mw)	Avg Slip Rate (mm/yr)	Avg Return Period (yrs)	Date of Last Rupture (year)	Largest Historic Event >5.5M (year)	Est. Site PGA (g)
Reference Notes: (1)		(2)	(3)	(2)	(4)	(3)	(3)	(3)	(5)	(6)
Imperial Valley Faults										
Imperial	5.9 NE	A	B	62	**7.0**	20	79	1979	7.0 1940	**0.36**
Brawley	6.7 NE	B	B	14	**7.0**	20	---	1979	5.8 1979	**0.34**
Brawley Seismic Zone	13 N	B	B	42	**6.4**	25	24		5.9 1981	**0.16**
Cerro Prieto	19 SSE	A	B	116	**7.2**	34	50	1980	7.1 1934	**0.18**
East Highline Canal	22 ENE	C	C	22	**6.3**	1	774			**0.10**
San Jacinto Fault System										
- Superstition Hills	5.0 NW	B	A	22	**6.6**	4	250	1987	6.5 1987	**0.32**
- Superstition Mtn.	11 NW	B	A	23	**6.6**	5	500	1440 +/-		**0.19**
- Elmore Ranch	25 NW	B	A	29	**6.6**	1	225	1987	5.9 1987	**0.11**
- Borrego Mtn	31 WNW	B	A	29	**6.6**	4	175		6.5 1942	**0.09**
- Anza Segment	47 NW	A	A	90	**7.2**	12	250	1918	6.8 1918	**0.09**
- Coyote Creek	50 NW	B	A	40	**6.8**	4	175	1968	6.5 1968	**0.07**
- Hot Spgs-Buck Ridge	63 NW	B	A	70	**6.5**	2	354		6.3 1937	**0.05**
- Whole Zone	11 NW	A	A	245	**7.5**	---	---			**0.31**
Elsinore Fault System										
- Laguna Salada	18 SW	B	B	67	**7.0**	3.5	336		7.0 1891	**0.17**
- Coyote Segment	28 W	B	A	38	**6.8**	4	625			**0.11**
- Julian Segment	53 WNW	A	A	75	**7.1**	5	340			**0.08**
- Earthquake Valley	55 WNW	B	A	20	**6.5**	2	351			**0.06**
- Whole Zone	28 W	A	A	250	**7.5**	---	---			**0.16**
San Andreas Fault System										
- Coachella Valley	42 NNW	A	A	95	**7.4**	25	220	1690+/-	6.5 1948	**0.11**
- Whole S. Calif. Zone	42 NNW	A	A	458	**7.9**	---	---	1857	7.8 1857	**0.14**

Notes:

1. Jennings (1994) and CDMG (1996)
2. CDMG (1996), where Type A faults -- slip rate >5 mm/yr and well constrained paleoseismic data
   Type B faults -- all other faults.
3. WGCEP (1995)
4. CDMG (1996) based on Wells & Coppersmith (1994)
5. Ellsworth Catalog in USGS PP 1515 (1990) and USBR (1976), Mw = moment magnitude,
6. The deterministic estimates of the Site PGA are based on the attenuation relationship of:
   Boore, Joyner, Fumal (1997)

However, because of the high tectonic activity and deep alluvium of the region, we cannot preclude the potential for surface rupture on undiscovered or new faults that may underlie the site.

▸ **Liquefaction.** Liquefaction is a potential design consideration because of underlying saturated sandy substrata. The potential for liquefaction at the site is discussed in more detail in Section 3.7.

Other Secondary Hazards.

▸ **Landsliding.** The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps of the region and no indications of landslides were observed during our site investigation.

▸ **Volcanic hazards.** The site is not located in proximity to any known volcanically active area and the risk of volcanic hazards is considered very low.

▸ **Tsunamis, seiches, and flooding.** The site does not lie near any large bodies of water, so the threat of tsunami, seiches, or other seismically-induced flooding is unlikely.

▸ **Expansive soil.** In general, much of the near surface soils in the Imperial Valley consist of silty clays and clays which are moderate to highly expansive. The expansive soil conditions are discussed in more detail in Section 3.5.

3.4 Site Acceleration and UBC Seismic Coefficients

Site Acceleration: Deterministic horizontal peak ground accelerations (PGA) from maximum probable earthquakes on regional faults have been estimated and are included in Table 1. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Accelerations also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

We have used the computer program FRISKSP (Blake, 2000) to provide a probabilistic estimate of the site PGA using the attenuation relationship of Boore, Joyner, and Fumal NEHRP D 250 (1997). The PGA estimate for the project site having a 10% probability of being exceeded in 50 years (return period of 475 years) is **0.65 g.**

CBC Seismic Coefficients: The CBC seismic response coefficients are calculated from the near-source factors for Seismic Zone 4. The near-source factors are based on the distance from the fault and the seismic source type. The following table lists seismic and site coefficients (near source factors) determined by Chapter 16 of the 2001 CBC. ***This site lies within 9.5 km of a Type A fault overlying S_D (stiff) soil.***

CBC Seismic Coefficients for Chapter 16 Seismic Provisions

CBC Code Edition	Soil Profile Type	Seismic Source Type	Distance to Critical Source	Near Source Factors		Seismic Coefficients	
				Na	Nv	Ca	Cv
2001	S_D (stiff soil)	A	< 9.5 km	1.02	1.24	0.45	0.79
Ref. Table	16-J	16-U	---	16-S	16-T	16-Q	16-R

3.5 Subsurface Soil

Subsurface soils encountered during the field exploration conducted on January 21 and February 8, 2005 consist of interbedded clays, silty clays, silts, and sands to a depth of 50 feet. Stiff to very stiff clays and silty clays with minor lenses of silty sand to sandy silt are dominant in the western 1/3 of the project site. The central 1/3 of the site has subsurface soils consisting of silty clay to a depth of about 20 feet. Underlying the silty clays are medium dense to dense sands to about 32 feet below ground surface. Stiff to very stiff clays extend from 32 to 50 feet. The eastern 1/3 of the site consists of approximately 16 feet of clay overlying dense to very dense sands to 50 feet, the maximum depth of exploration. The subsurface logs (Plates B-1 through B-10) depict the stratigraphic relationships of the various soil types.

The native surface clays likely exhibit high swell potential (Expansion Index, EI = 91 to 130) when correlated to Plasticity index tests (ASTM D4318) performed on the native clays. The clay is expansive when wetted and can shrink with moisture loss (drying).

Development of building foundations, concrete flatwork, and asphaltic concrete pavements should include provisions for mitigating potential swelling forces and reduction in soil strength, which can occur from saturation of the soil. Causes for soil saturation include landscape irrigation, broken utility lines, or capillary rise in moisture upon sealing the ground surface to evaporation. Moisture losses can occur with lack of landscape watering, close proximity of structures to downslopes (detention basins) and root system moisture extraction from deep rooted shrubs and trees placed near the foundations. Typical measures used for residential projects to remediate expansive soil include:

- moisture conditioning subgrade soils to a minimum of 5% above optimum moisture (ASTM D1557) for the full range in depth of surface soils.
- design of foundations that are resistant to shrink/swell forces of silt/clay soil.

3.6 Groundwater

A ½-inch diameter piezometer was placed on the project site in the CPT-2 sounding. Groundwater was encountered in the piezometer at a depth of 8 feet on January 25, 2005. There is uncertainty in the accuracy of short-term water level measurements, particularly in fine-grained soil. Groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, drainage, and site grading. The referenced groundwater level should not be interpreted to represent an accurate or permanent condition. Our work scope did not include a groundwater surface mounding study resulting from applied landscape water.

Soils encountered below 3 feet are likely to pump under construction wheel loads. Light earthmoving equipment should be anticipated for use in these areas.

Subsurface agricultural tile drainage pipelines (4-inch diameter plastic or clay) exist at a depth of 5.0 to 6.5 feet below this site and have assisted in preventing an artificially high groundwater depth. Abandoning and plugging the subsurface drainage pipelines can allow groundwater levels to rise variably across the site. Cutting the subsurface tile drain pipelines with utility trenches will likely result in some localized trench flooding. Base line collectors (6 to 8 inch diameter) along the north side of the site should be crushed in-place and trench backfill compacted (85-90%). The 4-inch lateral pipeline drains are not required to be removed or crushed in-place. The pipelines should be plugged at street crossings.

3.7 Liquefaction

Liquefaction occurs when granular soil below the water table is subjected to vibratory motions, such as produced by earthquakes. With strong ground shaking, an increase in pore water pressure develops as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations.

Four conditions are generally required for liquefaction to occur:

(1) the soil must be saturated (relatively shallow groundwater);
(2) the soil must be loosely packed (low to medium relative density);
(3) the soil must be relatively cohesionless (not clayey); and
(4) groundshaking of sufficient intensity must occur to function as a trigger mechanism.

All of these conditions exist to some degree at this site.

Methods of Analysis: Liquefaction potential at the project site was evaluated using the 1997 NCEER Liquefaction Workshop methods that are based on the Seed, et. al. 1985 and Robertson and Campanella (1985) methods. The 1997 NCEER methods utilize direct SPT blow counts or CPT cone readings from site exploration and earthquake magnitude/PGA estimates from the seismic hazard analysis. The resistance to liquefaction is plotted on a chart of cyclic shear stress ratio (CSR) versus a corrected blow count $N_{1(60)}$ or Qc_{1N}. A ground acceleration of 0.65g was used in the analysis with an 8.0-foot groundwater depth.

Liquefaction induced settlements have been estimated using the 1987 Tokimatsu and Seed method. Fines content of liquefiable sands and silt increase the liquefaction resistance in that more cycles of ground motions are required to fully develop pore pressures. The SPT blow counts were adjusted to an equivalent clean sand blow count, $N_{1(60)}$ prior to calculating settlements using Robertson and Wride (1997) adjustments. A computed factor of safety less than 1.0 indicates a liquefiable condition.

The soil encountered at the points of exploration included saturated sandy silts and silty sands that could liquefy during a CBC Design Basis Earthquake (7M – 0.65g) for a 10% risk in 50 years. Liquefaction can occur within several isolated silt and sand layers between depths of 10 to 30 feet. The likely triggering mechanism for liquefaction appears to be strong groundshaking associated with the rupture of the Imperial Fault and possibly the Cerro Prieto Fault.

Liquefaction Effects: Based on empirical relationships, total induced settlements are estimated to be about ½ to 1.0 inch should liquefaction occur. Differential settlement could be estimated to be about 1 inch across a building area. Based on research from Ishihara (1985) and Youd and Garris (1995) ground rupture or sand boil formation is unlikely because of the thickness of the overlying non-liquefiable soil. Because of the depth of the liquefiable layer, wide area subsidence from soil overburden would be the expected effect of liquefaction rather than bearing capacity failure of the proposed structures. The relatively high fines content (>20%) within the potentially liquefiable layer will probably reduce pore water movement significantly, thereby stalling development of a "quick" soil condition.

Since the potentially liquefiable sandy soil are overlain by 10 to 24 feet of stiff clay which resist groundwater movement, it is unlikely that the light structure loads planned are sufficient to result in liquefaction induced settlement greater than the surrounding land mass.

Mitigation: Based on an estimate of less than 1 inch of liquefaction induced settlements, no mitigation is required at this project site. If the differential settlement caused by liquefaction is considered excessive, the designer may consider the following ground improvement techniques or foundation designs to mitigate the liquefaction induced settlement.

1) Foundations that use grade-beam footings to tie floor slabs and isolated columns to continuous footings (conventional or post-tensioned).

2) Structural flat-plate mats, either conventionally reinforced or tied with post-tensioned tendons.

These alternatives reduce the potential effects of liquefaction-induced settlements by making the structures more able to withstand differential settlement.

Section 4
RECOMMENDATIONS

4.1 Site Preparation

Clearing and Grubbing: All surface improvements, debris or vegetation including grass, trees, and weeds on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic strippings should be hauled from the site and not used as fill. Any trash, construction debris, concrete slabs, old pavement, landfill, and buried obstructions such as old foundations and utility lines exposed during rough grading should be traced to the limits of the foreign material by the grading contractor and removed under our supervision. Any excavations resulting from site clearing should be sloped to a bowl shape to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative.

The site is underlain by tile drain lines at a depth of approximately 5.5 to 6.5 feet below ground surface. Tile lines should be cut and plugged at the street crossings. The pipelines are likely full of water and may temporarily flood excavations if not capped promptly. Base lines (8 inch diameter and larger) should be located and crushed in-place with the backfill compacted to a minimum 85 to 90% of ASTM D1557 maximum density.

The Date Drain No. 3 crosses through the central portion of the site in a north-south direction. It is our understanding that the drain will be pipelined by the Imperial Irrigation District (IID). The soils around the pipeline are typically not compacted to the criteria of engineered fill by the IID during pipelining. Therefore, it will be necessary to excavate and recompact the pipeline fill soils prior to construction of streets or any other improvements planned in the area of the Date Drain No. 3.

Building Pad Preparation: The exposed surface soil within the building pad/foundation areas should be removed to 30 inches below the building pad elevation or existing grade (whichever is lower) extending five feet beyond all exterior wall/column lines (including concreted areas adjacent to the residences). Exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to 5 to 10% above optimum moisture content and recompacted to 85 to 90% of the maximum density determined in accordance with ASTM D1557 methods.

Prior to over-excavation of the surface soil, deep moisture penetration may be achieved by bordering the site and applying multiple floodings to allow water to permeate to a minimum depth of 3.0 feet (20% minimum moisture content) below existing natural surface.

A one to two foot thick silt layer was noted at a depth of 3 feet in the backhoe test pits on the site. The silt layer may pump under equipment loads during site grading. If pumping soil conditions are encountered, the silt should be allowed to dry sufficiently to allow for compaction or a geotextile fabric may be required to stabilize the subgrade soils prior to building pad construction.

The native soil is suitable for use as engineered fill provided it is free from concentrations of organic matter or other deleterious material. The fill soil should be uniformly moisture conditioned by discing and watering to the limits specified above, placed in maximum 8-inch lifts (loose), and compacted to the limits specified above. Clay soil should not be compacted greater than 90% relative compaction because highly compacted soil will result in increased swelling.

Imported fill soil (if required) should have a Plasticity Index less than 20 and sulfates (SO_4) less than 2,000 ppm or non-expansive, granular soil meeting the USCS classifications of SM, SP-SM, or SW-SM with a maximum rock size of 3 inches and 5 to 35% passing the No. 200 sieve. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported granular fill should be placed in lifts no greater than 8 inches in loose thickness and compacted to a minimum of 90% of ASTM D1557 maximum dry density at optimum moisture ±2%.

In areas other than the building pad which are to receive area concrete slabs, the ground surface should be presaturated to a minimum depth of 24 inches and then scarified to 8 inches, moisture conditioned to a minimum of 5% over optimum, and recompacted to 83-87% of ASTM D1557 maximum density just prior to concrete placement.

Trench Backfill: On-site soil free of debris, vegetation, and other deleterious matter may be suitable for use as utility trench backfill, but may be difficult to uniformly maintain at specified moistures and compact to the specified densities. Granular material is acceptable for backfill of utility trenches. Granular trench backfill used in building pad areas should be plugged at each end of the building foundation to prevent landscape water migration into the trench below the building.

Backfill soil within roadways should be placed in layers not more that 6 inches in thickness and mechanically compacted to a minimum of 87% of the ASTM D1557 maximum dry density except for the top 12 inches of the trench which shall be compacted to at least 90%. Native backfill should only be placed and compacted after encapsulating buried pipes with suitable bedding and pipe envelope material. Pipe envelope/bedding should either be clean sand (Sand Equivalent SE>30) or crushed rock when encountering groundwater.

Groundwater was encountered at 8.0 feet below ground surface in mid January 2005. Running ground conditions should be anticipated which will likely require dewatering of trenches greater than 8.0 feet deep. A geotextile filter fabric (Mirafi 140N or equivalent) should be used to encapsulate the crushed rock when placed below groundwater to reduce the potential for in-washing of fines into the gravel void space. Precautions should be taken in the compaction of the backfill to avoid damage to the pipes and structures.

Moisture Control and Drainage: The moisture condition of the building pad should be maintained during trenching and utility installation until concrete is placed or should be rewetted by use of multiple applications of water with sprinklers before initiating delayed construction. If soil drying is noted in footings, a 2 to 3 inch depth of water may be used in the bottom of footings to restore footing subgrade moisture and reduce potential edge lift.

Adequate site drainage is essential to future performance of the project. Infiltration of excess irrigation water and stormwaters can adversely affect the performance of the subsurface soil at the site. Positive drainage should be maintained away from all structures (5% for 5 feet minimum across unpaved areas) to prevent ponding and subsequent saturation of the native clay soil. Gutters and downspouts may be considered as a means to convey water away from foundations. If landscape irrigation is allowed next to the building, drip irrigation systems or lined planter boxes should be used. The subgrade soil should be maintained in a moist, but not saturated state, and not allowed to dry out. Drainage should be maintained without ponding. Trees should be set back from foundations equal to their height.

Observation and Density Testing: All site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area.

The geotechnical firm that provides observation and testing during construction shall assume the responsibility of "*geotechnical engineer of record*" and, as such, shall perform additional tests and investigation as necessary to satisfy themselves as to the site conditions and the recommendations for site development.

Auxiliary Structures Foundation Preparation: Auxiliary structures such as free standing or retaining walls should have the existing soil beneath the structure foundation prepared in the manner recommended for the building pad except the preparation needed only to extend 18 inches below and beyond the footing.

4.2 Foundations and Settlements

Shallow spread footings and continuous wall footings are suitable to support the single family residential homes provided they are structurally tied with grade-beams to resist differential movement associated with liquefiable and expansive soils. Footings shall be founded on a layer of properly prepared and compacted soil as described in Section 4.1. The foundations may be designed using an allowable soil bearing pressure of 1,500 psf for compacted native clay soil. The allowable soil pressure may be increased by 20% for each foot of embedment depth in excess of 18 inches and by one-third for short term loads induced by winds or seismic events. The maximum allowable soil pressure at increased embedment depths shall not exceed 3,000 psf.

As an alternative to shallow spread foundations, flat plate structural mats or grade-beam reinforced foundations may be used to mitigate expansive soil heave and/or liquefaction related movement.

Flat Plate Structural Mats: Flat plate structural mats may be used to mitigate expansive soils at the project site. The structural mat shall have a double mat of steel (minimum No. 4's @ 12" O.C. each way – top and bottom) and a minimum thickness of 10 inches. Mat edges shall have a minimum edge footing of 12 inches width and 18 inches depth (below the building pad surface). At a minimum, mats may be designed by UBC Section 1815 (Div. III) methods using an Effective Plasticity Index of 30.

Structural mats may be designed for a modulus of subgrade reaction (Ks) of 100 pci when placed on compacted clay. Mats shall overlay 2 inches of sand and a 10-mil polyethylene vapor retarder. The building support pad shall be moisture conditioned and recompacted as specified in Section 4.1.

Grade-beam Reinforced Foundations: Specific soil data for structures with grade-beam reinforced foundations placed on the native clays are presented below in accordance with the design method given in CBC Chapter 18 (1997) - Division III, Section 1815:

- Weighted Plasticity Index (PI) = 37
- Slope Coefficient (C_s) = 1.0
- Strength Coefficient (C_o) = 0.8
- Climatic Rating (C_w) = 15
- Effective PI = 30
- 1-C Value = 0.17
- Maximum Grade-beam Spacing = 17 feet

Post-tensioned Slabs: If post-tensioned slabs are considered for this project, the following soil criteria shall be used in the Post Tensioning Institute (PTI) designs:

Edge Moisture Variation Distance, e_m	Center Lift: 5.3 ft. Edge Lift: 2.6 ft.
Depth to Constant Suction:	5.0 ft.
Constant Suction (pF):	3.6
Differential Swell, y_m	Center Lift: 3.12 in. Edge Lift: 0.55 in.
Moisture Velocity	0.6 inches/month
Estimated Differential Settlement (swell):	1.0 in.
Bearing Capacity:	1,500 psf

Clamping devices and end anchors for post-tensioned tendons are susceptible to corrosion from aggressive soil and landscape water conditions. Therefore, a minimum concrete cover of 3.0 inches, a PVC end cap and epoxy coatings should be specified for the tendon ends with a positive bonding agent used with polymer modified cementitious material to patch the recessed anchor cup.

A complete encapsulation system intended for corrosive environments is a suggested protection method for post-tensioning cables and anchoring/clamping devices.

All exterior foundations should be embedded a minimum of 18 inches below the building support pad or lowest adjacent final grade, whichever is deeper. Interior footings may be 12 inches deep. Continuous wall footings should have a minimum width of 12 inches. Spread footings should have a minimum dimension of 24 inches and should not be structurally isolated. Recommended concrete reinforcement and sizing for all footings should be provided by the structural engineer.

Resistance to horizontal loads will be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid pressure of 250 pcf to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.25 may also be used at the base of the footings to resist lateral loading.

Foundation movement under the estimated static (non-seismic) loadings and static site conditions are estimated to not exceed 1 inch with differential movement of about two-thirds of total movement for the loading assumptions stated above when the subgrade preparation guidelines given above are followed. Seismically induced liquefaction settlement of the surrounding land mass and structure may be on the order of ½ to 1.0 inch.

4.3 Slabs-On-Grade

Concrete slabs and flatwork placed over native clay soil should be designed in accordance with Chapter 18, Division III of the 2001 CBC (using an Effective Plasticity Index of 30) and shall be a minimum of 5 inches thick due to expansive soil conditions (non-traffic areas). Concrete floor slabs shall be monolithically placed with the foundations.

The concrete slabs should be underlain by a minimum of 4 inches of clean sand (Sand Equivalent SE>30) or aggregate base that has been moistened to approximately optimum moisture just before the concrete placement.

A 10-mil visqueen vapor retarder, properly lapped and sealed with a 2-inch sand cover and extended a minimum of 12 inches into the footing, should be placed as a capillary break to prevent moisture migration into the slab section. Concrete slabs may be placed directly over a 15-mil vapor retarder if desired (Stego-Wrap or equivalent).

Concrete slab and flatwork reinforcement should consist of chaired rebar slab reinforcement (minimum of No. 4 bars at 18-inch centers, both horizontal directions) placed at slab mid-height to resist potential swell forces and cracking. Slab thickness and steel reinforcement are minimums only and should be verified by the structural engineer/designer knowing the actual project loadings. All steel components of the foundation system should be protected from corrosion by maintaining a 3-inch minimum concrete cover of densely consolidated concrete at footings (by use of a vibrator). The construction joint between the foundation and any mowstrips/sidewalks placed adjacent to foundations should be sealed with a polyurethane based non-hardening sealant to prevent moisture migration between the joint. Epoxy coated embedded steel components or permanent waterproofing membranes placed at the exterior footing sidewall may also be used to mitigate the corrosion potential of concrete placed in contact with native soil.

Control joints should be provided in all concrete slabs-on-grade at a maximum spacing (in feet) of 2 to 3 times the slab thickness (in inches) as recommended by American Concrete Institute (ACI) guidelines. All joints should form approximately square patterns to reduce randomly oriented contraction cracks. Contraction joints in the slabs should be tooled at the time of the pour or sawcut (¼ of slab depth) within 6 to 8 hours of concrete placement. Construction (cold) joints in foundations and area flatwork should either be thickened butt-joints with dowels or a thickened keyed-joint designed to resist vertical deflection at the joint. All joints in flatwork should be sealed to prevent moisture, vermin, or foreign material intrusion. Precautions should be taken to prevent curling of slabs in this arid desert region (refer to ACI guidelines).

All independent flatwork (sidewalks, patios) should be placed on a minimum of 2 inches of concrete sand or aggregate base, dowelled to the perimeter foundations where adjacent to the building and sloped 2% or more away from the building.

A minimum of 24 inches of moisture conditioned (5% minimum above optimum) and 8 inches of compacted subgrade (83 to 87%) and a 10-mil (minimum) polyethylene separation sheet should underlie the flatwork containing steel reinforcing (except wire mesh).

All flatwork should be jointed in square patterns and at irregularities in shape at a maximum spacing of 10 feet or the least width of the sidewalk. Driveway slabs should have a thickened edge extending a minimum of 4 inches below a 4-inch sand or aggregate base course which should be compacted to a minimum of 90% of ASTM D1557 maximum density.

4.4 Concrete Mixes and Corrosivity

Selected chemical analyses for corrosivity were conducted on bulk samples of the near surface soil from the project site (Plate C-2). The native soils were found to have moderate to severe levels of sulfate ion concentration (516 to 5,385 ppm). Sulfate ions in high concentrations can attack the cementitious material in concrete, causing weakening of the cement matrix and eventual deterioration by raveling. The California Building Code recommends that increased quantities of Type II Portland Cement be used at a low water/cement ratio when concrete is subjected to moderate sulfate concentrations. Type V Portland Cement and/or Type II/V cement with 25% flyash replacement is recommended when the concrete is subjected to soil with severe sulfate concentration.

A minimum of 6.25 sacks per cubic yard of concrete (4,500 psi) of Type V Portland Cement with a maximum water/cement ratio of 0.45 (by weight) should be used for concrete placed in contact with native soil on this project (sitework including streets, sidewalks, driveways, patios, and foundations). Admixtures may be required to allow placement of this low water/cement ratio concrete.

The native soil has moderate to severe levels of chloride ion concentration (210 to 860 ppm). Chloride ions can cause corrosion of reinforcing steel, anchor bolts and other buried metallic conduits. Resistivity determinations on the soil indicate very severe potential for metal loss because of electrochemical corrosion processes. Mitigation of the corrosion of steel can be achieved by using steel pipes coated with epoxy corrosion inhibitors, asphaltic and epoxy coatings, cathodic protection or by encapsulating the portion of the pipe lying above groundwater with a minimum of 3 inches of densely consolidated concrete. ***No metallic pipes or conduits should be placed below foundations.***

Foundation designs shall provide a minimum concrete cover of three (3) inches around steel reinforcing or embedded components (anchor bolts, etc.) exposed to native soil or landscape water (to 18 inches above grade).

If the 3-inch concrete edge distance cannot be achieved, all embedded steel components (anchor bolts, etc.) shall be epoxy dipped for corrosion protection or a corrosion inhibitor and a permanent waterproofing membrane shall be placed along the exterior face of the exterior footings. ***Hold down straps should not be used at building perimeter due to metal exposure at the edge of the foundation.*** Additionally, the concrete should be thoroughly vibrated at footings during placement to decrease the permeability of the concrete. ***Copper water piping (except for trap primers) should not be placed under floor slabs.*** The trap primer pipe shall be completely encapsulated in a PVC sleeve and Type K copper should be utilized if polyethylene tubing cannot be used.

4.5 Excavations

All site excavations should conform to CalOSHA requirements for Type B soil. The contractor is solely responsible for the safety of workers entering trenches. Temporary excavations with depths of 4 feet or less may be cut nearly vertical for short duration. Excavations deeper than 4 feet will require shoring or slope inclinations in conformance to CAL/OSHA regulations for Type B soil. Surcharge loads of stockpiled soil or construction materials should be set back from the top of the slope a minimum distance equal to the height of the slope.

All permanent slopes should not be steeper than 3:1 to reduce wind and rain erosion. Retention basins should not exceed a maximum depth of 4 feet and slopes should not be steeper than 4:1. Protected slopes with ground cover may be as steep as 2:1. However, maintenance with motorized equipment may not be possible at this inclination.

Groundwater was encountered at a depth of 8.0 feet on January 25, 2005. The contractor is cautioned to evaluate soil moisture and groundwater conditions at the time of bidding. Running ground conditions should be anticipated below 8 feet. Dewatering will likely be necessary to install utilities in trenches greater than 8 feet.

4.6 Seismic Design

This site is located in the seismically active southern California area and the site structures are subject to strong ground shaking due to potential fault movements along the Brawley, Superstition Hills, and Imperial Faults. Engineered design and earthquake-resistant construction are the common solutions to increase safety and development of seismic areas. Designs should comply with the latest edition of the CBC for Seismic Zone 4 using the seismic coefficients given in Section 3.4 of this report. ***This site lies within 9.5 km of a Type A fault overlying S_D (stiff) soil.***

4.7 Pavements

Pavements should be designed according to CALTRANS or other acceptable methods. Traffic indices were not provided by the project engineer or owner; therefore, we have provided structural sections for several traffic indices for comparative evaluation. The public agency or design engineer should decide the appropriate traffic index for the site. Maintenance of proper drainage is necessary to prolong the service life of the pavements. Based on the current State of California CALTRANS method, an estimated R-value of 5 for the subgrade soil and assumed traffic indices, the following table provides our estimates for asphaltic concrete (AC) pavement sections.

RECOMMENDED PAVEMENTS SECTIONS

R-Value of Subgrade Soil - 5 (estimated) Design Method - CALTRANS 1990

Traffic Index (assumed)	Flexible Pavements		(*) Flexible Pavements	
	Asphaltic Concrete Thickness (in.)	Aggregate Base Thickness (in.)	Asphaltic Concrete Thickness (in.)	Aggregate Base Thickness (in.)
4.0	3.0	8.0	3.0	4.0
5.0	3.0	9.0	3.0	4.0
6.0	3.5	12.0	3.0	6.0
7.0	3.5	15.0	3.5	8.0
8.0	4.0	18.0	4.0	11.0

(*) Pavement structural section when used in conjunction with 9 inches of lime-treated subgrade soil (3-4% quicklime by weight) with minimum R-Value = 60.

Notes:

1) Asphaltic concrete shall be Caltrans, Type B, ¾ inch maximum (½ inch maximum for parking areas), medium grading, compacted to a minimum of 95% of the 75-blow Marshall density (ASTM D1559).
2) Aggregate base shall conform to Caltrans Class 2 (¾ in. maximum), compacted to a minimum of 95% of ASTM D1557 maximum dry density.
3) Place pavements on 8 inches of moisture conditioned (minimum 4% above optimum) native soil compacted to a minimum of 90% of the maximum dry density (ASTM D1557).
4) Portland cement concrete for pavements should have Type V cement, a minimum compressive strength of 4,500 psi at 28 days, and a maximum water-cement ratio of 0.45.

Section 5
LIMITATIONS AND ADDITIONAL SERVICES

5.1 Limitations

The recommendations and conclusions within this report are based on current information regarding the proposed 80-acre Willowbend Subdivision located at the southwest corner of Willowbend Drive and State Hwy 86 in southern El Centro, California. The conclusions and recommendations of this report are invalid if:

- Structural loads change from those stated or the structures are relocated.
- The Additional Services section of this report is not followed.
- This report is used for adjacent or other property.
- Changes of grade or groundwater occur between the issuance of this report and construction other than those anticipated in this report.
- Any other change that materially alters the project from that proposed at the time this report was prepared.

Findings and recommendations in this report are based on selected points of field exploration, geologic literature, laboratory testing, and our understanding of the proposed project. Our analysis of data and recommendations presented herein are based on the assumption that soil conditions do not vary significantly from those found at specific exploratory locations. Variations in soil conditions can exist between and beyond the exploration points or groundwater elevations may change. If detected, these conditions may require additional studies, consultation, and possible design revisions.

This report contains information that may be useful in the preparation of contract specifications. However, the report is not worded is such a manner that we recommend its use as a construction specification document without proper modification. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk.

This report was prepared according to the generally accepted *geotechnical engineering standards of practice* that existed in Imperial County at the time the report was prepared. No express or implied warranties are made in connection with our services. This report should be considered invalid for periods after two years from the report date without a review of the validity of the findings and recommendations by our firm, because of potential changes in the Geotechnical Engineering Standards of Practice.

The client has responsibility to see that all parties to the project including, designer, contractor, and subcontractor are made aware of this entire report. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk.

5.2 Additional Services

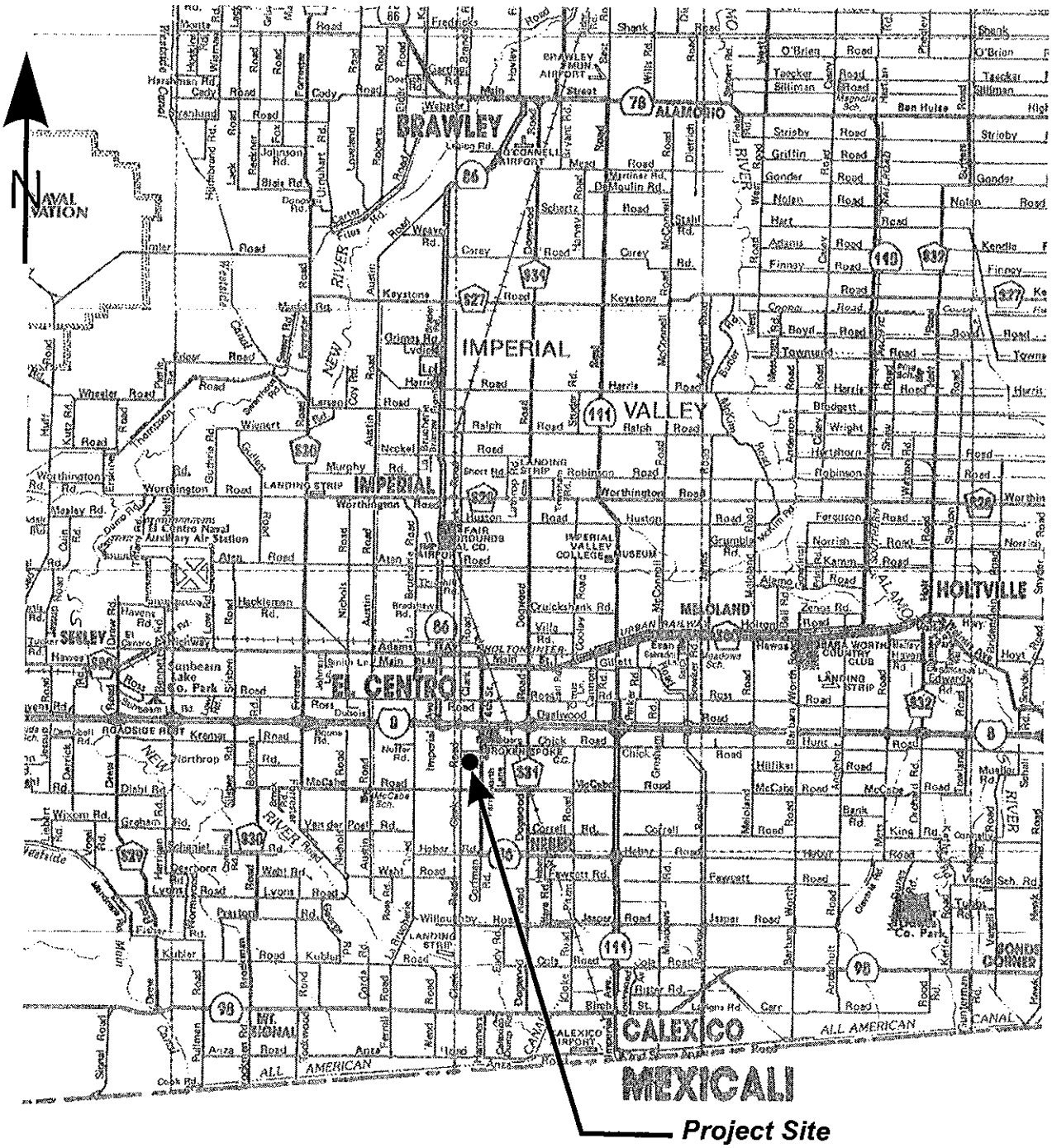
We recommend that Landmark Consultants, Inc. be retained as the geotechnical consultant to provide the tests and observations services during construction. If Landmark Consultants does not provide such services then *the geotechnical engineering firm providing such tests and observations shall become the geotechnical engineer of record and assume responsibility for the project.*

The recommendations presented in this report are based on the assumption that:

- Consultation during development of design and construction documents to check that the geotechnical recommendations are appropriate for the proposed project and that the geotechnical recommendations are properly interpreted and incorporated into the documents.
- Landmark Consultants will have the opportunity to review and comment on the plans and specifications for the project prior to the issuance of such for bidding.
- Continuous observation, inspection, and testing by the geotechnical consultant of record during site clearing, grading, excavation, placement of fills, building pad and subgrade preparation, and backfilling of utility trenches.
- Observation of foundation excavations and reinforcing steel before concrete placement.
- Other consultation as necessary during design and construction.

We emphasize our review of the project plans and specifications to check for compatibility with our recommendations and conclusions. Additional information concerning the scope and cost of these services can be obtained from our office.

APPENDIX A



LANDMARK Geo-Engineers and Geologists a DBE/MBE/SBE Company Project No.: LE05030	Vicinity Map	Plate A-1



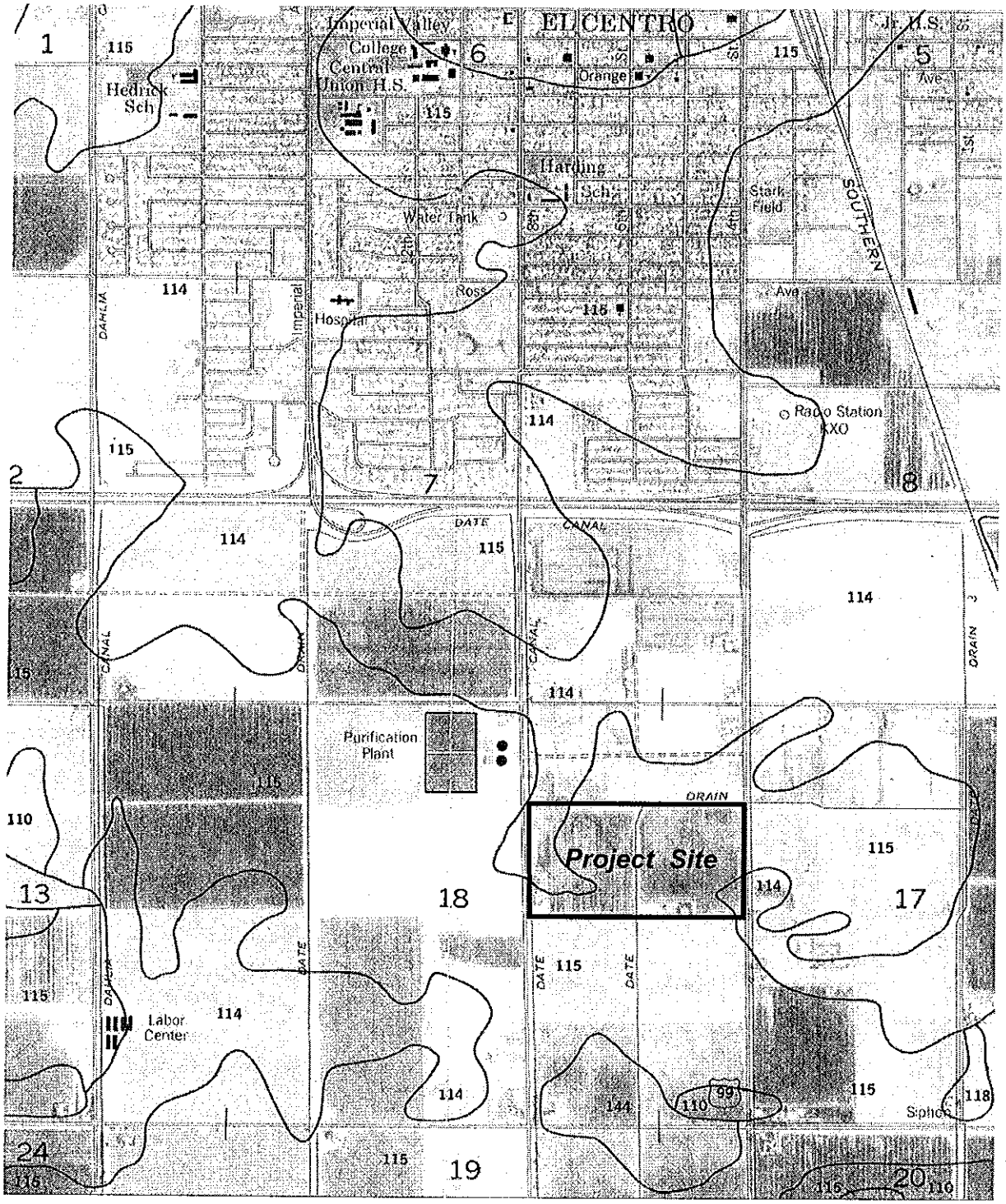
N

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Project No.: LE05030

Site Exploration Map

Plate
A-2

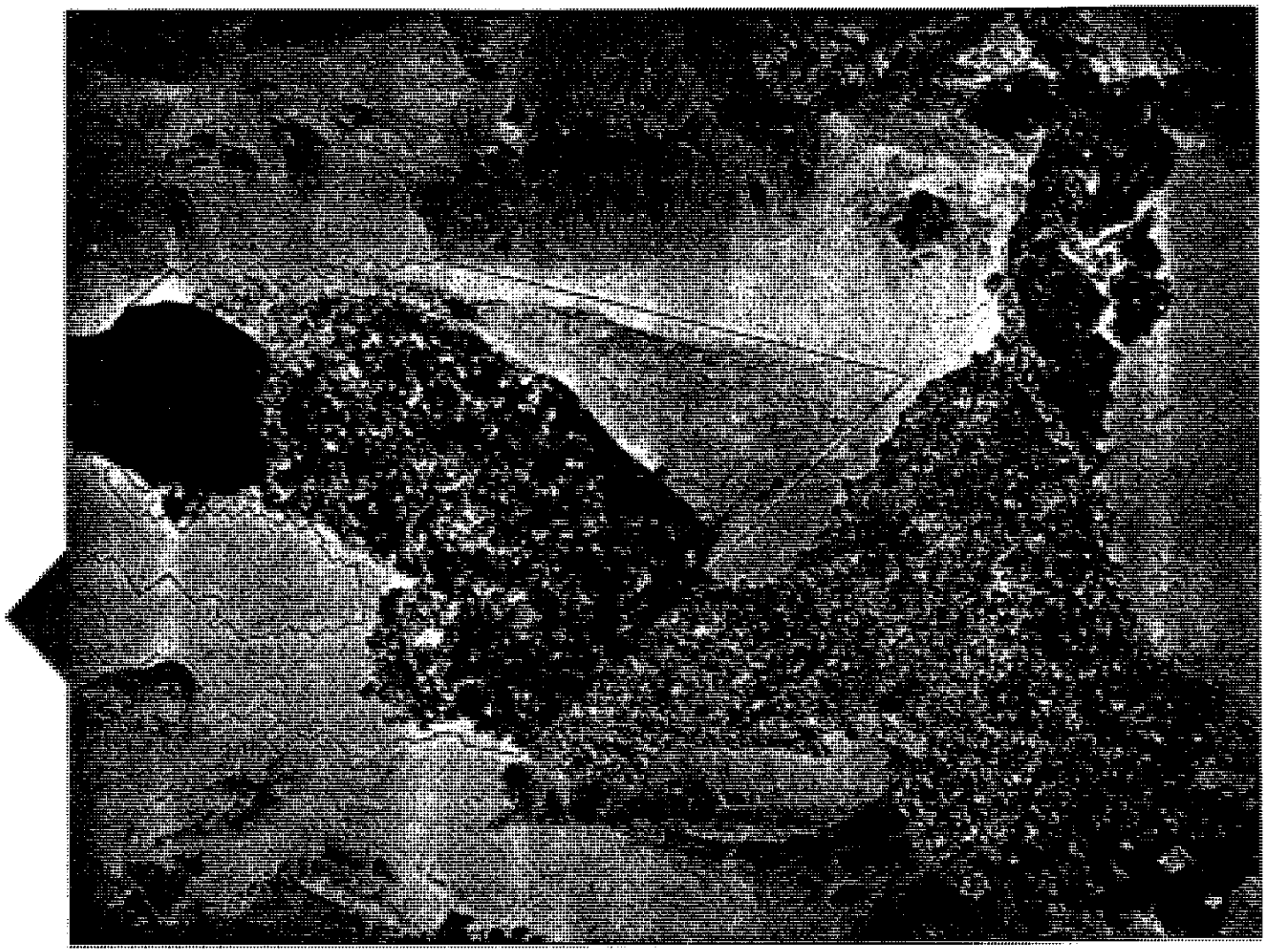


N

LANDMARK Geo-Engineers and Geologists a DBE/MBE/SBE Company Project No.: LE05030	Soil Survey Map	Plate A-3

Soil Survey of

IMPERIAL COUNTY CALIFORNIA IMPERIAL VALLEY AREA



United States Department of Agriculture Soil Conservation Service
in cooperation with
University of California Agricultural Experiment Station
and
Imperial Irrigation District

TABLE 11.--ENGINEERING INDEX PROPERTIES

[The symbol > means more than. Absence of an entry indicates that data were not estimated]

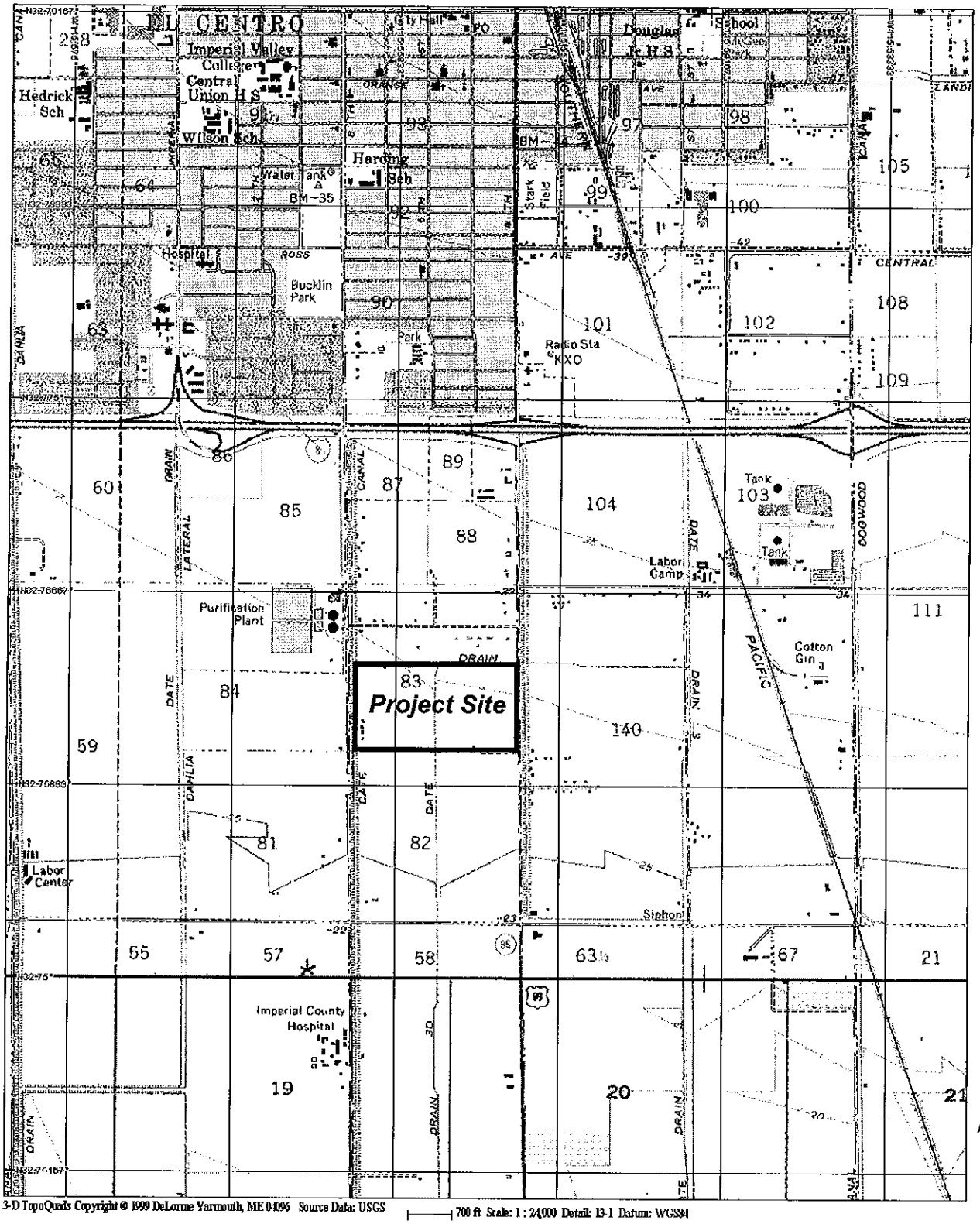
Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
100----------	0-13	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
Antho	13-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
101*:											
Antho----------	0-8	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	8-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
Superstition------	0-6	Fine sand-------	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
102*. Badland											
103----------	0-10	Gravelly sand---	SP, SP-SM	A-1, A-2	0-5	60-90	50-85	30-55	0-10	---	NP
Carsitas	10-60	Gravelly sand, gravelly coarse sand, sand.	SP, SP-SM	A-1	0-5	60-90	50-85	25-50	0-10	---	NP
104* Fluvaquents											
105----------	0-13	Clay loam-------	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
Glenbar	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
106----------	0-13	Clay loam-------	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
Glenbar	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
107*----------	0-13	Loam----------	ML, CL-ML, CL	A-4	0	100	100	100	70-80	20-30	NP-10
Glenbar	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	35-45	15-30
108----------	0-14	Loam----------	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
Holtville	14-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
109----------	0-17	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
Holtville	17-24	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
110----------	0-17	Silty clay------	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
Holtville	17-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

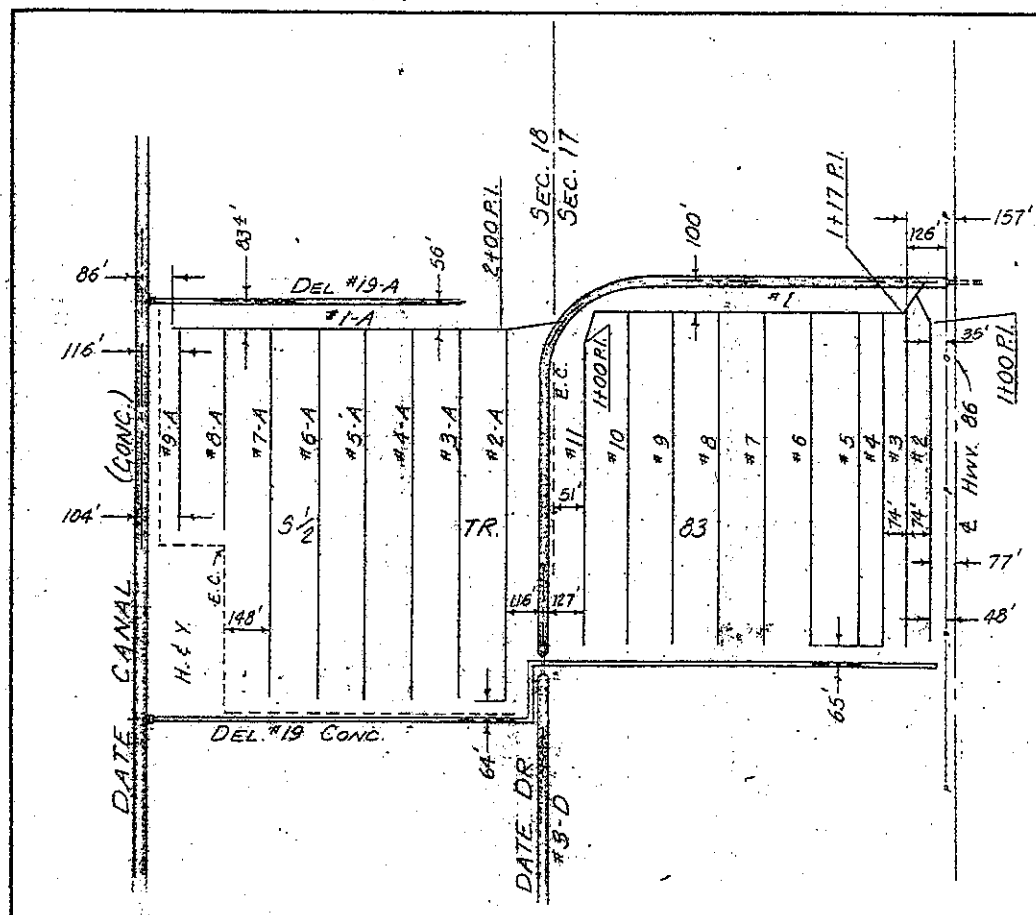
Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
111*:											
Holtville	0-10	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	10-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
112	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
113	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	100	85-95	50-70	25-45
114	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
115*:											
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
116*:											
Imperial	0-13	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	13-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
117, 118	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Indio	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
119*:											
Indio	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Vint	0-10	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	25-35	---	NP
	10-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
120*	0-12	Loam	ML, CL-ML	A-4	0	100	95-100	75-85	55-65	20-30	NP-10
Laveen	12-60	Loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	85-95	70-80	55-65	15-25	NP-10

See footnote at end of table.



LANDMARK Geo-Engineers and Geologists a DBE/MBE/SBE Company Project No.: LE05030	Topographic Map	Plate A-4

TD-3485-1



LINE NO.	OUTLET ELEV.	SLOPE	TILE DEPTH STA 1+00	TILE DEPTH END TILE	OUTLET STA. 0+00=	STAKED FOOTAGE	TILE INSTALLED 8"	6"	4"
1	963.40	.001	6.1	5.3	T.O.	1100	1100		
2	963.70	.0015	5.8	6.1	0+47 #1	1111			1111
3	963.90	.001	5.7	6.4	0+99 #1	1070			1070
4	963.90	↓	5.6	6.4	1+79 #1	1057			1057
5	964.00		5.7	6.3	2+53 #1	1057			1057
6	964.10		5.3	6.2	4+00 #1	1057			1057
7	964.20		5.4	6.2	5+47 ± #1	1058			1058
8	964.40		5.3	6.1	6+93 ± #1	1059			1059
9	964.50		5.4	6.0	8+43 ± #1	1059			1059
10	964.70		5.3	5.8	9+90 ± #1	1060			1060
11	964.70		5.1	5.8	11+00 #1	1065			1065
1-A	964.00		5.8	5.6	T.O.	1257		1257	
2-A	964.50		5.6	6.2	1+84 #1A	1186			1186
3-A	964.60		5.7	6.4	3+26 #1A	1184			1184
4-A	964.80		5.6	6.4	4+85 #1A	1182			1182
5-A	964.90		5.5	6.5	6+35 #1A	1180			1180
6-A	965.10		5.4	6.3	7+85 #1A	1178			1178
7-A	965.20		5.4	6.3	9+35 #1A	1176			1176
8-A	965.40	↓	5.3	5.4	10+85 #1A	640			640
9-A	965.50	.001	5.3	5.6	12+35 #1A	640			640

B.M. ~ "+" CHIPPED ON THE UPSTR. W.W. OF CHK. IN DOGWOOD LAT. 2 @ DEL. 28

Elevation 973.01 F.B. 6746 10

LEGEND

STKD 8-15-78

IMPERIAL IRRIGATION DISTRICT
ENGINEERING DEPARTMENT
IMPERIAL, CALIFORNIA

TILE DRAIN CONSTRUCTION

PT. SO. 1/2 TR. 83

PROP. O. ESHELMAN T. 16 S.-R. 14 E.

SCALE: 1"=400' SH. 1 OF TD-3485

STAKED 8-15-78 BY PARKER-RIDDLE
INSTALLED 10-30-78 BY M°ELVANY
GRAVEL EAST MESA TILE HANCOR
PLOTTED O.D. CHECKED SIC F.B.

REFER:
STAKED BY
INSTALLED BY
GRAVEL TILE
PLOTTED CHECKED F.B.

ISSUE 4
ISSUE 3
ISSUE 2
ISSUE 1 CONSTR STKS. 5-28-79 D.D.

APPENDIX B

CLIENT: D.R. Horton

PROJECT: Willowbend Subdivision

LOCATION: See Site and Boring Location Plan

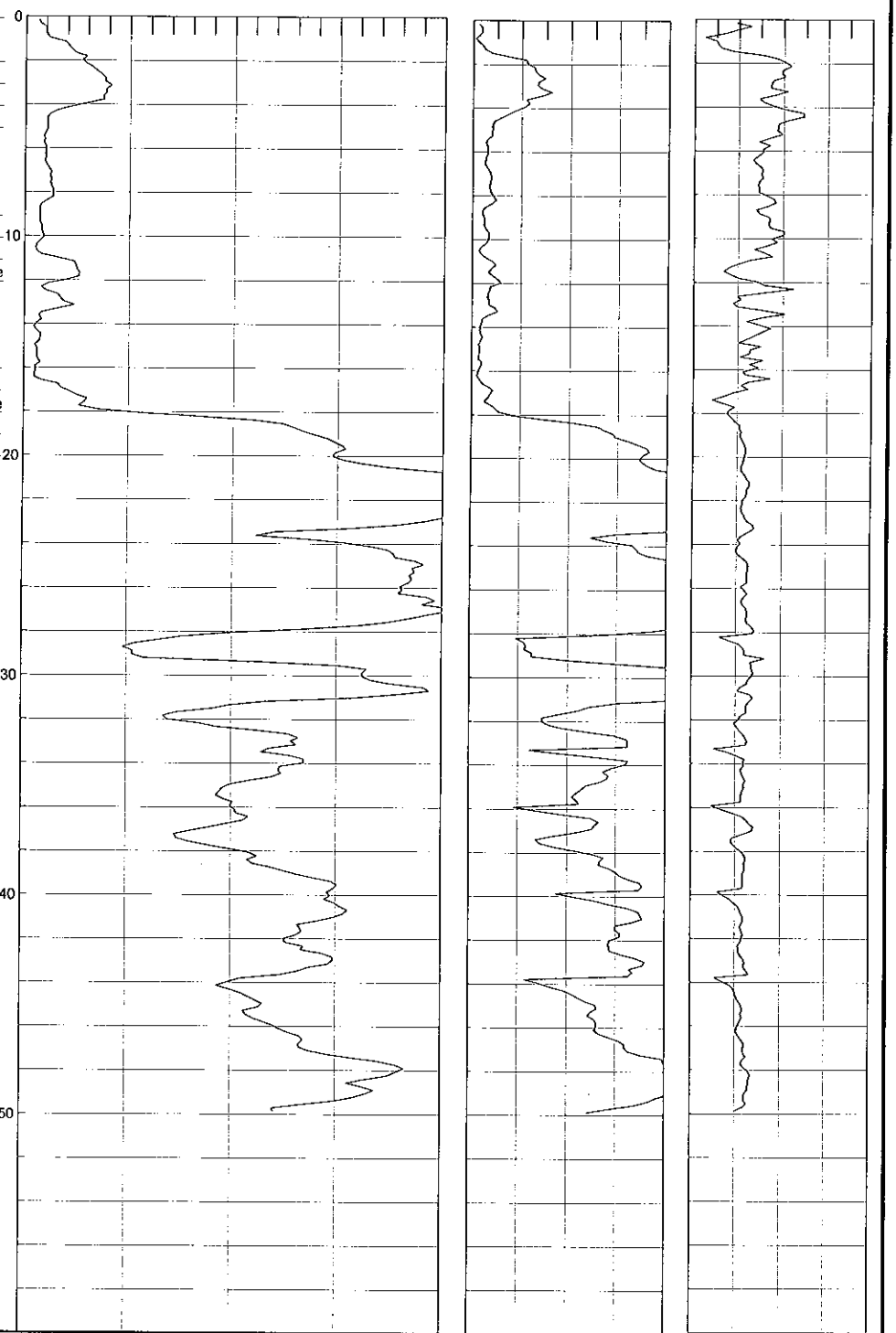
CONE PENETROMETER: HOLGUIN, FAHAN & ASSC. Truck Mounted Electric Cone with 23 ton reaction weight

DATE: 01/21/05

LOG OF CONE SOUNDING DATA CPT-1

DEPTH (FEET)	INTERPRETED SOIL PROFILE From Robertson & Campanella (1989)		
	GROUND EL. +/-		
	Sandy Silt to Clayey Silt	ML	dense
	Sandy Silt to Clayey Silt	" "	dense
	Clayey Silt to Silty Clay	ML/CL	hard
	Sandy Silt to Clayey Silt	ML	dense
	Silty Clay to Clay	CL	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
10	Silty Clay to Clay	CL	stiff
	Clayey Silt to Silty Clay	ML/CL	stiff
	Silty Sand to Sandy Silt	SM/ML	medium dense
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Sandy Silt to Clayey Silt	ML	loose
	Silty Sand to Sandy Silt	SM/ML	medium dense
	Sand to Silty Sand	SP/SM	very dense
20	Silty Sand to Sandy Silt	SM/ML	very dense
	Sand to Silty Sand	SP/SM	very dense
	Sand to Clayey Sand	SP/SC	very dense
	Sand to Silty Sand	SP/SM	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Sand to Silty Sand	SP/SM	very dense
	Sand to Clayey Sand	SP/SC	very dense
	Sand to Silty Sand	SP/SM	very dense
	Sand to Clayey Sand	SP/SC	very dense
	Silty Sand to Sandy Silt	SM/ML	dense
30	Silty Sand to Sandy Silt	" "	very dense
	Silty Sand to Sandy Silt	" "	very dense
	Silty Sand to Sandy Silt	" "	dense
	Silty Sand to Sandy Silt	" "	very dense
	Sand to Silty Sand	SP/SM	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Sand to Silty Sand	SP/SM	dense
	Silty Sand to Sandy Silt	SM/ML	dense
	Silty Sand to Sandy Silt	" "	dense
	Silty Sand to Sandy Silt	" "	very dense
40	Sand to Silty Sand	SP/SM	very dense
	Sand to Silty Sand	" "	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Sand to Silty Sand	SP/SM	very dense
	Sand to Silty Sand	" "	very dense
	Sand to Silty Sand	" "	dense
	Silty Sand to Sandy Silt	SM/ML	dense
	Sand to Silty Sand	SP/SM	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
50	Sand to Clayey Sand	SP/SC	very dense

End of Sounding @ 49.5 ft.



Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-1

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-1

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: 17.0 Phi (deg.)	Su (tsf)	OCR
0.15	0.5	15.36	2.10	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	6	2.00		70			0.90	>10
0.30	1.0	20.99	0.92	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	6	2.00	39.7	45	72	38		
0.45	1.5	40.68	1.34	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	9	2.00	76.9	35	84	40		
0.60	2.0	53.21	3.64	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	21	2.00		50			3.12	>10
0.75	2.5	63.27	4.06	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	25	2.00		50			3.71	>10
0.93	3.0	75.06	3.66	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	30	2.00		45			4.41	>10
1.08	3.5	78.83	3.72	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	32	2.00		45			4.63	>10
1.23	4.0	69.87	3.17	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	20	2.00	132.1	40	83	40		
1.38	4.5	32.61	4.60	4	Silty Clay to Clay	CL	very stiff	125	1.8	19	2.00		70			1.90	>10
1.53	5.0	21.06	3.92	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	1.93		75			1.22	>10
1.68	5.5	19.44	3.49	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.84		75			1.12	>10
1.83	6.0	19.16	3.19	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.75		75			1.11	>10
1.98	6.5	19.39	2.75	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.68		70			1.12	>10
2.13	7.0	22.71	3.02	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	9	1.62		65			1.31	>10
2.28	7.5	24.53	2.96	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	10	1.56		65			1.42	>10
2.45	8.0	26.17	3.03	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	10	1.51		60			1.51	>10
2.60	8.5	20.96	3.52	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.49		75			1.20	>10
2.75	9.0	14.49	3.03	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	6	1.47		80			0.82	>10
2.90	9.5	15.01	3.39	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.44		85			0.85	>10
3.05	10.0	17.44	3.85	4	Silty Clay to Clay	CL	stiff	125	1.8	10	1.42		85			0.99	>10
3.20	10.5	12.26	3.23	4	Silty Clay to Clay	CL	stiff	125	1.8	7	1.40		95			0.69	>10
3.35	11.0	20.03	3.09	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.38		75			1.15	>10
3.50	11.5	48.81	1.66	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	11	1.37	63.0	35	59	36		
3.65	12.0	48.60	2.17	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	14	1.35	62.0	45	58	36		
3.80	12.5	20.11	3.63	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.33		80			1.15	>10
3.95	13.0	34.38	1.96	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	10	1.32	42.8	50	47	35		
4.13	13.5	32.48	3.06	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	13	1.30		65			1.87	>10
4.28	14.0	14.02	2.79	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	6	1.29		90			0.79	>10
4.43	14.5	12.16	3.10	4	Silty Clay to Clay	CL	stiff	125	1.8	7	1.27		100			0.68	8.70
4.58	15.0	13.39	2.48	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	5	1.26		90			0.75	>10
4.73	15.5	11.86	2.39	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	5	1.25		95			0.66	>10
4.88	16.0	12.37	2.69	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	5	1.23		100			0.69	>10
5.03	16.5	12.32	2.75	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	5	1.22		100			0.68	>10
5.18	17.0	36.67	2.13	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	10	1.21	41.9	55	47	35		
5.33	17.5	56.00	1.19	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	12	1.20	63.4	35	59	36		
5.48	18.0	78.51	1.67	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	17	1.19	88.1	35	69	38		
5.65	18.5	211.42	1.90	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	38	1.18	235.1	20	98	42		
5.80	19.0	267.58	2.12	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	49	1.17	295.0	20	104	43		
5.95	19.5	296.99	2.28	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	66	1.16	324.7	20	107	43		
6.10	20.0	299.77	2.35	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	67	1.15	325.1	20	107	43		
6.25	20.5	325.81	2.22	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	59	1.14	350.5	20	110	43		
6.40	21.0	419.48	2.32	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	210	1.13	447.6	20	117	44		
6.55	21.5	438.56	2.50	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	219	1.12	464.3	20	118	44		
6.70	22.0	447.45	2.36	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	224	1.11	470.1	20	118	45		
6.85	22.5	424.02	2.21	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	212	1.10	442.1	20	116	44		
7.00	23.0	401.12	2.39	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	201	1.09	415.1	20	115	44		
7.18	23.5	303.68	2.65	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	152	1.09	311.9	25	106	43		
7.33	24.0	266.42	2.13	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	48	1.08	271.7	20	102	42		
7.48	24.5	344.49	2.02	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	63	1.07	348.8	20	109	43		
7.63	25.0	370.94	2.41	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	185	1.06	372.9	20	111	44		
7.78	25.5	371.63	2.49	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	186	1.06	371.0	20	111	44		
7.93	26.0	366.93	2.39	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	183	1.05	363.8	20	111	43		
8.08	26.5	374.97	2.35	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	187	1.04	369.3	20	111	44		
8.23	27.0	396.25	2.39	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	198	1.03	387.6	20	112	44		
8.38	27.5	367.54	2.47	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	184	1.03	357.1	20	110	43		
8.53	28.0	259.98	2.74	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	58	1.02	251.0	30	100	42		
8.68	28.5	130.24	1.69	8	Sand to Silty Sand	SP/SM	dense	115	5.5	24	1.01	124.9	30	79	39		
8.85	29.0	102.90	2.36	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	23	1.01	98.1	40	72	38		
9.00	29.5	215.01	2.87	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	48	1.00	203.7	35	93	41		
9.15	30.0	326.05	2.72	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	163	1.00	306.9	25	106	43		

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-1

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: 17.0 Phi (deg.)	Su (tsf)	OCR
9.30	30.5	354.92	2.41	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	79	0.99	332.0	25	108	43		
9.45	31.0	353.00	2.49	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	176	0.98	328.3	25	108	43		
9.60	31.5	204.10	2.51	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	45	0.98	188.7	30	91	41		
9.75	32.0	140.95	2.27	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	31	0.97	129.5	35	80	39		
9.90	32.5	192.61	2.05	8	Sand to Silty Sand	SP/SM	dense	115	5.5	35	0.97	176.0	30	89	40		
10.05	33.0	258.32	2.43	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	57	0.96	234.6	30	98	42		
10.20	33.5	242.14	1.70	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	44	0.96	218.7	25	96	41		
10.38	34.0	264.78	2.27	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	59	0.95	237.8	25	98	42		
10.53	34.5	246.40	2.29	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	55	0.94	220.1	30	96	41		
10.68	35.0	218.46	2.39	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	49	0.94	194.0	30	92	41		
10.83	35.5	188.77	2.32	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	42	0.93	166.7	35	88	40		
10.98	36.0	197.57	1.81	8	Sand to Silty Sand	SP/SM	dense	115	5.5	36	0.93	173.6	30	89	40		
11.13	36.5	209.24	2.01	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	38	0.92	182.9	30	90	41		
11.28	37.0	178.07	2.72	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	40	0.92	154.8	40	85	40		
11.43	37.5	151.74	1.98	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	34	0.91	131.2	35	81	39		
11.58	38.0	198.19	2.12	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	44	0.91	170.5	30	88	40		
11.73	38.5	220.78	2.43	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	49	0.91	189.0	30	91	41		
11.88	39.0	249.26	2.39	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	55	0.90	212.3	30	95	41		
12.05	39.5	291.60	2.34	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	65	0.90	247.1	30	99	42		
12.20	40.0	294.79	1.67	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	54	0.89	248.5	20	99	42		
12.35	40.5	297.38	1.93	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	54	0.89	249.5	25	99	42		
12.50	41.0	305.51	2.29	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	68	0.88	255.1	25	100	42		
12.65	41.5	270.66	2.29	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	60	0.88	224.9	30	96	41		
12.80	42.0	260.19	2.32	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	58	0.87	215.1	30	95	41		
12.95	42.5	263.00	2.18	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	48	0.87	216.4	30	95	41		
13.10	43.0	293.83	2.29	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	65	0.87	240.7	30	98	42		
13.25	43.5	276.88	2.45	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	62	0.86	225.8	30	97	42		
13.40	44.0	217.93	1.72	8	Sand to Silty Sand	SP/SM	dense	115	5.5	40	0.86	176.9	30	89	41		
13.58	44.5	198.75	1.90	8	Sand to Silty Sand	SP/SM	dense	115	5.5	36	0.85	160.6	30	86	40		
13.73	45.0	223.67	2.14	8	Sand to Silty Sand	SP/SM	dense	115	5.5	41	0.85	179.9	30	90	41		
13.88	45.5	217.96	2.31	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	48	0.85	174.5	35	89	40		
14.03	46.0	231.46	2.24	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	51	0.84	184.5	30	91	41		
14.18	46.5	258.13	2.10	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	47	0.84	203.3	30	93	41		
14.33	47.0	268.66	2.36	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	60	0.84	212.3	30	95	41		
14.48	47.5	316.02	2.41	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	70	0.83	248.6	30	99	42		
14.63	48.0	359.94	2.45	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	180	0.83	282.0	30	103	42		
14.78	48.5	329.45	2.65	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	165	0.83	257.0	30	100	42		
14.93	49.0	330.45	2.55	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	73	0.82	256.7	30	100	42		
15.10	49.5	294.77	2.46	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	66	0.82	228.0	30	97	42		

CLIENT: D.R. Horton

PROJECT: Willowbend Subdivision

LOCATION: See Site and Boring Location Plan

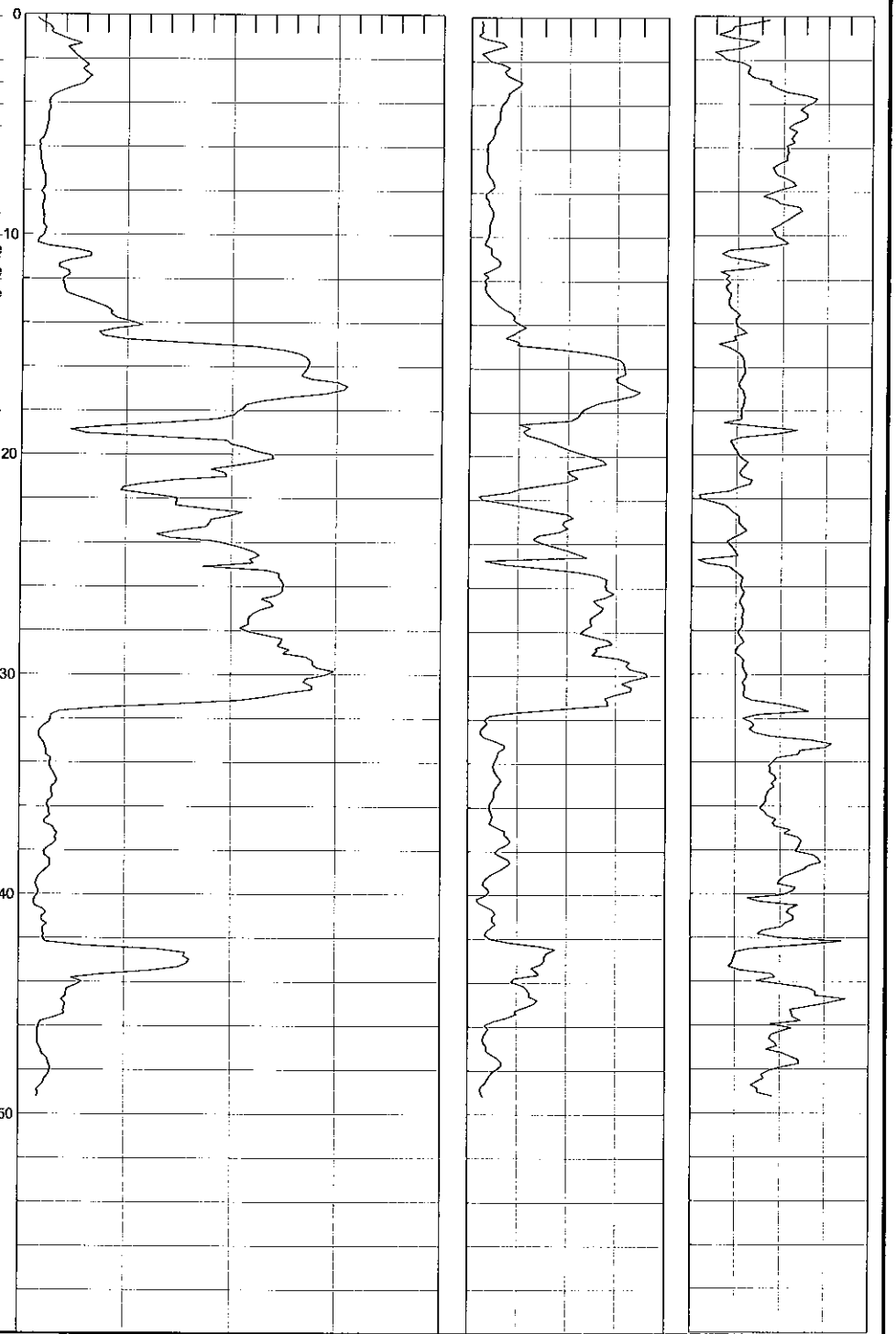
CONE PENETROMETER: HOLGUIN, FAHAN & ASSC. Truck Mounted Electric Cone with 23 ton reaction weight

DATE: 01/21/05

LOG OF CONE SOUNDING DATA CPT-2

DEPTH (FEET)	INTERPRETED SOIL PROFILE From Robertson & Campanella (1989)		
	GROUND EL. +/-		
	Sandy Silt to Clayey Silt	ML	dense
	Silty Sand to Sandy Silt	SM/ML	dense
	Sandy Silt to Clayey Silt	ML	dense
	Silty Clay to Clay	CL	hard
	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	very stiff
	Silty Clay to Clay	" "	very stiff
10	Silty Clay to Clay	" "	very stiff
	Sandy Silt to Clayey Silt	ML	medium dense
	Sandy Silt to Clayey Silt	" "	medium dense
	Silty Sand to Sandy Silt	SM/ML	medium dense
	Silty Sand to Sandy Silt	" "	dense
	Silty Sand to Sandy Silt	" "	dense
	Sand to Silty Sand	SP/SM	very dense
	Sand to Silty Sand	" "	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Silty Sand to Sandy Silt	" "	dense
20	Sand to Silty Sand	SP/SM	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Sand to Silty Sand	SP/SM	dense
	Sand to Silty Sand	" "	very dense
	Silty Sand to Sandy Silt	SM/ML	dense
	Sand to Silty Sand	SP/SM	very dense
	Sand to Silty Sand	" "	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Silty Sand to Sandy Silt	" "	very dense
	Sand to Silty Sand	SP/SM	very dense
30	Silty Sand to Sandy Silt	SM/ML	very dense
	Silty Sand to Sandy Silt	" "	very dense
	Sandy Silt to Clayey Silt	ML	medium dense
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clay	CL/CH	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
	Clay	CL/CH	very stiff
40	Clay	" "	stiff
	Silty Clay to Clay	CL	very stiff
	Silty Clay to Clay	" "	very stiff
	Sandy Silt to Clayey Silt	ML	dense
	Sandy Silt to Clayey Silt	" "	medium dense
	Clay	CL/CH	hard
	Silty Clay to Clay	CL	very stiff
	Silty Clay to Clay	" "	very stiff
	Silty Clay to Clay	" "	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
50			

End of Sounding @ 49.5 ft.



Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-2

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-2

Est. GWT (ft): 8.0 Phi Correlation: 0 (0-Schm(78),1-R&C(83),2-PHT(74))

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
0.15	0.5	17.83	2.58	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	7	2.00		70			1.05	>10
0.30	1.0	28.90	1.49	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	8	2.00	54.6	45	81	39		
0.45	1.5	46.93	2.51	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	13	2.00	88.7	45	88	40		
0.60	2.0	48.95	1.19	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	11	2.00	92.5	30	84	40		
0.75	2.5	58.42	2.37	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	17	2.00	110.4	40	86	40		
0.93	3.0	61.55	2.81	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	18	2.00	116.4	40	84	40		
1.08	3.5	47.17	3.73	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	19	2.00		55			2.76	>10
1.23	4.0	26.55	5.27	3	Clay	CL/CH	very stiff	125	1.3	21	2.00		80			1.55	>10
1.38	4.5	24.23	4.90	3	Clay	CL/CH	very stiff	125	1.3	19	2.00		80			1.41	>10
1.53	5.0	23.12	4.76	3	Clay	CL/CH	very stiff	125	1.3	18	1.94		80			1.34	>10
1.68	5.5	20.63	4.40	3	Clay	CL/CH	very stiff	125	1.3	17	1.84		80			1.19	>10
1.83	6.0	15.34	4.27	3	Clay	CL/CH	stiff	125	1.3	12	1.75		90			0.88	>10
1.98	6.5	16.13	4.16	3	Clay	CL/CH	stiff	125	1.3	13	1.68		85			0.93	>10
2.13	7.0	17.65	3.63	4	Silty Clay to Clay	CL	very stiff	125	1.8	10	1.61		80			1.01	>10
2.28	7.5	20.36	4.07	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	1.55		80			1.17	>10
2.45	8.0	19.29	3.98	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.50		80			1.11	>10
2.60	8.5	19.56	3.53	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.48		75			1.12	>10
2.75	9.0	18.77	4.69	3	Clay	CL/CH	very stiff	125	1.3	15	1.46		85			1.07	>10
2.90	9.5	19.57	4.06	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.43		80			1.12	>10
3.05	10.0	20.73	3.58	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	1.41		75			1.19	>10
3.20	10.5	17.72	3.89	4	Silty Clay to Clay	CL	very stiff	125	1.8	10	1.39		85			1.01	>10
3.35	11.0	60.85	1.54	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	14	1.37	79.0	30	66	37		
3.50	11.5	38.37	2.87	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	11	1.36	49.2	55	52	35		
3.65	12.0	42.48	1.44	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	9	1.34	53.9	40	54	36		
3.80	12.5	39.63	1.56	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	9	1.33	49.7	40	52	35		
3.95	13.0	51.68	1.67	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	11	1.31	64.1	40	59	36		
4.13	13.5	78.76	1.75	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	18	1.30	96.7	30	72	38		
4.28	14.0	92.52	1.99	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	21	1.29	112.5	30	76	39		
4.43	14.5	92.44	2.19	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	21	1.27	111.2	35	76	39		
4.58	15.0	114.36	1.66	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	25	1.26	136.2	25	82	39		
4.73	15.5	245.41	1.89	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	45	1.25	289.5	20	104	43		
4.88	16.0	272.04	2.28	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	60	1.24	317.9	20	107	43		
5.03	16.5	270.41	2.25	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	49	1.22	313.0	20	106	43		
5.18	17.0	305.81	2.14	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	56	1.21	350.7	20	110	43		
5.33	17.5	258.21	2.31	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	57	1.20	293.5	20	104	43		
5.48	18.0	209.57	2.22	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	47	1.19	236.1	25	98	42		
5.65	18.5	177.76	1.92	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	32	1.18	198.5	25	93	41		
5.80	19.0	63.89	3.79	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	26	1.17		55			3.71	>10
5.95	19.5	174.42	1.91	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	32	1.16	191.3	25	92	41		
6.10	20.0	224.46	2.00	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	41	1.15	244.2	20	99	42		
6.25	20.5	222.60	2.37	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	49	1.14	240.2	25	98	42		
6.40	21.0	189.65	2.20	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	42	1.13	203.0	25	93	41		
6.55	21.5	120.52	2.45	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	27	1.12	128.0	35	80	39		
6.70	22.0	122.84	0.80	9	Sand	SP	dense	110	6.5	19	1.12	129.5	15	80	39		
6.85	22.5	157.60	1.39	8	Sand to Silty Sand	SP/SM	dense	115	5.5	29	1.11	164.9	20	87	40		
7.00	23.0	196.58	2.05	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	36	1.10	204.2	25	94	41		
7.18	23.5	168.07	2.29	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	37	1.09	173.2	30	89	40		
7.33	24.0	151.43	1.88	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	34	1.08	155.0	30	85	40		
7.48	24.5	211.10	1.87	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	38	1.07	214.5	25	95	41		
7.63	25.0	221.98	1.02	9	Sand	SP	very dense	110	6.5	34	1.07	224.0	15	96	41		
7.78	25.5	217.98	1.92	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	40	1.06	218.5	25	96	41		
7.93	26.0	248.11	2.25	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	55	1.05	247.0	25	99	42		
8.08	26.5	242.72	2.29	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	54	1.05	239.9	25	98	42		
8.23	27.0	235.72	2.27	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	52	1.04	231.5	25	97	42		
8.38	27.5	218.59	2.30	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	49	1.03	213.2	25	95	41		
8.53	28.0	214.19	2.22	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	48	1.03	207.5	25	94	41		
8.68	28.5	243.97	2.27	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	54	1.02	234.9	25	98	42		
8.85	29.0	250.16	2.05	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	45	1.01	239.3	25	98	42		
9.00	29.5	276.08	2.30	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	61	1.01	262.4	25	101	42		
9.15	30.0	290.53	2.41	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	65	1.00	274.4	25	102	42		

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-2

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
9.30	30.5	273.22	2.38	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	61	0.99	256.5	25	100	42		
9.45	31.0	254.40	2.38	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	57	0.99	237.4	25	98	42		
9.60	31.5	145.06	3.77	12	Sand to Clayey Sand	SP/SC	dense	115	2.0	73	0.98	134.5	45	81	39		
9.75	32.0	32.22	3.50	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	13	0.98		85			1.83	>10
9.90	32.5	23.46	2.72	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	9	0.97		95			1.31	>10
10.05	33.0	19.01	3.92	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.96		100			1.05	7.00
10.20	33.5	24.45	5.73	3	Clay	CL/CH	very stiff	125	1.3	20	0.96		100			1.37	8.14
10.38	34.0	27.81	4.10	4	Silty Clay to Clay	CL	very stiff	125	1.8	16	0.95		100			1.57	>10
10.53	34.5	30.20	3.52	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.94		95			1.71	>10
10.68	35.0	34.37	3.71	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	14	0.94		90			1.95	>10
10.83	35.5	30.47	3.54	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.93		95			1.72	>10
10.98	36.0	28.05	3.31	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.93		95			1.58	>10
11.13	36.5	27.16	3.41	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.92		100			1.52	>10
11.28	37.0	29.21	3.95	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.92		100			1.64	>10
11.43	37.5	34.82	4.64	4	Silty Clay to Clay	CL	very stiff	125	1.8	20	0.91		100			1.97	>10
11.58	38.0	26.97	4.78	3	Clay	CL/CH	very stiff	125	1.3	22	0.91		100			1.51	8.00
11.73	38.5	27.43	5.66	3	Clay	CL/CH	very stiff	125	1.3	22	0.90		100			1.54	8.14
11.88	39.0	25.02	4.98	3	Clay	CL/CH	very stiff	125	1.3	20	0.89		100			1.39	6.76
12.05	39.5	16.64	4.02	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.89		100			0.90	4.37
12.20	40.0	17.53	4.46	3	Clay	CL/CH	stiff	125	1.3	14	0.88		100			0.95	3.66
12.35	40.5	14.50	3.47	4	Silty Clay to Clay	CL	stiff	125	1.8	8	0.88		100			0.77	3.43
12.50	41.0	23.38	4.44	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	0.87		100			1.29	7.27
12.65	41.5	23.62	4.29	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	0.87		100			1.31	7.27
12.80	42.0	22.95	3.40	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	9	0.86		100			1.27	9.79
12.95	42.5	71.86	4.80	11	Overconsolidated Soil	??	medium dense	120	1.0	72	0.86	58.4	80	57	36		
13.10	43.0	158.39	1.98	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	35	0.86	128.2	35	80	39		
13.25	43.5	144.34	1.94	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	32	0.85	116.3	40	77	39		
13.40	44.0	62.95	3.46	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	25	0.85		75			3.62	>10
13.58	44.5	48.19	5.02	4	Silty Clay to Clay	CL	hard	125	1.8	28	0.84		95			2.75	>10
13.73	45.0	43.00	6.24	3	Clay	CL/CH	hard	125	1.3	34	0.84		100			2.44	>10
13.88	45.5	42.98	4.81	4	Silty Clay to Clay	CL	hard	125	1.8	25	0.84		100			2.44	>10
14.03	46.0	24.46	4.36	4	Silty Clay to Clay	CL	very stiff	125	1.8	14	0.83		100			1.35	6.54
14.18	46.5	18.20	4.07	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.83		100			0.98	4.00
14.33	47.0	19.14	3.65	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.82		100			1.03	4.28
14.48	47.5	25.59	4.48	4	Silty Clay to Clay	CL	very stiff	125	1.8	15	0.82		100			1.41	6.76
14.63	48.0	29.37	4.13	4	Silty Clay to Clay	CL	very stiff	125	1.8	17	0.81		100			1.63	8.56
14.78	48.5	25.33	3.16	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	10	0.81		100			1.40	9.00
14.93	49.0	18.87	2.91	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	0.81		100			1.01	5.31

CLIENT: D.R. Horton

PROJECT: Willowbend Subdivision

LOCATION: See Site and Boring Location Plan

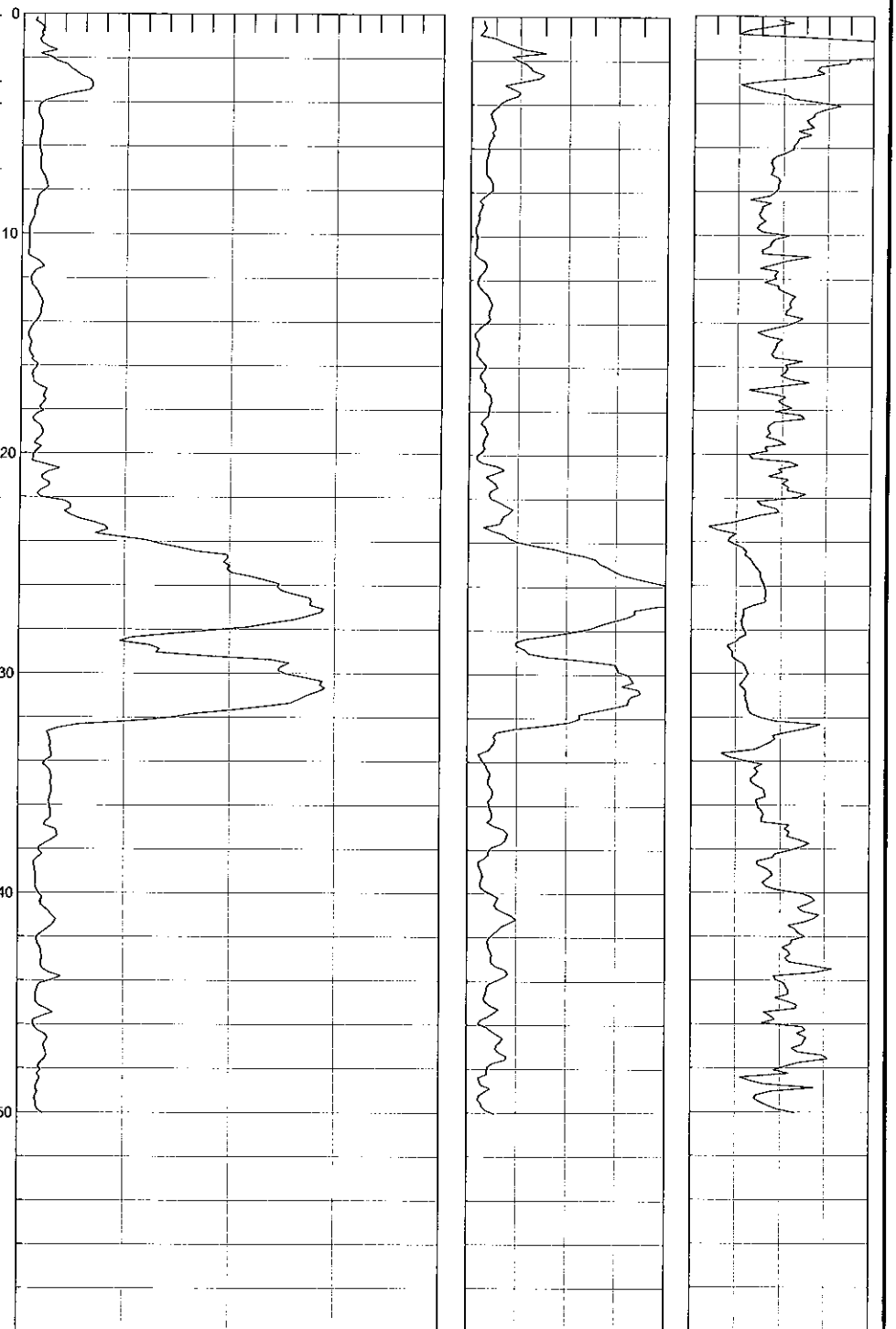
CONE PENETROMETER: HOLGUIN, FAHAN & ASSC. Truck Mounted Electric Cone with 23 ton reaction weight

DATE: 01/21/05

LOG OF CONE SOUNDING DATA CPT-3

DEPTH (FEET)	INTERPRETED SOIL PROFILE From Robertson & Campanella (1989)		
	GROUND EL. +/-		
	Silty Clay to Clay	CL	stiff
	Clay	CL/CH	very stiff
	Clay	" "	hard
	Clayey Silt to Silty Clay	ML/CL	hard
	Clay	CL/CH	stiff
	Clay	" "	stiff
	Silty Clay to Clay	CL	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	stiff
10	Silty Clay to Clay	CL	firm
	Clay	CL/CH	firm
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	stiff
	Clay	CL/CH	very stiff
	Clay	" "	firm
	Clay	" "	stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	very stiff
	Silty Clay to Clay	" "	stiff
20	Silty Clay to Clay	" "	stiff
	Silty Clay to Clay	" "	very stiff
	Silty Clay to Clay	" "	very stiff
	Sandy Silt to Clayey Silt	ML	medium dense
	Silty Sand to Sandy Silt	SM/ML	medium dense
	Silty Sand to Sandy Silt	" "	dense
	Silty Sand to Sandy Silt	" "	very dense
	Sand to Clayey Sand	SP/SC	very dense
	Silty Sand to Sandy Silt	SM/ML	very dense
	Silty Sand to Sandy Silt	" "	dense
30	Silty Sand to Sandy Silt	" "	very dense
	Silty Sand to Sandy Silt	" "	very dense
	Silty Sand to Sandy Silt	" "	very dense
	Silty Clay to Clay	CL	hard
	Sandy Silt to Clayey Silt	ML	loose
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
	Clayey Silt to Silty Clay	ML/CL	stiff
40	Silty Clay to Clay	CL	stiff
	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
	Clay	CL/CH	very stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	very stiff
	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
50	Silty Clay to Clay	" "	very stiff

End of Sounding @ 50.0 ft.



Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-3

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-3

Est. GWT (ft): 8.0 Phi Correlation: 0 (0-Schm(78),1-R&C(83),2-PHT(74))

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type		Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
0.15	0.5	14.17	3.84	4	4	Silty Clay to Clay	CL	stiff	125	1.8	8	2.00		85			0.83	>10
0.30	1.0	18.80	3.25	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	2.00		75			1.10	>10
0.45	1.5	18.94	9.09	3	3	Clay	CL/CH	very stiff	125	1.3	15	2.00		100			1.11	>10
0.60	2.0	25.37	8.71	3	3	Clay	CL/CH	very stiff	125	1.3	20	2.00		95			1.49	>10
0.75	2.5	39.78	6.00	3	3	Clay	CL/CH	hard	125	1.3	32	2.00		70			2.33	>10
0.93	3.0	56.37	4.70	4	4	Silty Clay to Clay	CL	hard	125	1.8	32	2.00		55			3.31	>10
1.08	3.5	64.96	2.58	6	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	19	2.00	122.8	40	83	40		
1.23	4.0	33.12	4.71	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	19	2.00		70			1.93	>10
1.38	4.5	15.60	5.92	3	3	Clay	CL/CH	stiff	125	1.3	12	2.00		100			0.90	>10
1.53	5.0	17.53	5.18	3	3	Clay	CL/CH	very stiff	125	1.3	14	1.90		90			1.01	>10
1.68	5.5	18.10	4.99	3	3	Clay	CL/CH	very stiff	125	1.3	14	1.81		90			1.05	>10
1.83	6.0	16.07	4.50	3	3	Clay	CL/CH	stiff	125	1.3	13	1.72		90			0.92	>10
1.98	6.5	17.56	3.75	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	10	1.65		80			1.01	>10
2.13	7.0	17.44	3.51	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	10	1.59		80			1.00	>10
2.28	7.5	21.08	3.68	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	1.53		75			1.21	>10
2.45	8.0	22.77	3.70	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	1.48		70			1.31	>10
2.60	8.5	15.12	3.11	5	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	6	1.46		80			0.86	>10
2.75	9.0	12.75	2.99	4	4	Silty Clay to Clay	CL	stiff	125	1.8	7	1.44		85			0.72	>10
2.90	9.5	10.05	3.03	4	4	Silty Clay to Clay	CL	stiff	125	1.8	6	1.42		100			0.56	9.19
3.05	10.0	7.07	3.38	3	3	Clay	CL/CH	firm	125	1.3	6	1.40		100			0.38	3.74
3.20	10.5	7.26	3.50	3	3	Clay	CL/CH	firm	125	1.3	6	1.38		100			0.39	3.74
3.35	11.0	6.57	3.77	3	3	Clay	CL/CH	firm	125	1.3	5	1.36		100			0.35	3.14
3.50	11.5	17.87	3.59	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	10	1.34		85			1.02	>10
3.65	12.0	11.09	3.70	3	3	Clay	CL/CH	stiff	125	1.3	9	1.32		100			0.62	6.43
3.80	12.5	10.75	3.59	4	4	Silty Clay to Clay	CL	stiff	125	1.8	6	1.31		100			0.60	7.56
3.95	13.0	17.24	4.38	3	3	Clay	CL/CH	stiff	125	1.3	14	1.29		95			0.98	>10
4.13	13.5	19.40	4.28	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.27		90			1.10	>10
4.28	14.0	16.61	4.56	3	3	Clay	CL/CH	stiff	125	1.3	13	1.26		100			0.94	>10
4.43	14.5	9.25	3.50	3	3	Clay	CL/CH	stiff	125	1.3	7	1.24		100			0.50	3.91
4.58	15.0	8.13	3.66	3	3	Clay	CL/CH	firm	125	1.3	7	1.23		100			0.44	3.21
4.73	15.5	8.32	3.60	3	3	Clay	CL/CH	firm	125	1.3	7	1.22		100			0.45	3.21
4.88	16.0	13.02	4.22	3	3	Clay	CL/CH	stiff	125	1.3	10	1.20		100			0.72	6.10
5.03	16.5	11.23	4.13	3	3	Clay	CL/CH	stiff	125	1.3	9	1.19		100			0.62	4.68
5.18	17.0	17.62	3.83	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	1.18		100			0.99	>10
5.33	17.5	22.56	3.83	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	1.17		90			1.28	>10
5.48	18.0	19.91	4.03	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.16		95			1.12	>10
5.65	18.5	13.31	4.48	3	3	Clay	CL/CH	stiff	125	1.3	11	1.14		100			0.74	5.42
5.80	19.0	20.05	3.40	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	1.13		95			1.13	>10
5.95	19.5	16.31	3.74	4	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.12		100			0.91	9.59
6.10	20.0	16.13	3.03	5	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	6	1.11		100			0.90	>10
6.25	20.5	15.96	3.91	4	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.10		100			0.89	8.41
6.40	21.0	28.05	3.75	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	1.09		85			1.60	>10
6.55	21.5	25.30	4.21	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	14	1.09		95			1.44	>10
6.70	22.0	18.66	4.68	3	3	Clay	CL/CH	very stiff	125	1.3	15	1.08		100			1.04	7.70
6.85	22.5	45.94	3.25	5	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	18	1.07		65			2.65	>10
7.00	23.0	49.09	3.06	6	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	14	1.06	49.2	65	52	35		
7.18	23.5	78.50	1.24	8	8	Sand to Silty Sand	SP/SM	medium dense	115	5.5	14	1.05	78.1	35	65	37		
7.33	24.0	95.39	1.79	7	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	21	1.04	94.2	35	71	38		
7.48	24.5	151.24	2.23	7	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	34	1.04	148.4	30	84	40		
7.63	25.0	196.47	2.59	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	44	1.03	191.5	30	92	41		
7.78	25.5	199.46	2.96	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	44	1.02	193.1	35	92	41		
7.93	26.0	233.15	3.15	12	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	117	1.02	224.3	35	96	41		
8.08	26.5	258.79	3.31	12	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	129	1.01	247.3	35	99	42		
8.23	27.0	281.23	2.80	12	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	141	1.00	267.1	30	101	42		
8.38	27.5	274.57	2.31	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	61	1.00	259.2	25	101	42		
8.53	28.0	211.93	2.32	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	47	0.99	198.8	30	93	41		
8.68	28.5	113.19	2.22	7	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	25	0.99	105.5	40	74	38		
8.85	29.0	129.42	1.74	8	8	Sand to Silty Sand	SP/SM	dense	115	5.5	24	0.98	119.9	30	78	39		
9.00	29.5	224.57	2.06	8	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	41	0.97	206.9	25	94	41		
9.15	30.0	249.77	2.49	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	56	0.97	228.8	30	97	42		

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-3

Est. GWT (ft): 8.0 Phi Correlation: 0 (0-Schm(78),1-R&C(83),2-PHT(74))

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type		Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: 17.0 Phi (deg.)	Su (tsf)	OCR
9.30	30.5	282.56	2.31	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	63	0.96	257.3	25	100	42		
9.45	31.0	282.53	2.42	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	63	0.96	255.8	25	100	42		
9.60	31.5	253.17	2.49	7	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	56	0.95	227.9	30	97	42		
9.75	32.0	171.47	2.80	7	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	38	0.95	153.5	40	85	40		
9.90	32.5	67.23	4.93	11	11	Overconsolidated Soil	??	medium dense	120	1.0	67	0.94	59.8	75	57	36		
10.05	33.0	28.33	3.94	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.94		100			1.60	>10
10.20	33.5	30.03	3.16	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.93		90			1.69	>10
10.38	34.0	29.20	1.82	6	6	Sandy Silt to Clayey Silt	ML	loose	115	3.5	8	0.93	25.5	75	32	33		
10.53	34.5	27.05	3.00	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.92		95			1.52	>10
10.68	35.0	30.84	2.76	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.91		85			1.74	>10
10.83	35.5	30.90	3.17	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.91		90			1.74	>10
10.98	36.0	29.40	3.07	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.90		95			1.65	>10
11.13	36.5	30.34	3.14	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.90		95			1.71	>10
11.28	37.0	28.33	3.92	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.89		100			1.59	>10
11.43	37.5	35.23	4.51	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	20	0.89		100			1.99	>10
11.58	38.0	21.70	4.91	3	3	Clay	CL/CH	very stiff	125	1.3	17	0.88		100			1.20	5.10
11.73	38.5	18.76	3.46	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.88		100			1.02	5.10
11.88	39.0	15.74	3.32	4	4	Silty Clay to Clay	CL	stiff	125	1.8	9	0.87		100			0.84	3.83
12.05	39.5	16.70	3.43	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.87		100			0.90	4.09
12.20	40.0	18.20	4.11	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.86		100			0.99	4.57
12.35	40.5	21.97	5.40	3	3	Clay	CL/CH	very stiff	125	1.3	18	0.86		100			1.21	4.78
12.50	41.0	28.85	5.20	3	3	Clay	CL/CH	very stiff	125	1.3	23	0.86		100			1.61	7.41
12.65	41.5	34.06	4.98	3	3	Clay	CL/CH	very stiff	125	1.3	27	0.85		100			1.92	>10
12.80	42.0	22.30	4.89	3	3	Clay	CL/CH	very stiff	125	1.3	18	0.85		100			1.22	4.68
12.95	42.5	19.50	4.37	3	3	Clay	CL/CH	very stiff	125	1.3	16	0.84		100			1.06	3.74
13.10	43.0	22.38	4.36	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	0.84		100			1.23	5.88
13.25	43.5	22.75	5.37	3	3	Clay	CL/CH	very stiff	125	1.3	18	0.83		100			1.25	4.57
13.40	44.0	34.48	4.36	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	20	0.83		100			1.94	>10
13.58	44.5	19.14	4.29	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.82		100			1.03	4.28
13.73	45.0	17.32	4.18	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.82		100			0.93	3.66
13.88	45.5	26.87	4.26	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	15	0.82		100			1.49	7.27
14.03	46.0	17.81	3.52	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.81		100			0.95	3.66
14.18	46.5	20.35	4.99	3	3	Clay	CL/CH	very stiff	125	1.3	16	0.81		100			1.10	3.50
14.33	47.0	26.30	4.96	3	3	Clay	CL/CH	very stiff	125	1.3	21	0.80		100			1.45	5.21
14.48	47.5	26.53	5.64	3	3	Clay	CL/CH	very stiff	125	1.3	21	0.80		100			1.46	5.21
14.63	48.0	21.04	4.31	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	0.80		100			1.14	4.47
14.78	48.5	19.93	3.09	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	0.79		100			1.07	5.53
14.93	49.0	18.05	4.15	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.79		100			0.96	3.50
15.10	49.5	17.10	2.98	5	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	7	0.79		100			0.91	4.09
15.25	50.0	20.50	4.02	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	0.78		100			1.10	4.09

CLIENT: D.R. Horton

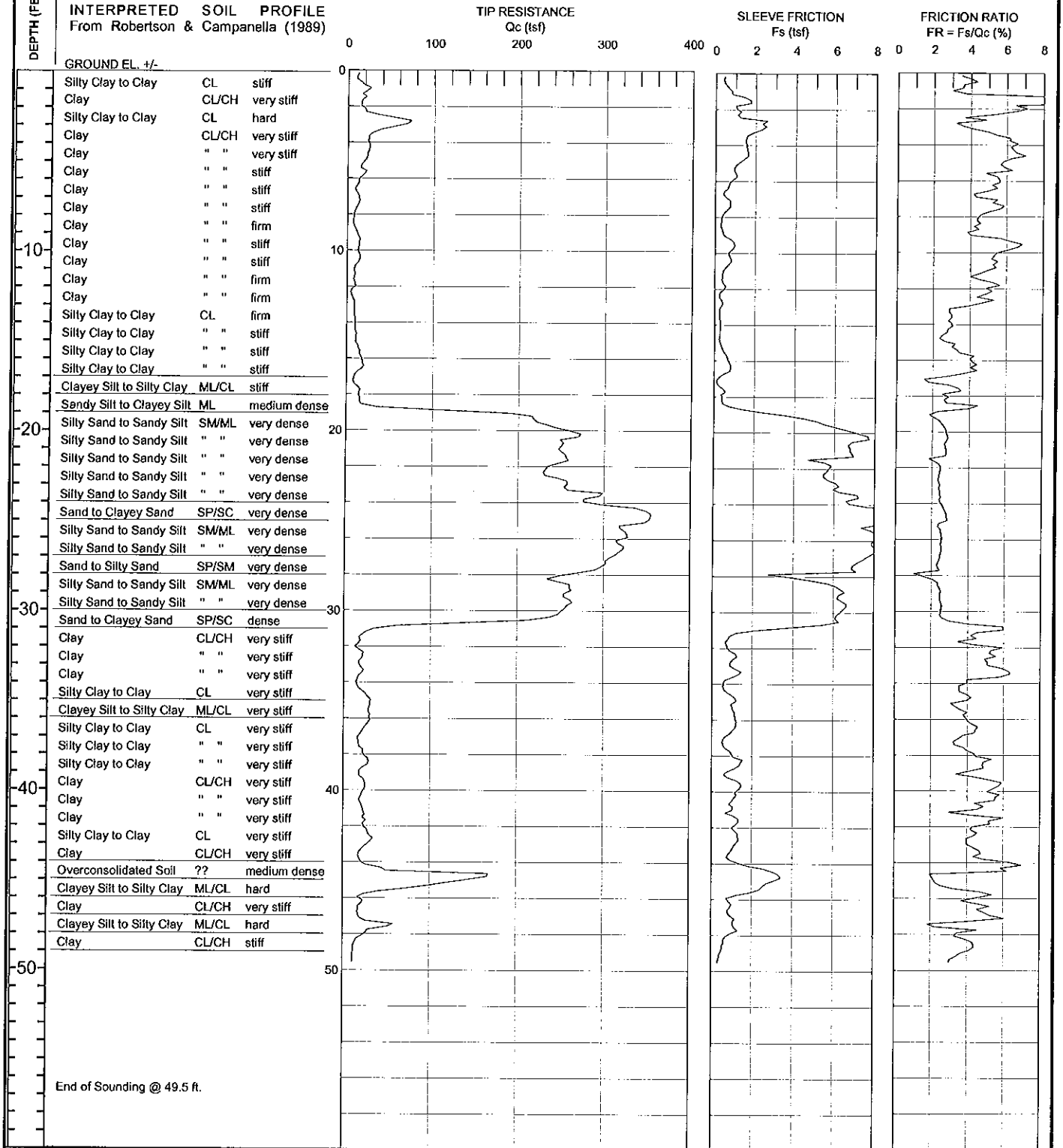
PROJECT: Willowbend Subdivision

LOCATION: See Site and Boring Location Plan

CONE PENETROMETER: HOLGUIN, FAHAN & ASSC. Truck Mounted Electric Cone with 23 ton reaction weight

DATE: 01/21/05

LOG OF CONE SOUNDING DATA CPT-4



GROUND EL. +/-		
Silty Clay to Clay	CL	stiff
Clay	CL/CH	very stiff
Silty Clay to Clay	CL	hard
Clay	CL/CH	very stiff
Clay	" "	very stiff
Clay	" "	stiff
Clay	" "	stiff
Clay	" "	stiff
Clay	" "	firm
Clay	" "	stiff
Clay	" "	stiff
Clay	" "	firm
Clay	" "	firm
Silty Clay to Clay	CL	firm
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Sandy Silt to Clayey Silt	ML	medium dense
Silty Sand to Sandy Silt	SM/ML	very dense
Silty Sand to Sandy Silt	" "	very dense
Silty Sand to Sandy Silt	" "	very dense
Silty Sand to Sandy Silt	" "	very dense
Silty Sand to Sandy Silt	" "	very dense
Sand to Clayey Sand	SP/SC	very dense
Silty Sand to Sandy Silt	SM/ML	very dense
Silty Sand to Sandy Silt	" "	very dense
Sand to Silty Sand	SP/SM	very dense
Silty Sand to Sandy Silt	SM/ML	very dense
Silty Sand to Sandy Silt	" "	very dense
Sand to Clayey Sand	SP/SC	dense
Clay	CL/CH	very stiff
Clay	" "	very stiff
Clay	" "	very stiff
Silty Clay to Clay	CL	very stiff
Clayey Silt to Silty Clay	ML/CL	very stiff
Silty Clay to Clay	CL	very stiff
Silty Clay to Clay	" "	very stiff
Silty Clay to Clay	" "	very stiff
Clay	CL/CH	very stiff
Clay	" "	very stiff
Clay	" "	very stiff
Silty Clay to Clay	CL	very stiff
Clay	CL/CH	very stiff
Overconsolidated Soil	??	medium dense
Clayey Silt to Silty Clay	ML/CL	hard
Clay	CL/CH	very stiff
Clayey Silt to Silty Clay	ML/CL	hard
Clay	CL/CH	stiff

End of Sounding @ 49.5 ft.

Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-4

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-4

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
0.15	0.5	10.86	3.93	3	Clay	CL/CH	stiff	125	1.3	9	2.00		95			0.64	>10
0.30	1.0	19.89	3.39	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	2.00		75			1.17	>10
0.45	1.5	19.90	6.78	3	Clay	CL/CH	very stiff	125	1.3	16	2.00		95			1.17	>10
0.60	2.0	15.61	8.10	3	Clay	CL/CH	stiff	125	1.3	12	2.00		100			0.91	>10
0.75	2.5	24.66	5.16	3	Clay	CL/CH	very stiff	125	1.3	20	2.00		80			1.44	>10
0.93	3.0	65.28	3.86	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	26	2.00		45			3.83	>10
1.08	3.5	40.38	4.88	4	Silty Clay to Clay	CL	hard	125	1.8	23	2.00		65			2.36	>10
1.23	4.0	24.12	6.31	3	Clay	CL/CH	very stiff	125	1.3	19	2.00		85			1.41	>10
1.38	4.5	24.82	6.36	3	Clay	CL/CH	very stiff	125	1.3	20	2.00		85			1.44	>10
1.53	5.0	22.30	6.36	3	Clay	CL/CH	very stiff	125	1.3	18	1.90		90			1.29	>10
1.68	5.5	17.71	5.67	3	Clay	CL/CH	very stiff	125	1.3	14	1.80		95			1.02	>10
1.83	6.0	16.03	5.54	3	Clay	CL/CH	stiff	125	1.3	13	1.72		95			0.92	>10
1.98	6.5	10.94	5.21	3	Clay	CL/CH	stiff	125	1.3	9	1.65		100			0.62	>10
2.13	7.0	11.90	4.65	3	Clay	CL/CH	stiff	125	1.3	10	1.59		100			0.68	>10
2.28	7.5	12.66	5.59	3	Clay	CL/CH	stiff	125	1.3	10	1.53		100			0.72	>10
2.45	8.0	8.42	4.66	3	Clay	CL/CH	firm	125	1.3	7	1.48		100			0.47	5.88
2.60	8.5	6.99	4.37	3	Clay	CL/CH	firm	125	1.3	6	1.46		100			0.38	4.18
2.75	9.0	9.99	4.10	3	Clay	CL/CH	stiff	125	1.3	8	1.44		100			0.56	7.00
2.90	9.5	13.82	6.23	3	Clay	CL/CH	stiff	125	1.3	11	1.41		100			0.78	>10
3.05	10.0	13.16	6.05	3	Clay	CL/CH	stiff	125	1.3	11	1.39		100			0.74	>10
3.20	10.5	14.49	5.33	3	Clay	CL/CH	stiff	125	1.3	12	1.37		100			0.82	>10
3.35	11.0	10.07	5.21	3	Clay	CL/CH	stiff	125	1.3	8	1.36		100			0.56	5.88
3.50	11.5	8.60	4.35	3	Clay	CL/CH	firm	125	1.3	7	1.34		100			0.47	4.37
3.65	12.0	9.08	5.24	3	Clay	CL/CH	firm	125	1.3	7	1.32		100			0.50	4.57
3.80	12.5	5.40	4.81	3	Clay	CL/CH	firm	125	1.3	4	1.30		100			0.28	2.06
3.95	13.0	7.88	4.64	3	Clay	CL/CH	firm	125	1.3	6	1.29		100			0.43	3.43
4.13	13.5	8.66	2.90	4	Silty Clay to Clay	CL	firm	125	1.8	5	1.27		100			0.47	4.89
4.28	14.0	9.46	2.94	4	Silty Clay to Clay	CL	stiff	125	1.8	5	1.26		100			0.52	5.42
4.43	14.5	9.96	2.85	4	Silty Clay to Clay	CL	stiff	125	1.8	6	1.24		100			0.55	5.65
4.58	15.0	10.61	2.47	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	4	1.23		100			0.58	8.41
4.73	15.5	12.09	3.16	4	Silty Clay to Clay	CL	stiff	125	1.8	7	1.22		100			0.67	7.27
4.88	16.0	16.24	3.94	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.20		100			0.91	>10
5.03	16.5	18.60	4.27	3	Clay	CL/CH	very stiff	125	1.3	15	1.19		100			1.05	>10
5.18	17.0	10.19	2.66	4	Silty Clay to Clay	CL	stiff	125	1.8	6	1.18		100			0.55	4.89
5.33	17.5	9.77	2.68	4	Silty Clay to Clay	CL	stiff	125	1.8	6	1.17		100			0.53	4.47
5.48	18.0	14.87	2.95	5	Clayey Silt to Silty Clay	ML/CL	stiff	120	2.5	6	1.16		100			0.83	>10
5.65	18.5	15.98	3.26	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.14		100			0.89	>10
5.80	19.0	110.01	2.70	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	24	1.13	117.9	40	77	39		
5.95	19.5	218.70	2.30	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	49	1.13	232.6	25	97	42		
6.10	20.0	246.37	2.68	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	55	1.12	260.0	25	101	42		
6.25	20.5	263.83	2.80	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	59	1.11	276.3	25	102	42		
6.40	21.0	249.98	2.69	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	56	1.10	259.8	25	101	42		
6.55	21.5	253.43	2.43	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	56	1.09	261.4	25	101	42		
6.70	22.0	246.17	2.32	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	55	1.08	252.1	25	100	42		
6.85	22.5	230.83	2.40	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	51	1.08	234.7	25	98	42		
7.00	23.0	253.57	2.37	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	56	1.07	256.0	25	100	42		
7.18	23.5	270.04	2.38	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	60	1.06	270.7	25	102	42		
7.33	24.0	282.55	2.42	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	63	1.05	281.2	25	103	42		
7.48	24.5	327.97	2.64	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	164	1.05	324.2	25	107	43		
7.63	25.0	353.48	2.80	12	Sand to Clayey Sand	SP/SC	very dense	115	2.0	177	1.04	347.1	25	109	43		
7.78	25.5	328.05	2.38	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	73	1.03	320.0	25	107	43		
7.93	26.0	326.60	2.51	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	73	1.03	316.5	25	107	43		
8.08	26.5	319.22	2.50	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	71	1.02	307.3	25	106	43		
8.23	27.0	312.37	2.45	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	69	1.01	298.8	25	105	43		
8.38	27.5	300.38	2.33	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	67	1.01	285.5	25	103	42		
8.53	28.0	269.43	1.68	8	Sand to Silty Sand	SP/SM	very dense	115	5.5	49	1.00	254.5	20	100	42		
8.68	28.5	247.50	2.25	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	55	0.99	232.4	25	97	42		
8.85	29.0	259.30	2.46	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	58	0.99	242.0	30	99	42		
9.00	29.5	259.55	2.47	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	58	0.98	240.7	30	98	42		
9.15	30.0	254.86	2.53	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	57	0.98	235.0	30	98	42		

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-4

Est. GWT (ft): 8.0 Phi Correlation: 0 (0-Schm(78),1-R&C(83),2-PHT(74))

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
9.30	30.5	232.59	2.66	7	Silty Sand to Sandy Silt	SM/ML	very dense	115	4.5	52	0.97	213.2	30	95	41		
9.45	31.0	77.92	5.29	11	Overconsolidated Soil	??	medium dense	120	1.0	78	0.96	71.0	70	62	37		
9.60	31.5	21.37	4.39	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	0.96		100			1.19	8.56
9.75	32.0	16.35	4.55	3	Clay	CL/CH	stiff	125	1.3	13	0.95		100			0.89	4.09
9.90	32.5	20.61	5.35	3	Clay	CL/CH	very stiff	125	1.3	16	0.94		100			1.14	5.88
10.05	33.0	18.58	5.04	3	Clay	CL/CH	very stiff	125	1.3	15	0.94		100			1.02	4.89
10.20	33.5	21.14	6.17	3	Clay	CL/CH	very stiff	125	1.3	17	0.93		100			1.17	5.88
10.38	34.0	15.59	4.58	3	Clay	CL/CH	stiff	125	1.3	12	0.93		100			0.84	3.58
10.53	34.5	17.84	3.54	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.92		100			0.98	5.53
10.68	35.0	27.71	4.04	4	Silty Clay to Clay	CL	very stiff	125	1.8	16	0.92		100			1.56	>10
10.83	35.5	29.82	3.33	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.91		95			1.68	>10
10.98	36.0	29.45	3.88	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.90		100			1.66	>10
11.13	36.5	26.68	4.31	4	Silty Clay to Clay	CL	very stiff	125	1.8	15	0.90		100			1.49	>10
11.28	37.0	18.25	3.87	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.89		100			1.00	5.21
11.43	37.5	17.31	3.43	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.89		100			0.94	4.68
11.58	38.0	22.92	4.26	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	0.88		100			1.27	7.27
11.73	38.5	28.51	5.02	3	Clay	CL/CH	very stiff	125	1.3	23	0.88		100			1.60	8.00
11.88	39.0	19.63	4.12	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.87		100			1.07	5.42
12.05	39.5	22.13	5.15	3	Clay	CL/CH	very stiff	125	1.3	18	0.87		100			1.22	5.00
12.20	40.0	24.42	5.42	3	Clay	CL/CH	very stiff	125	1.3	20	0.86		100			1.35	5.76
12.35	40.5	19.75	5.61	3	Clay	CL/CH	very stiff	125	1.3	16	0.86		100			1.08	4.00
12.50	41.0	21.19	4.62	3	Clay	CL/CH	very stiff	125	1.3	17	0.85		100			1.16	4.37
12.65	41.5	23.38	4.42	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	0.85		100			1.29	6.54
12.80	42.0	24.14	4.90	3	Clay	CL/CH	very stiff	125	1.3	19	0.85		100			1.33	5.31
12.95	42.5	28.49	4.37	4	Silty Clay to Clay	CL	very stiff	125	1.8	16	0.84		100			1.59	9.00
13.10	43.0	31.35	3.99	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	13	0.84		100			1.76	>10
13.25	43.5	20.76	4.58	3	Clay	CL/CH	very stiff	125	1.3	17	0.83		100			1.13	3.91
13.40	44.0	18.96	5.17	3	Clay	CL/CH	very stiff	125	1.3	15	0.83		100			1.02	3.43
13.58	44.5	39.85	6.34	3	Clay	CL/CH	hard	125	1.3	32	0.82		100			2.25	>10
13.73	45.0	159.05	2.07	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	35	0.82	123.4	40	79	39		
13.88	45.5	97.51	2.69	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	28	0.82	75.3	55	64	37		
14.03	46.0	26.91	4.86	3	Clay	CL/CH	very stiff	125	1.3	22	0.81		100			1.49	5.53
14.18	46.5	20.94	4.46	3	Clay	CL/CH	very stiff	125	1.3	17	0.81		100			1.14	3.66
14.33	47.0	17.77	5.19	3	Clay	CL/CH	stiff	125	1.3	14	0.81		100			0.95	2.91
14.48	47.5	45.51	2.68	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	13	0.80	34.5	80	41	34		
14.63	48.0	25.81	3.76	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	10	0.80		100			1.42	8.85
14.78	48.5	14.08	4.17	3	Clay	CL/CH	stiff	125	1.3	11	0.80		100			0.73	2.00
14.93	49.0	11.77	4.01	3	Clay	CL/CH	stiff	125	1.3	9	0.79		100			0.59	1.50
15.10	49.5	11.13	3.14	4	Silty Clay to Clay	CL	stiff	125	1.8	6	0.79		100			0.55	1.70

CLIENT: D.R. Horton

PROJECT: Willowbend Subdivision

LOCATION: See Site and Boring Location Plan

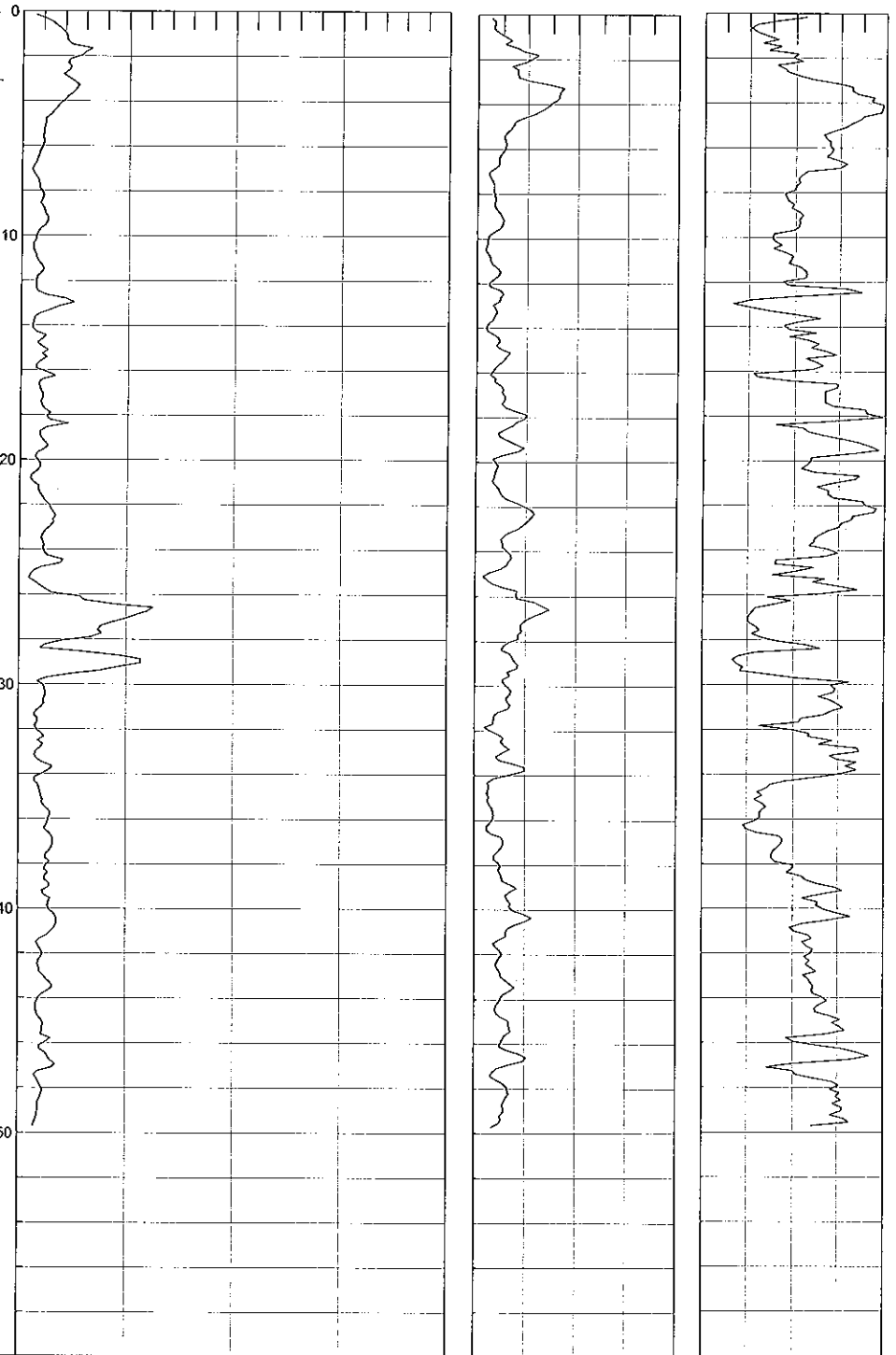
CONE PENETROMETER: HOLGUIN, FAHAN & ASSC. Truck Mounted Electric Cone with 23 ton reaction weight

DATE: 01/21/05

LOG OF CONE SOUNDING DATA CPT-5

DEPTH (FEET)	INTERPRETED SOIL PROFILE From Robertson & Campanella (1989)		
	GROUND EL. +/-		
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	hard
	Clayey Silt to Silty Clay	" "	hard
	Clay	CL/CH	hard
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	very stiff
	Silty Clay to Clay	" "	very stiff
10	Silty Clay to Clay	" "	stiff
	Silty Clay to Clay	" "	stiff
	Silty Clay to Clay	" "	very stiff
	Silty Clay to Clay	" "	very stiff
	Clay	CL/CH	stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
20	Clay	" "	very stiff
	Clay	" "	stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
	Clay	CL/CH	stiff
	Sandy Silt to Clayey Silt	ML	medium dense
	Sandy Silt to Clayey Silt	" "	medium dense
	Sandy Silt to Clayey Silt	" "	medium dense
30	Clayey Silt to Silty Clay	ML/CL	hard
	Clay	CL/CH	very stiff
	Clay	" "	stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clayey Silt to Silty Clay	ML/CL	stiff
	Sandy Silt to Clayey Silt	ML	loose
	Sandy Silt to Clayey Silt	" "	loose
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Silty Clay to Clay	CL	very stiff
40	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
50	Clay	" "	very stiff

End of Sounding @ 49.5 ft.



Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-5

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-5

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: 17.0 Phi (deg.)	Su (tsf)	OCR
0.15	0.5	20.51	3.33	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	2.00		70			1.21	>10
0.30	1.0	36.41	2.33	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	10	2.00	68.8	45	88	40		
0.45	1.5	43.01	3.02	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	12	2.00	81.3	50	85	40		
0.60	2.0	59.58	3.58	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	24	2.00		45			3.50	>10
0.75	2.5	43.83	3.65	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	18	2.00		55			2.57	>10
0.93	3.0	41.46	4.19	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	17	2.00		60			2.43	>10
1.08	3.5	50.53	6.26	3	Clay	CL/CH	hard	125	1.3	40	2.00		65			2.96	>10
1.23	4.0	43.39	7.18	3	Clay	CL/CH	hard	125	1.3	35	2.00		75			2.54	>10
1.38	4.5	32.44	7.82	3	Clay	CL/CH	very stiff	125	1.3	26	2.00		85			1.89	>10
1.53	5.0	23.32	6.77	3	Clay	CL/CH	very stiff	125	1.3	19	1.92		90			1.35	>10
1.68	5.5	20.25	5.63	3	Clay	CL/CH	very stiff	125	1.3	16	1.82		90			1.17	>10
1.83	6.0	19.40	5.58	3	Clay	CL/CH	very stiff	125	1.3	16	1.74		90			1.12	>10
1.98	6.5	15.51	5.62	3	Clay	CL/CH	stiff	125	1.3	12	1.67		95			0.89	>10
2.13	7.0	11.22	5.59	3	Clay	CL/CH	stiff	125	1.3	9	1.60		100			0.64	>10
2.28	7.5	13.73	4.19	3	Clay	CL/CH	stiff	125	1.3	11	1.55		90			0.78	>10
2.45	8.0	17.39	3.83	4	Silty Clay to Clay	CL	stiff	125	1.8	10	1.49		80			1.00	>10
2.60	8.5	18.94	3.73	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.47		80			1.09	>10
2.75	9.0	21.22	4.11	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	1.45		80			1.22	>10
2.90	9.5	23.56	4.17	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	1.42		75			1.36	>10
3.05	10.0	15.64	3.32	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.40		85			0.89	>10
3.20	10.5	11.70	3.18	4	Silty Clay to Clay	CL	stiff	125	1.8	7	1.38		95			0.66	>10
3.35	11.0	13.09	3.74	4	Silty Clay to Clay	CL	stiff	125	1.8	7	1.36		95			0.74	>10
3.50	11.5	18.76	4.12	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	1.35		90			1.07	>10
3.65	12.0	15.70	4.15	3	Clay	CL/CH	stiff	125	1.3	13	1.33		95			0.89	>10
3.80	12.5	14.36	5.66	3	Clay	CL/CH	stiff	125	1.3	11	1.31		100			0.81	>10
3.95	13.0	37.93	2.47	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	11	1.30	46.5	55	50	35		
4.13	13.5	27.02	2.99	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	1.28		70			1.55	>10
4.28	14.0	11.68	4.23	3	Clay	CL/CH	stiff	125	1.3	9	1.27		100			0.65	6.10
4.43	14.5	15.99	4.13	4	Silty Clay to Clay	CL	stiff	125	1.8	9	1.25		100			0.90	>10
4.58	15.0	18.16	4.80	3	Clay	CL/CH	very stiff	125	1.3	15	1.24		100			1.03	>10
4.73	15.5	22.85	5.22	3	Clay	CL/CH	very stiff	125	1.3	18	1.22		95			1.30	>10
4.88	16.0	17.86	4.29	3	Clay	CL/CH	very stiff	125	1.3	14	1.21		100			1.01	>10
5.03	16.5	22.71	3.99	4	Silty Clay to Clay	CL	very stiff	125	1.8	13	1.20		90			1.29	>10
5.18	17.0	19.15	5.54	3	Clay	CL/CH	very stiff	125	1.3	15	1.19		100			1.08	>10
5.33	17.5	19.81	5.47	3	Clay	CL/CH	very stiff	125	1.3	16	1.17		100			1.12	>10
5.48	18.0	24.63	7.42	3	Clay	CL/CH	very stiff	125	1.3	20	1.16		100			1.40	>10
5.65	18.5	32.18	4.50	4	Silty Clay to Clay	CL	very stiff	125	1.8	18	1.15		85			1.85	>10
5.80	19.0	18.89	5.36	3	Clay	CL/CH	very stiff	125	1.3	15	1.14		100			1.06	9.79
5.95	19.5	23.40	7.32	3	Clay	CL/CH	very stiff	125	1.3	19	1.13		100			1.33	>10
6.10	20.0	15.43	5.36	3	Clay	CL/CH	stiff	125	1.3	12	1.12		100			0.86	6.32
6.25	20.5	17.75	4.58	3	Clay	CL/CH	stiff	125	1.3	14	1.11		100			0.99	7.85
6.40	21.0	11.00	6.45	3	Clay	CL/CH	stiff	125	1.3	9	1.10		100			0.60	3.50
6.55	21.5	17.94	5.34	3	Clay	CL/CH	very stiff	125	1.3	14	1.09		100			1.00	7.41
6.70	22.0	23.81	6.64	3	Clay	CL/CH	very stiff	125	1.3	19	1.08		100			1.35	>10
6.85	22.5	30.99	7.25	3	Clay	CL/CH	very stiff	125	1.3	25	1.07		100			1.77	>10
7.00	23.0	30.31	6.23	3	Clay	CL/CH	very stiff	125	1.3	24	1.06		100			1.73	>10
7.18	23.5	22.19	5.22	3	Clay	CL/CH	very stiff	125	1.3	18	1.05		100			1.25	>10
7.33	24.0	22.11	5.04	3	Clay	CL/CH	very stiff	125	1.3	18	1.04		100			1.24	9.39
7.48	24.5	30.02	4.86	3	Clay	CL/CH	very stiff	125	1.3	24	1.04		95			1.71	>10
7.63	25.0	24.31	4.05	4	Silty Clay to Clay	CL	very stiff	125	1.8	14	1.03		100			1.37	>10
7.78	25.5	11.09	4.43	3	Clay	CL/CH	stiff	125	1.3	9	1.02		100			0.59	2.91
7.93	26.0	24.46	6.05	3	Clay	CL/CH	very stiff	125	1.3	20	1.01		100			1.38	>10
8.08	26.5	82.23	3.04	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	23	1.00	78.1	55	65	37		
8.23	27.0	109.43	2.09	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	24	1.00	103.3	40	73	38		
8.38	27.5	78.95	2.32	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	18	0.99	74.0	50	64	37		
8.53	28.0	61.10	2.70	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	17	0.99	57.0	60	56	36		
8.68	28.5	34.17	4.06	4	Silty Clay to Clay	CL	very stiff	125	1.8	20	0.98		90			1.94	>10
8.85	29.0	106.83	1.47	8	Sand to Silty Sand	SP/SM	dense	115	5.5	19	0.97	98.3	35	72	38		
9.00	29.5	72.55	2.13	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	16	0.97	66.4	50	60	36		
9.15	30.0	22.15	5.43	3	Clay	CL/CH	very stiff	125	1.3	18	0.96		100			1.24	7.00

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-5

Est. GWT (ft): 8.0 Phi Correlation: 0 (0-Schm(78),1-R&C(83),2-PHT(74))

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %	1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
9.30	30.5	24.25	5.60	3	Clay	CL/CH	very stiff	125	1.3	19	0.96		100			1.36	8.00
9.45	31.0	22.33	5.95	3	Clay	CL/CH	very stiff	125	1.3	18	0.95		100			1.24	6.76
9.60	31.5	15.82	5.14	3	Clay	CL/CH	stiff	125	1.3	13	0.94		100			0.86	3.83
9.75	32.0	16.35	3.57	4	Silty Clay to Clay	CL	stiff	125	1.8	9	0.94		100			0.89	5.00
9.90	32.5	20.90	5.04	3	Clay	CL/CH	very stiff	125	1.3	17	0.93		100			1.16	5.76
10.05	33.0	19.44	6.30	3	Clay	CL/CH	very stiff	125	1.3	16	0.92		100			1.07	5.00
10.20	33.5	17.89	6.11	3	Clay	CL/CH	stiff	125	1.3	14	0.92		100			0.98	4.28
10.38	34.0	27.46	6.43	3	Clay	CL/CH	very stiff	125	1.3	22	0.91		100			1.54	8.56
10.53	34.5	15.86	3.90	4	Silty Clay to Clay	CL	stiff	125	1.8	9	0.91		100			0.86	4.28
10.68	35.0	19.98	2.65	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	8	0.90		100			1.10	8.70
10.83	35.5	22.68	2.60	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	9	0.90		100			1.26	>10
10.98	36.0	28.54	2.57	6	Sandy Silt to Clayey Silt	ML	loose	115	3.5	8	0.89	24.1	90	30	32		
11.13	36.5	26.25	2.12	6	Sandy Silt to Clayey Silt	ML	loose	115	3.5	7	0.89	22.0	90	28	32		
11.28	37.0	31.73	3.47	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	13	0.88		95			1.79	>10
11.43	37.5	28.43	3.19	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.88		100			1.59	>10
11.58	38.0	26.55	3.43	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	11	0.87		100			1.48	>10
11.73	38.5	25.26	4.04	4	Silty Clay to Clay	CL	very stiff	125	1.8	14	0.87		100			1.40	8.27
11.88	39.0	27.17	5.18	3	Clay	CL/CH	very stiff	125	1.3	22	0.86		100			1.52	6.88
12.05	39.5	25.04	5.27	3	Clay	CL/CH	very stiff	125	1.3	20	0.86		100			1.39	6.00
12.20	40.0	27.93	5.17	3	Clay	CL/CH	very stiff	125	1.3	22	0.86		100			1.56	6.88
12.35	40.5	34.47	6.03	3	Clay	CL/CH	very stiff	125	1.3	28	0.85		100			1.94	>10
12.50	41.0	32.93	4.12	4	Silty Clay to Clay	CL	very stiff	125	1.8	19	0.85		100			1.85	>10
12.65	41.5	21.42	4.66	3	Clay	CL/CH	very stiff	125	1.3	17	0.84		100			1.17	4.28
12.80	42.0	20.86	4.77	3	Clay	CL/CH	very stiff	125	1.3	17	0.84		100			1.14	4.09
12.95	42.5	19.69	4.63	3	Clay	CL/CH	very stiff	125	1.3	16	0.83		100			1.07	3.66
13.10	43.0	21.17	4.78	3	Clay	CL/CH	very stiff	125	1.3	17	0.83		100			1.15	4.00
13.25	43.5	29.42	4.81	3	Clay	CL/CH	very stiff	125	1.3	24	0.82		100			1.64	6.65
13.40	44.0	23.66	5.02	3	Clay	CL/CH	very stiff	125	1.3	19	0.82		100			1.30	4.68
13.58	44.5	16.83	5.24	3	Clay	CL/CH	stiff	125	1.3	13	0.82		100			0.90	2.82
13.73	45.0	19.31	5.60	3	Clay	CL/CH	very stiff	125	1.3	15	0.81		100			1.04	3.35
13.88	45.5	22.98	6.06	3	Clay	CL/CH	very stiff	125	1.3	18	0.81		100			1.26	4.18
14.03	46.0	25.98	4.44	4	Silty Clay to Clay	CL	very stiff	125	1.8	15	0.80		100			1.43	6.54
14.18	46.5	21.86	6.03	3	Clay	CL/CH	very stiff	125	1.3	17	0.80		100			1.19	3.83
14.33	47.0	30.91	5.20	3	Clay	CL/CH	very stiff	125	1.3	25	0.80		100			1.72	6.54
14.48	47.5	17.03	4.34	3	Clay	CL/CH	stiff	125	1.3	14	0.79		100			0.90	2.57
14.63	48.0	21.22	5.85	3	Clay	CL/CH	very stiff	125	1.3	17	0.79		100			1.15	3.50
14.78	48.5	20.89	6.08	3	Clay	CL/CH	very stiff	125	1.3	17	0.79		100			1.13	3.43
14.93	49.0	18.70	6.06	3	Clay	CL/CH	stiff	125	1.3	15	0.78		100			1.00	2.91
15.10	49.5	16.64	6.15	3	Clay	CL/CH	stiff	125	1.3	13	0.78		100			0.88	2.34

CLIENT: D.R. Horton

PROJECT: Willowbend Subdivision

LOCATION: See Site and Boring Location Plan

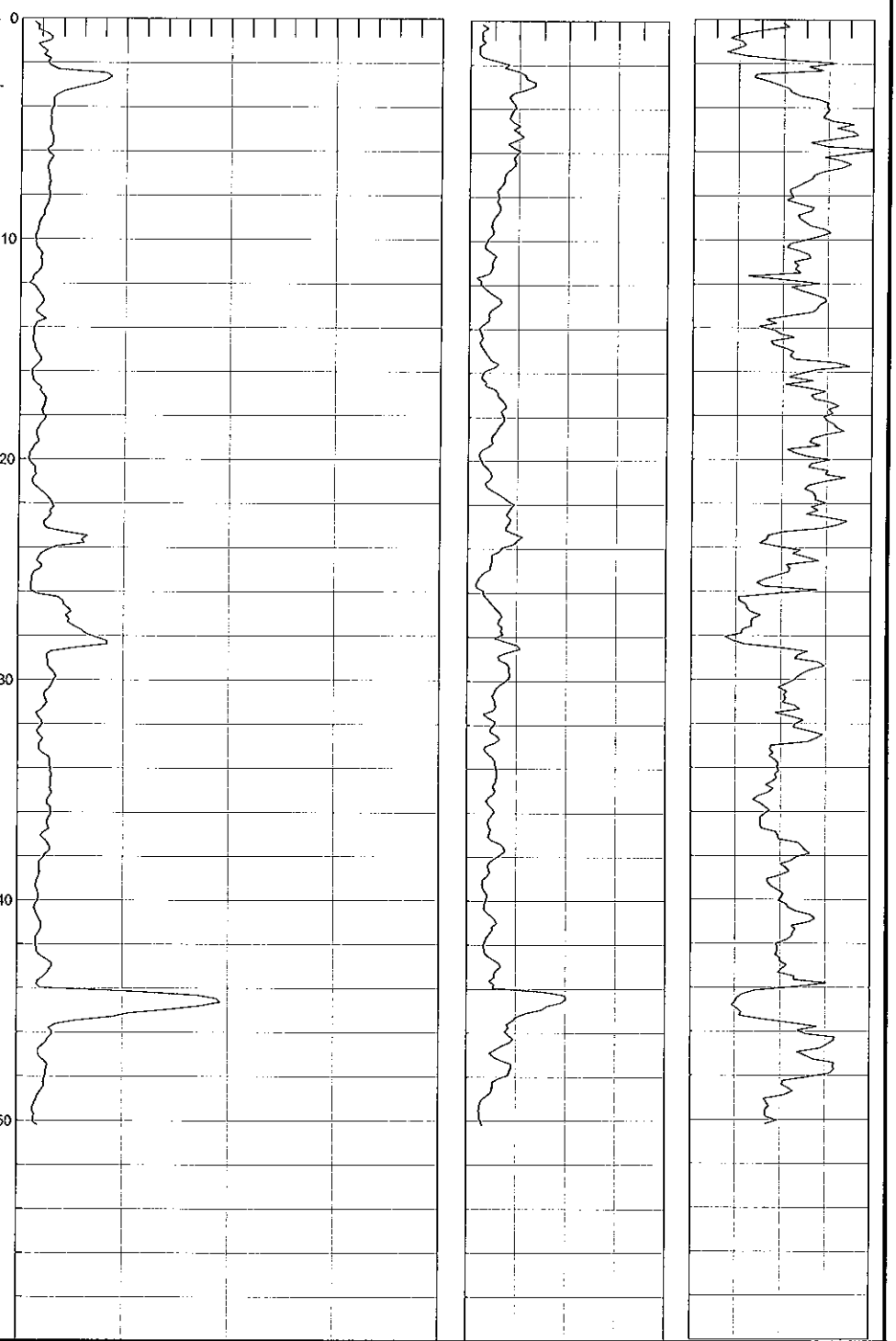
CONE PENETROMETER: HOLGUIN, FAHAN & ASSC. Truck Mounted Electric Cone with 23 ton reaction weight

DATE: 01/21/05

LOG OF CONE SOUNDING DATA CPT-6

DEPTH (FEET)	INTERPRETED SOIL PROFILE From Robertson & Campanella (1989)		
	GROUND EL. +/-		
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	hard
	Clay	CL/CH	hard
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
	Clay	CL/CH	very stiff
10	Clay	" "	stiff
	Clay	" "	very stiff
	Clay	" "	stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	stiff
	Clay	CL/CH	stiff
	Clay	" "	stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
20	Clay	" "	stiff
	Clay	" "	stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
	Clayey Silt to Silty Clay	ML/CL	hard
	Clay	CL/CH	very stiff
	Silty Clay to Clay	CL	stiff
	Sandy Silt to Clayey Silt	ML	medium dense
	Sandy Silt to Clayey Silt	" "	medium dense
	Clayey Silt to Silty Clay	ML/CL	hard
30	Clay	CL/CH	very stiff
	Silty Clay to Clay	CL	very stiff
	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clay	CL/CH	very stiff
	Silty Clay to Clay	CL	very stiff
40	Silty Clay to Clay	" "	very stiff
	Clay	CL/CH	very stiff
	Silty Clay to Clay	CL	very stiff
	Silty Clay to Clay	" "	very stiff
	Clay	CL/CH	very stiff
	Silty Sand to Sandy Silt	SM/ML	dense
	Clayey Silt to Silty Clay	ML/CL	hard
	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Silty Clay to Clay	CL	very stiff
50	Silty Clay to Clay	" "	stiff

End of Sounding @ 50.0 ft.



Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
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Plate B-6

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-6

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %		1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
0.15	0.5	14.95	3.71	4	4	Silty Clay to Clay	CL	stiff	125	1.8	9	2.00		85			0.88	>10
0.30	1.0	26.65	1.95	6	6	Sandy Silt to Clayey Silt	ML	dense	115	3.5	8	2.00	50.4	50	78	39		
0.45	1.5	19.98	1.88	6	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	6	2.00	37.8	60	62	37		
0.60	2.0	24.31	4.17	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	14	2.00		75			1.42	>10
0.75	2.5	47.28	4.55	4	4	Silty Clay to Clay	CL	hard	125	1.8	27	2.00		60			2.77	>10
0.93	3.0	78.65	3.23	6	6	Sandy Silt to Clayey Silt	ML	very dense	115	3.5	22	2.00	148.7	40	91	41		
1.08	3.5	42.52	4.42	4	4	Silty Clay to Clay	CL	hard	125	1.8	24	2.00		60			2.49	>10
1.23	4.0	30.62	5.79	3	3	Clay	CL/CH	very stiff	125	1.3	24	2.00		75			1.79	>10
1.38	4.5	28.21	5.88	3	3	Clay	CL/CH	very stiff	125	1.3	23	2.00		80			1.64	>10
1.53	5.0	28.10	6.56	3	3	Clay	CL/CH	very stiff	125	1.3	22	1.91		85			1.64	>10
1.68	5.5	29.40	6.47	3	3	Clay	CL/CH	very stiff	125	1.3	24	1.82		80			1.71	>10
1.83	6.0	26.93	7.08	3	3	Clay	CL/CH	very stiff	125	1.3	22	1.73		85			1.56	>10
1.98	6.5	28.33	6.48	3	3	Clay	CL/CH	very stiff	125	1.3	23	1.66		85			1.64	>10
2.13	7.0	25.84	5.91	3	3	Clay	CL/CH	very stiff	125	1.3	21	1.60		80			1.50	>10
2.28	7.5	27.04	4.96	3	3	Clay	CL/CH	very stiff	125	1.3	22	1.54		75			1.56	>10
2.45	8.0	26.85	4.34	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	15	1.49		70			1.55	>10
2.60	8.5	25.43	4.76	3	3	Clay	CL/CH	very stiff	125	1.3	20	1.47		75			1.47	>10
2.75	9.0	21.90	4.87	3	3	Clay	CL/CH	very stiff	125	1.3	18	1.44		85			1.26	>10
2.90	9.5	17.54	5.33	3	3	Clay	CL/CH	very stiff	125	1.3	14	1.42		95			1.00	>10
3.05	10.0	14.83	5.55	3	3	Clay	CL/CH	stiff	125	1.3	12	1.40		100			0.84	>10
3.20	10.5	16.41	4.40	3	3	Clay	CL/CH	stiff	125	1.3	13	1.38		95			0.93	>10
3.35	11.0	20.31	4.95	3	3	Clay	CL/CH	very stiff	125	1.3	16	1.36		90			1.16	>10
3.50	11.5	18.96	4.65	3	3	Clay	CL/CH	very stiff	125	1.3	15	1.34		90			1.08	>10
3.65	12.0	10.84	4.05	3	3	Clay	CL/CH	stiff	125	1.3	9	1.33		100			0.60	6.21
3.80	12.5	16.66	4.84	3	3	Clay	CL/CH	stiff	125	1.3	13	1.31		100			0.94	>10
3.95	13.0	21.45	5.79	3	3	Clay	CL/CH	very stiff	125	1.3	17	1.29		95			1.22	>10
4.13	13.5	17.00	5.02	3	3	Clay	CL/CH	stiff	125	1.3	14	1.28		100			0.96	>10
4.28	14.0	18.02	3.30	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	7	1.26		85			1.02	>10
4.43	14.5	12.63	4.02	3	3	Clay	CL/CH	stiff	125	1.3	10	1.25		100			0.70	6.54
4.58	15.0	13.46	3.73	4	4	Silty Clay to Clay	CL	stiff	125	1.8	8	1.23		100			0.75	9.39
4.73	15.5	18.22	4.43	3	3	Clay	CL/CH	very stiff	125	1.3	15	1.22		100			1.03	>10
4.88	16.0	14.26	5.89	3	3	Clay	CL/CH	stiff	125	1.3	11	1.21		100			0.80	7.13
5.03	16.5	13.95	4.59	3	3	Clay	CL/CH	stiff	125	1.3	11	1.19		100			0.78	6.65
5.18	17.0	21.06	5.44	3	3	Clay	CL/CH	very stiff	125	1.3	17	1.18		100			1.19	>10
5.33	17.5	24.12	6.01	3	3	Clay	CL/CH	very stiff	125	1.3	19	1.17		100			1.37	>10
5.48	18.0	22.82	6.05	3	3	Clay	CL/CH	very stiff	125	1.3	18	1.16		100			1.30	>10
5.65	18.5	21.01	6.22	3	3	Clay	CL/CH	very stiff	125	1.3	17	1.15		100			1.19	>10
5.80	19.0	16.72	6.00	3	3	Clay	CL/CH	stiff	125	1.3	13	1.14		100			0.94	7.70
5.95	19.5	15.07	5.04	3	3	Clay	CL/CH	stiff	125	1.3	12	1.13		100			0.84	6.21
6.10	20.0	9.27	5.26	3	3	Clay	CL/CH	firm	125	1.3	7	1.11		100			0.50	2.91
6.25	20.5	13.88	5.51	3	3	Clay	CL/CH	stiff	125	1.3	11	1.10		100			0.77	5.10
6.40	21.0	13.75	6.22	3	3	Clay	CL/CH	stiff	125	1.3	11	1.09		100			0.76	4.89
6.55	21.5	18.47	5.21	3	3	Clay	CL/CH	very stiff	125	1.3	15	1.09		100			1.03	7.85
6.70	22.0	29.09	5.64	3	3	Clay	CL/CH	very stiff	125	1.3	23	1.08		100			1.66	>10
6.85	22.5	30.82	5.35	3	3	Clay	CL/CH	very stiff	125	1.3	25	1.07		95			1.76	>10
7.00	23.0	25.55	6.50	3	3	Clay	CL/CH	very stiff	125	1.3	20	1.06		100			1.45	>10
7.18	23.5	45.54	4.40	4	4	Silty Clay to Clay	CL	hard	125	1.8	26	1.05		75			2.62	>10
7.33	24.0	52.58	3.40	5	5	Clayey Silt to Silty Clay	ML/CL	hard	120	2.5	21	1.04		65			3.04	>10
7.48	24.5	22.66	4.82	3	3	Clay	CL/CH	very stiff	125	1.3	18	1.03		100			1.27	9.59
7.63	25.0	20.24	4.75	3	3	Clay	CL/CH	very stiff	125	1.3	16	1.03		100			1.13	7.41
7.78	25.5	13.58	3.80	4	4	Silty Clay to Clay	CL	stiff	125	1.8	8	1.02		100			0.74	4.89
7.93	26.0	11.66	3.91	3	3	Clay	CL/CH	stiff	125	1.3	9	1.01		100			0.62	3.07
8.08	26.5	34.98	2.63	6	6	Sandy Silt to Clayey Silt	ML	loose	115	3.5	10	1.00	33.2	75	40	34		
8.23	27.0	47.67	2.74	6	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	14	1.00	44.9	65	49	35		
8.38	27.5	49.34	2.69	6	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	14	0.99	46.2	65	50	35		
8.53	28.0	65.92	2.02	7	7	Silty Sand to Sandy Silt	SM/ML	medium dense	115	4.5	15	0.98	61.3	50	58	36		
8.68	28.5	74.60	2.74	6	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	21	0.98	69.0	55	62	37		
8.85	29.0	28.42	4.85	3	3	Clay	CL/CH	very stiff	125	1.3	23	0.97		100			1.61	>10
9.00	29.5	29.53	5.65	3	3	Clay	CL/CH	very stiff	125	1.3	24	0.97		100			1.67	>10
9.15	30.0	34.64	4.76	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	20	0.96		95			1.97	>10

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Willowbend Subdivision Project No: LE05030 Date: 01/21/05

CONE SOUNDING: CPT-6

Est. GWT (ft): 8.0 Phi Correlation: 0 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth meters	Base Depth feet	Avg Tip Qc, tsf	Avg Friction Ratio, %		1 Soil Type	Soil Classification	USC	Density or Consistency	Est. Density (pcf)	Qc to N	SPT N(60)	Cn or Cq	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	Nk: Phi (deg.)	17.0 Su (tsf)	OCR
9.30	30.5	29.34	4.12	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	17	0.95		100			1.66	>10
9.45	31.0	26.14	4.15	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	15	0.95		100			1.47	>10
9.60	31.5	21.62	4.41	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	0.94		100			1.20	8.27
9.75	32.0	21.98	4.71	3	3	Clay	CL/CH	very stiff	125	1.3	18	0.93		100			1.22	6.32
9.90	32.5	19.96	5.21	3	3	Clay	CL/CH	very stiff	125	1.3	16	0.93		100			1.10	5.21
10.05	33.0	21.82	4.79	3	3	Clay	CL/CH	very stiff	125	1.3	17	0.92		100			1.21	6.00
10.20	33.5	24.37	3.56	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	10	0.92		100			1.36	>10
10.38	34.0	30.35	3.82	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.91		100			1.71	>10
10.53	34.5	31.27	3.84	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	13	0.91		95			1.76	>10
10.68	35.0	31.06	3.55	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.90		95			1.75	>10
10.83	35.5	29.99	3.08	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.90		95			1.69	>10
10.98	36.0	30.08	3.30	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.89		95			1.69	>10
11.13	36.5	29.15	3.14	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	12	0.89		95			1.64	>10
11.28	37.0	25.60	3.61	5	5	Clayey Silt to Silty Clay	ML/CL	very stiff	120	2.5	10	0.88		100			1.43	>10
11.43	37.5	28.36	4.55	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	16	0.88		100			1.59	>10
11.58	38.0	27.01	5.04	3	3	Clay	CL/CH	very stiff	125	1.3	22	0.87		100			1.51	7.00
11.73	38.5	21.02	4.25	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	0.87		100			1.15	6.00
11.88	39.0	20.21	3.93	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	12	0.86		100			1.11	5.42
12.05	39.5	18.10	3.62	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.86		100			0.98	4.47
12.20	40.0	19.77	4.04	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.85		100			1.08	5.10
12.35	40.5	16.74	4.42	3	3	Clay	CL/CH	stiff	125	1.3	13	0.85		100			0.90	3.14
12.50	41.0	20.99	5.39	3	3	Clay	CL/CH	very stiff	125	1.3	17	0.84		100			1.15	4.18
12.65	41.5	21.80	4.57	3	3	Clay	CL/CH	very stiff	125	1.3	17	0.84		100			1.19	4.37
12.80	42.0	17.65	4.21	4	4	Silty Clay to Clay	CL	stiff	125	1.8	10	0.84		100			0.95	3.91
12.95	42.5	19.55	3.84	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.83		100			1.06	4.57
13.10	43.0	30.69	4.09	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	18	0.83		100			1.71	>10
13.25	43.5	27.84	4.19	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	16	0.82		100			1.55	8.00
13.40	44.0	20.30	5.12	3	3	Clay	CL/CH	very stiff	125	1.3	16	0.82		100			1.10	3.66
13.58	44.5	156.13	2.45	7	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	35	0.81	120.3	45	78	39		
13.73	45.0	170.60	1.99	7	7	Silty Sand to Sandy Silt	SM/ML	dense	115	4.5	38	0.81	130.9	35	80	39		
13.88	45.5	85.04	2.58	6	6	Sandy Silt to Clayey Silt	ML	medium dense	115	3.5	24	0.81	65.0	60	60	36		
14.03	46.0	33.15	4.96	3	3	Clay	CL/CH	very stiff	125	1.3	27	0.80		100			1.85	7.56
14.18	46.5	29.88	5.99	3	3	Clay	CL/CH	very stiff	125	1.3	24	0.80		100			1.66	6.32
14.33	47.0	21.34	5.44	3	3	Clay	CL/CH	very stiff	125	1.3	17	0.80		100			1.16	3.66
14.48	47.5	27.47	6.08	3	3	Clay	CL/CH	very stiff	125	1.3	22	0.79		100			1.52	5.31
14.63	48.0	26.90	5.93	3	3	Clay	CL/CH	very stiff	125	1.3	22	0.79		100			1.48	5.00
14.78	48.5	25.07	4.20	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	14	0.79		100			1.37	5.76
14.93	49.0	19.62	4.01	4	4	Silty Clay to Clay	CL	very stiff	125	1.8	11	0.78		100			1.05	3.83
15.10	49.5	15.38	3.41	4	4	Silty Clay to Clay	CL	stiff	125	1.8	9	0.78		100			0.80	2.65
15.25	50.0	15.59	3.52	4	4	Silty Clay to Clay	CL	stiff	125	1.8	9	0.78		100			0.81	2.65

CLIENT: D.R. Horton
PROJECT: Willowbend Subdivision
LOCATION: See Site and Exploration Plan

METHOD OF EXCAVATION Backhoe
DATE OBSERVED 02/08/05
LOGGED BY E. Camacho

LOG OF TEST PIT T-1

SHEET 1 OF 1

DEPTH (FEET)	CLASSIFICATION	SAMPLE TYPE	BLOWS/ FOOT	POCKET PEN. (TSF)	DESCRIPTION OF MATERIAL SURFACE ELEV. +/-	MOISTURE CONTENT (%)	DRY UNIT WT. (PCF)	RELATIVE COMPACTION (%)	LIQUID LIMIT	PLASTICITY INDEX	PASSING # 200
1					FAT CLAY (CH): Brown, dry, very stiff	12.4*	90.0*				
2											
3											
4		●			SANDY SILT (ML): Sandy silt with fine sands, ligth brown, dry, medium dense. Fines with low to medium plasticity	5.0*	91.6*				85
5											
6					FAT CLAY (CH): Reddish brown, moist, medium stiff to stiff	21.0*	93.0*				
7											
8					Anticipated GW depth ▼						
9											
10					End of Exploration @ 10.0 ft.						
11					No groundwater encountered at the time of exploration *Nuclear densometer readings						

Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-7

CLIENT: D.R. Horton
PROJECT: Willowbend Subdivision
LOCATION: See Site and Exploration Plan

METHOD OF EXCAVATION Backhoe
DATE OBSERVED 02/08/05
LOGGED BY E. Camacho

LOG OF TEST PIT T-2

SHEET 1 OF 1

DEPTH (FEET)	CLASSIFICATION	SAMPLE TYPE	BLOWS/ FOOT	POCKET PEN. (TSF)	DESCRIPTION OF MATERIAL SURFACE ELEV. +/-	MOISTURE CONTENT (%)	DRY UNIT WT. (PCF)	RELATIVE COMPACTION (%)	LIQUID LIMIT	PLASTICITY INDEX	PASSING # 200
1					FAT CLAY (CH): Brown, dry, very stiff	8.3*	100.4*				
2											
3						8.3*	83.4*				
4					SANDY SILT (ML): Sandy silt with fine sands, ligth brown, dry, medium dense. Fines with low to medium plasticity						
5						19.3*	86.7*				
6					FAT CLAY (CH): Reddish brown, moist, medium stiff to stiff						
7											
8					Anticipated GW depth ▼						
9											
10					End of Exploration @ 10.0 ft.						
11					No groundwater encountered at the time of exploration *Nuclear densometer readings						

Project No: LE05030

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a DBE/MBE/SBE Company

Plate B-8

CLIENT: D.R. Horton
PROJECT: Willowbend Subdivision
LOCATION: See Site and Exploration Plan

METHOD OF EXCAVATION Backhoe
DATE OBSERVED 02/08/05
LOGGED BY E. Camacho

LOG OF TEST PIT T-3

SHEET 1 OF 1

DEPTH (FEET)	CLASSIFICATION	SAMPLE TYPE	BLOWS/ FOOT	POCKET PEN. (TSF)	DESCRIPTION OF MATERIAL SURFACE ELEV. +/-	MOISTURE CONTENT (%)	DRY UNIT WT. (PCF)	RELATIVE COMPACTION (%)	LIQUID LIMIT	PLASTICITY INDEX	PASSING # 200
1					FAT CLAY (CH): Brown, dry, very stiff	10.1*	83.6*				
2											
3						3.3*	99.8*				
4					SANDY SILT (ML): Sandy silt with fine sands, ligth brown, dry, medium dense. Fines with low to medium plasticity						
5						21.0*	85.3*				
6					FAT CLAY (CH): Reddish brown, moist, medium stiff to stiff						
7											
8					Anticipated GW depth ▼						
9											
10					End of Exploration @ 10.0 ft.						
11					No groundwater encountered at the time of exploration *Nuclear densometer readings						

Project No: LE05030

LANDMARK
Geo-Engineers and Geologists
a DBE/MBE/SBE Company

Plate B-9

CLIENT: D.R. Horton
PROJECT: Willowbend Subdivision
LOCATION: See Site and Exploration Plan

METHOD OF EXCAVATION Backhoe
DATE OBSERVED 02/08/05
LOGGED BY E. Camacho

LOG OF TEST PIT T-4

SHEET 1 OF 1

DEPTH (FEET)	CLASSIFICATION	SAMPLE TYPE	BLOWS/ FOOT	POCKET PEN. (TSF)	DESCRIPTION OF MATERIAL SURFACE ELEV. +/-	MOISTURE CONTENT (%)	DRY UNIT WT. (PCF)	RELATIVE COMPACTION (%)	LIQUID LIMIT	PLASTICITY INDEX	PASSING # 200
1					FAT CLAY (CH): Brown, dry, very stiff	10.4*	90.0*				
2											
3					SANDY SILT (ML): Sandy silt with fine sands, ligth brown, dry, medium dense. Fines with low to medium plasticity	3.7*	96.9*				
4											
5					FAT CLAY (CH): Reddish brown, moist, medium stiff to sti	15.0*	87.6*				
6											
7					Anticipated GW depth ▼						
8											
9											
10					End of Exploration @ 10.0 ft.						
11					No groundwater encountered at the time of exploration *Nuclear densometer readings						

Project No: LE05030

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Plate B-10

APPENDIX C

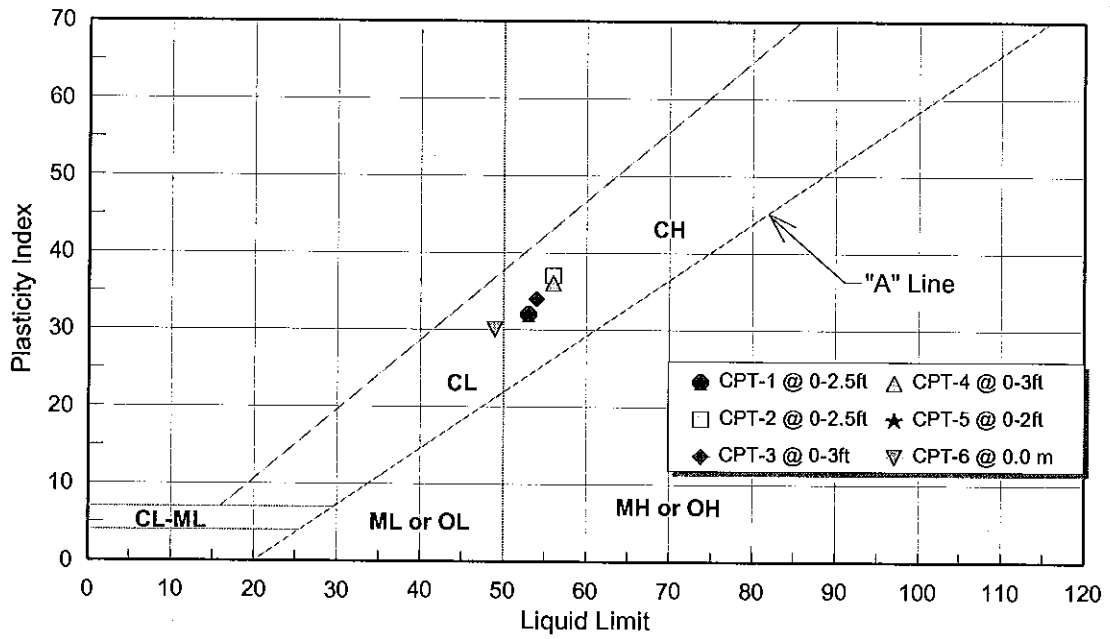
LANDMARK CONSULTANTS, INC.

CLIENT: D.R. Horton
PROJECT: Willowbend Subdivision
JOB NO: LE05030
DATE: 01/26/05

ATTERBERG LIMITS (ASTM D4318)

Sample Location	Sample Depth (ft)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	USCS Classif-ation
CPT-1	0-2.5	53	21	32	CH
CPT-2	0-2.5	56	19	37	CH
CPT-3	0-3	54	20	34	CH
CPT-4	0-3	56	20	36	CH
CPT-5	0-2	53	21	32	CH
CPT-6	0-2.5	49	19	30	CL

PLASTICITY CHART



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Project No: LE05030

Atterberg Limits Test Results

Plate C-1

LANDMARK CONSULTANTS, INC.

CLIENT: D.R. Horton
PROJECT: Willowbend Subdivision
JOB NO: LE05030
DATE: 01/27/05

CHEMICAL ANALYSES

Boring:	CPT-1	CPT-2	CPT-3	CPT-4	CPT-5	CPT-6	CalTrans
Sample Depth, ft:	0-2.5	0-2.5	0-3	0-3	0-2	0-2.5	Method
pH:	7.3	7.2	7.7	7.5	7.2	7.2	643
Electrical Conductivity (mmhos):	1.9	2.5	0.6	0.9	2.0	2.8	424
Resistivity (ohm-cm):	420	350	580	520	560	430	643
Chloride (Cl), ppm:	730	570	230	210	550	860	422
Sulfate (SO4), ppm:	2,841	4,742	516	1,074	3,235	5,385	417

General Guidelines for Soil Corrosivity

Material Affected	Chemical Agent	Amount in Soil (ppm)	Degree of Corrosivity
Concrete	Soluble Sulfates	0 -1000	Low
		1000 - 2000	Moderate
		2000 - 20,000	Severe
		> 20,000	Very Severe
Normal Grade Steel	Soluble Chlorides	0 - 200	Low
		200 - 700	Moderate
		700 - 1500	Severe
		> 1500	Very Severe
Normal Grade Steel	Resistivity	1-1000	Very Severe
		1000-2000	Severe
		2000-10,000	Moderate
		10,000+	Low

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Project No: LE05030

Selected Chemical Analyses Results

Plate C-2

APPENDIX D

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Appendix G: Hazardous Materials Assessments

Phase I ESA Report

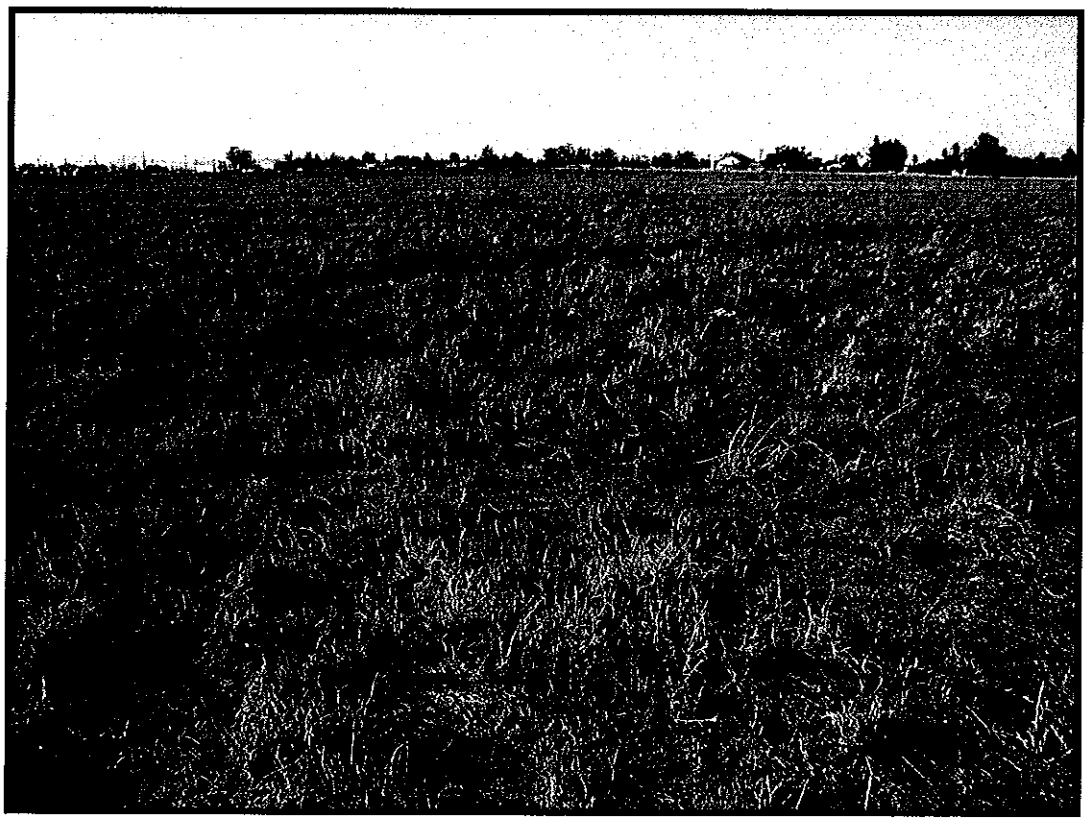
Willowbend Subdivision

SWC of Willowbend Drive and Highway 86

El Centro, California

Prepared for:

DR Horton
c/o Development Design & Engineering
1122 State Street
El Centro, CA 92243



Prepared by:

GS Lyon Consultants, Inc.
780 N. 4th Street
El Centro, CA 92243
(760) 337-1100

January 2006

GS Lyon

Engineering And
Information Technology

January 17, 2006

DR Horton
c/o Development Design & Engineering
1122 State Street
El Centro, CA 92243

Attn: Ms. Danielle DuBose

Phase I Environmental Site Assessment Report
40-Acre Willowbend Subdivision
El Centro, California
GSL Report No. GS0604

Dear Ms. DuBose:

We have performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527-00 of the approximately 40-acre property located at the southwest corner of Willowbend Drive and State Highway 86 in El Centro, California. Any exceptions to, or deletions from, this practice are described in Section 2.0 of this report. This assessment has revealed the following recognized environmental conditions (REC's) in connection with the property:

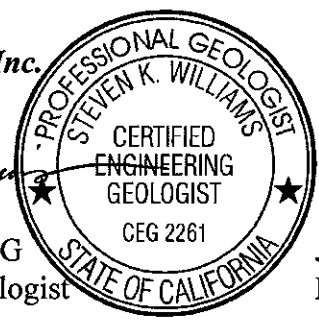
- Pesticide residues (low concentrations) typical to agricultural crop applications may be present in the near surface soils. GS Lyon sampled near surface soil from four (4) locations throughout the site. Results of the analyses were not available at the time of issuance of this report. The results will be submitted in an addendum report. ***A supplemental report will be issued.***

- Debris consisting of a wood pallet, dry brush, Styrofoam, cardboard and automobile tires is found at two locations of the subject site. ***The debris should be removed and properly disposed.***

40-acre Willowbend Subdivision
SWC Willowbend Drive and Highway 86 – El Centro, CA GSL Report No. GS0604

Attached is our report which describes the procedures used and results of the assessment. If you have any questions or require additional information, please do not hesitate to contact the undersigned at (760) 337-1100. We appreciate the opportunity to provide our professional review for this site.

Respectfully Submitted,
GS Lyon Consultants, Inc.





Steven K. Williams, CEG
Senior Engineering Geologist

Jeffrey O. Lyon, P.E.
Principal Engineer

Distribution:
Client (4)

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APPENDICES:
Appendix A: Site Photographs
Appendix B: Geologic and Soils Maps
Appendix C: Historical Aerial Photographs
Appendix D: Sanborn Fire Insurance Maps
Appendix E: EDR Environmental Records Search Report
Appendix F: Resumes of Environmental Professionals

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (ESA) is to identify potential environmental hazards associated with past and present activities on the subject site or in the immediate site vicinity in general conformance to ASTM Standard E-1527-00 "*Standard Practice for Environmental Site Assessments*". No environmental assessment can completely eliminate the possibility of hazardous material occurrences on a site. This ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the subject project.

1.2 Involved Parties

GS Lyon Consultants, Inc. has been retained by Danielle DuBose, of Development Design & Engineering, agents for DR Horton, to conduct a Phase I ESA at the project site as a prerequisite to property transaction (purchase, sale, refinance, etc.). The services outlined herein were performed in accordance with our "Proposal for Phase I Environmental Site Assessment (ESA) dated March 17, 2005, and confirmed by signed agreement dated January 5, 2006.

2.0 SCOPE OF WORK

2.1 Site Reconnaissance

A site reconnaissance was performed by an environmental technician of GS Lyon Consultants on January 10, 2006. The reconnaissance included visual observations of surficial conditions at the site and observation of adjoining properties to the extent that they were visible from public areas. The reconnaissance also included site observations for the presence of polychlorinated biphenyls (PCB's) and/or asbestos containing materials (ACM's), indications of surface or subsurface hydrocarbon or pesticide contamination, the presence of on-site groundwater wells, pits or sumps, wastewater discharge practices, and surface water drainage patterns. The observations made are presented in Sections 3.1 through 3.6 of this report.

2.2 Background Review

A review of historic topographic maps (Appendix B), historic aerial photographs (Appendix C), historic Sanborn Fire Insurance maps (Appendix D), and historic telephone and Polk City directories was performed to evaluate potentially adverse environmental conditions resulting from previous ownership and uses of the site. The details of the review are presented in Sections 4.1 through 4.5 of this report.

2.3 Regulatory Review

GS Lyon Consultants contracted Environmental Data Resources, Inc (EDR) of Southport, Connecticut to generate a compilation of State and Federal regulatory lists containing information regarding hazardous materials occurrences on or within a one mile radius of the project site. The EDR report is included in Appendix E. The details of the review are presented in Section 5.0 of this report.

2.4 Review of Title Documents/Environmental Liens

No title documents were provided by the client; therefore, GS Lyon did not investigate the presence of environmental liens on the subject property.

2.5 Analysis and Report Preparation

GS Lyon Consultants has reviewed the information outlined above and made inquiries of pertinent agencies regarding information gathered and general information about the site. This report summarizes the results of our study and provides our professional opinions regarding Recognized Environmental Concerns (REC's) on the site from past usage of the site and/or potential offsite sources and is presented in Section 6.0 of this report.

2.6 Radon Gas Testing

Due to the general absence of radon gas hazard in the Imperial County region of southern California, GS Lyon did not perform radon gas testing at the subject property.

3.0 SITE OVERVIEW

3.1 Site Location

The subject site is located at the southwest corner of Willowbend Drive and State Highway 86 (South Fourth Street) in southern El Centro, California. The site location is depicted on Plate 1, Site Map.

3.2 Site Description

Topographic maps (USGS 7.5 minute El Centro, CA Quadrangle) indicate that the site elevation is approximately 30 feet below mean sea level (MSL) or elevation 970 (local datum). The Imperial Irrigation District, which supplies power and raw (irrigation) water to the area, established local datum by equating mean sea level to El. 1000.00 feet.

The subject site is an approximately a 40-acre, flat-lying agricultural field which is currently fallow. Dried crop stubble and weeds cover the site. The site is almost square in plan view and bounded by the Date Drain No. 3, an earthen irrigation run-off water ditch, on the north and west. State Highway 86 (South Fourth Street) defines the eastern boundary, and a concrete lined head ditch forms the southern boundary to the subject site.

Three automobile tires were noted near the northeast corner along the northern boundary of the subject site. A wood pallet, cardboard box and large piece of Styrofoam were noted along the northern boundary of the subject site

Photographs of the site taken on January 10, 2006 during our site reconnaissance are included in Appendix A.

3.3 Adjacent Properties

The site is located in a rural area between agricultural fields and residential areas in southern El Centro, California.

Properties to the north of the Date Drain No. 3 consist of rural single family residential homes. Properties to the east of State Highway 86 consist of a newly constructed residential subdivision (Countryside Estates). Properties to the south consist of agricultural fields in production. A fallow agricultural field is located to the west across the Date Drain No. 3.

3.4 Geologic Setting

The site is located in the Colorado Desert Physiographic province of southern California. The dominant feature of the Colorado Desert province is the Salton Trough, a geologic structural depression resulting from large-scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and the southwest by faults of the San Jacinto Fault Zone. The Salton Trough represents northward extension of the Gulf of California, which has experienced continual in-filling with both marine and non-marine sediments since the Miocene Epoch (25 million years before present). The tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of historic seismicity.

The site is directly underlain by Holocene (0-11,000 years before present) Cahuilla Lake sediments, which consist of interbedded lenticular and tabular sand, silt, and clay. The predominant surface soil is silty clay. The Holocene lake deposits are considered to be less than 100 feet thick and are characterized by surficial clay and silt deposits with varying amounts of fine sand. The topography of the Imperial Valley is relatively flat, with few significant land features. The valley floor slopes gently to the north (less than 0.5 percent) from an elevation of sea level at Calexico to approximately 225 feet below sea level at the Salton Sea.

3.5 Soil Conditions

The U. S. Soil Conservation Service compiled a map of surface soil conditions based on a thirteen-year study from 1962-1975. The Soil Survey maps were published in 1981 and indicate that surficial deposits at the site and surrounding area consist predominantly of silty clay and silty clay loams of the Imperial soil group (see Appendix B). These loams are formed in sediment and alluvium of mixed origin (Colorado River overflows and fresh-water lake-bed sediments). Based on Unified Soil Classification System presented in the Soils Survey Report, the permeability of these soils is expected to be low to very low.

3.6 Groundwater Conditions

The groundwater in the site area is brackish and is encountered at a depth of 8 to 10 feet below the ground surface. Depth to groundwater may fluctuate due to localized geologic conditions, precipitation, irrigation, drainage and construction practices in the region. Based on the regional topography, groundwater flow is assumed to be generally towards the north within the site area. Flow directions may also vary locally in the vicinity of the site.

4.0 SITE HISTORY AND OPERATIONS

4.1 Historical Aerial Photo Review

Aerial photographs from the Imperial Irrigation District (IID) archives dating back to 1949 were reviewed for historical development of the subject site.

The 1949 aerial photograph shows the subject site to be a agricultural field in production. There is a single family residential home outside the margins of the subject site to the south and another to the southeast. The subject site is surrounded by agricultural fields to the north, south, east and west.

The 1965 and 1972 aerial photographs are similar to the 1949 aerial photograph.

The 1979 aerial photograph shows single family rural homes north of the subject site.

The 1984 and 1992 aerial photographs are similar to the 1979 aerial photograph.

Reproductions of the historical aerial photographs reviewed are included in Appendix C.

4.2 Sanborn Fire Insurance Map Review

Sanborn Fire Insurance Maps are large scale maps depicting the commercial, industrial, and residential sections of various cities across the United States. Since the primary use of the fire insurance maps was to assess the buildings that were being insured, the existence and location of fuel storage tanks, flammable or other potentially toxic substances, and the nature of businesses are often shown on these maps.

Due to the rural undeveloped nature of the site, no Sanborn Fire Insurance Maps were available for this site. A "No Coverage" letter for the Sanborn Fire Insurance Maps is included in Appendix D.

4.3 Review of Historic Topographic Maps

Historic topographic maps, USGS 7.5 Min. El Centro, California Quadrangle, did not show development on the site.

4.4 Review of Historic Telephone and Polk Directories

Telephone directories for the Imperial County, which included the City of El Centro businesses published in 1941, 1955, 1964, 1974 and 1994 were reviewed. No service stations, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted at or in the immediate vicinity of the site.

City directories are used for locating individuals and businesses in a particular urban or suburban area. City directories are generally divided into three sections: a business index, a list of resident names and addresses, the name and type of businesses (if unclear from the name). While city directory coverage is comprehensive for major cities, it may be spotty for rural and small towns. The Polk City Directory for the year 1963 was reviewed. The subject site is not covered by the Polk Directory due to the rural nature of the site.

4.5 Review of Title Information/Environmental Liens

No title documents were provided by the client for our review and no checks for environmental liens were made.

4.6 Other Information

Wetlands: No wetlands are located within one (1) mile of the subject property.
Sewer/water: Sewer and potable water service are not currently provided to the subject site.
Building Construction Materials: The risk of asbestos containing materials (ACM) and lead based paint existing at the subject property is unlikely due to lack of prior site development.
Seismic Faults: The nearest seismic fault (Imperial Fault) is located about 5.9 miles northeast of the site. Strong ground shaking can be expected for magnitudes of 6.0 to 7.2 events. The recurrence interval for 6.0M events on the Imperial Fault is 29 years.
Airport Zone: The subject site is not located within an Airport Compatibility Zone.
Industrial Areas: There are no industrial areas within 1.0 mile of this site.

5.0 REGULATORY RECORDS REVIEW

The following is a brief synopsis of sites identified in the Environmental Data Resources (EDR) report. The report is included in its entirety in Appendix E.

A review of the EDR report identified the following sites located within 1 mile as potential risks to the subject site:

1: Gene's 76. Located at 2390 South Fourth Street. This site had leaking underground tanks which were removed. The case was review in 1989 and closed by the Colorado Regional Water Quality Control Board in 1996.

Several known underground storage tank sites located within ½ to 1 mile of the site were identified in the EDR report. Because of their distance from the site, it is considered unlikely that prior or future hydrocarbon or agricultural chemical spills or releases would affect the site unless groundwater contamination and transport occurred.

Typical agricultural practices in the Imperial Valley consist of aerial and ground application of pesticides and application of chemical fertilizers to both ground and irrigation water. Many agricultural fields are burned after crop removal (wheat stubble, asparagus, etc.). Most of the agricultural fields in the valley are underlain by tile drainage systems (perforated pipelines encapsulated by sand/gravel envelope) installed at a depth of approximately 5 to 7 feet below the ground surface. The tile drains remove excess water to maintain groundwater below the root systems of crops and remove soluble salts and compounds leached from the soil during irrigation. The tile drain pipelines flow or are pumped into the open earthen drains/ditches such as the Date Drain No. 3 along the west and north margins of the site. According to the tile drain map (Appendix B, Plate 5), excess water is transferred to the Date Drain No. 3 at the northeast corner of the site.

The U.S. Geologic Survey, at the request of the Imperial Irrigation District (IID), performed a "one-time" water quality study of 27 irrigation drains throughout the Imperial Valley during the summer of 1994. Review of the study results indicate that the drains sampled contained less than the regulatory limits of arsenic, selenium, and nitrites for drinking water.

6.0 DISCUSSION AND CONCLUSIONS

We have performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527 of the proposed 80-acre Willowbend Subdivision in El Centro, California. Any exceptions to, or deletions from, this practice are described in Section 2.0 of this report. This assessment has revealed the following Recognized Environmental Conditions (REC's) for the study site:

- Based on our review of environmental records, historical documents, and site conditions, the property has been in agricultural use and/or vacant since the late 1940's. Residues of currently available pesticides and currently banned pesticides such as DDT/DDE may be present in near surface soils in limited concentrations (usually less than ¼ of EPA action levels).

  GS Lyon sampled near surface soil for pesticide residue concentrations from four (4) locations throughout the site. Results of the analyses were not available at the time of issuance of this report. ***The results will be submitted in an addendum report.***

- We did not identify any prior site uses (other than the agricultural use described above) that are associated with the manufacture, use or storage of hazardous materials on the site.

- Debris consisting of a wood pallet, dry brush, Styrofoam, cardboard and automobile tires is found at two locations of the subject site. ***The debris should be removed and properly disposed.***

- The potential for contamination of the site by PCB's is unlikely due to the lack of electrical transformers on the subject site. ***No action is recommended.***

- The potential for asbestos-containing materials and lead based paint existing at the site is considered to be unlikely due to the lack of site improvement. ***No action is recommended.***

- Radon gas is not believed to be a potential hazard at the site. A report titled "California Statewide Radon Survey-Screening Results", dated November 1990 and published by the California State Department of Health Services, notes that Southern California showed a low risk of elevated radon levels, based on 2-day tests conducted from January through April 1990. Some of the reported testing was performed in Imperial County; however, no data was observed as being at or near the project site. The EDR report (Appendix E, Page A-8) indicates Imperial County lies within the EPA Radon Zone 3 (<2pCi/L). ***No action is recommended.***

7.0 LIMITATIONS

The data presented and the opinions expressed in this report are qualified as follows:

- Our assessment of the site and surrounding areas was conducted in accordance with ASTM guidelines and the *generally accepted environmental engineering standard of practice* which existed in Imperial County, California at the time that the report was prepared. No warranty, express or implied, is made.

- The sole purpose of the investigation and of this report is to assess the physical characteristics of the site with respect to the presence or absence in the environment of oil or hazardous materials and substances as defined in the applicable state and federal environmental laws and regulations and to gather information regarding current and past usages that may result in adverse environmental conditions at the site.

- GS Lyon Consultants, Inc. derived the data in this report primarily from visual inspections, examination of public records and information in the public domain, informal interviews with individuals, and readily available information about the site. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration of the site, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in the report.

- In preparing this report, GS Lyon Consultants, Inc. has relied upon and presumed accurate certain information (or the absence thereof) about the site and adjacent properties by governmental officials and agencies, the Client, and others identified herein. Except as otherwise stated in the report, GS Lyon Consultants has not attempted to verify the accuracy or completeness of any such information.

- The findings, observations, and conclusions expressed by GS Lyon Consultants in this report are not, and should not be considered, an opinion concerning the compliance of any past or present owner or operator of the site with any federal, state or local law or regulation.

- No warranty or guarantee, express or implied, is made with respect to the data reported or findings, observations, and conclusions expressed in this report. Further, such data, findings, observations, and conclusions are based solely upon site conditions in existence at the time of investigation.

- This report has been prepared on behalf of and for the exclusive use of the Client for the particular site identified in this report, and is subject to and issued in connection with the referenced Agreement and the provisions thereof. This report should not be relied upon by any party other than the client, its legal counsel, and financial institution without the express permission of GS Lyon Consultants, Inc.

APPENDIX A



Photo 1: Looking south from northeast corner of the site.

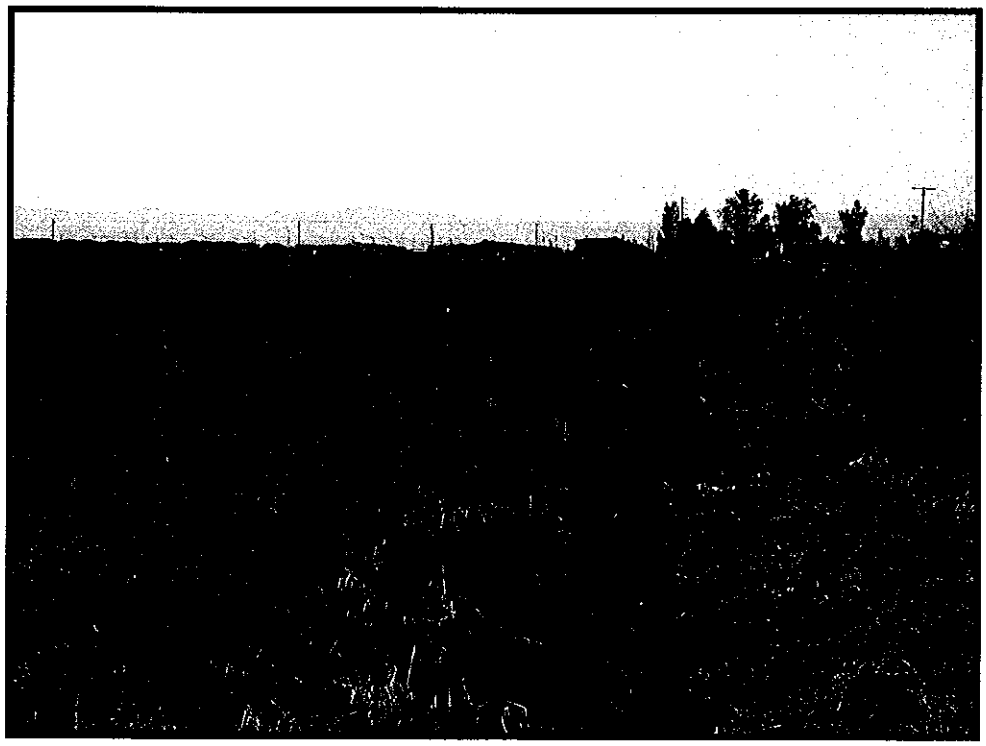


Photo 2: Looking west from northeastern corner of the site.

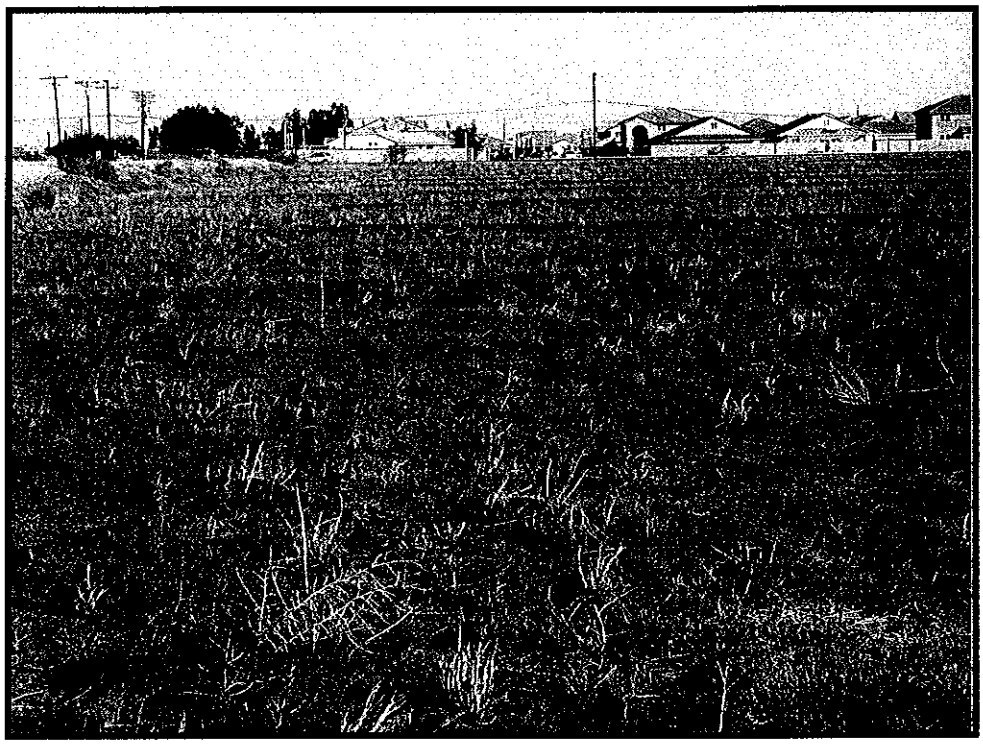


Photo 3: Looking east from the northwest corner of the site.

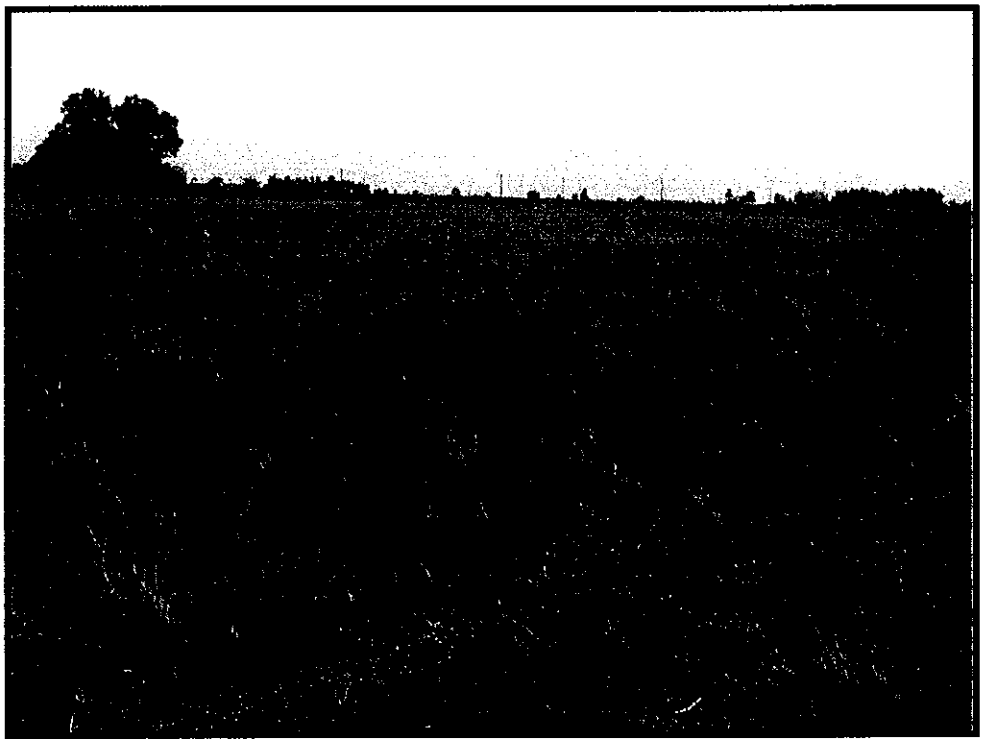


Photo 4: Looking south from the northwest corner of the site.



Photo 5: Looking east from northwest corner of the site.

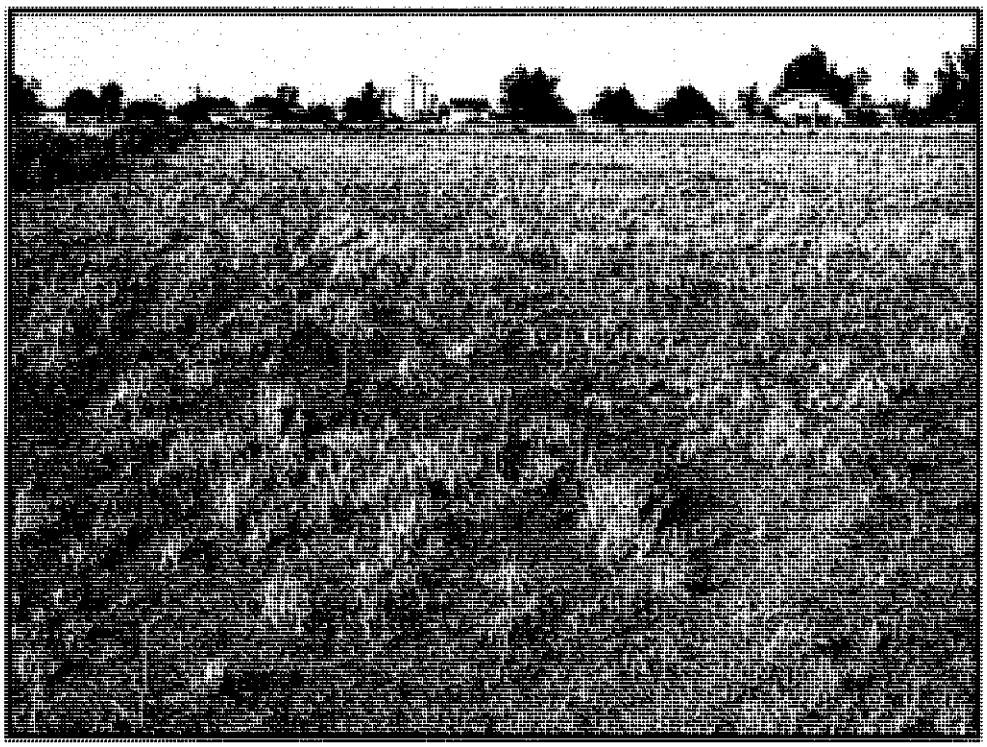


Photo 6: Looking north from the southwest corner of the site.

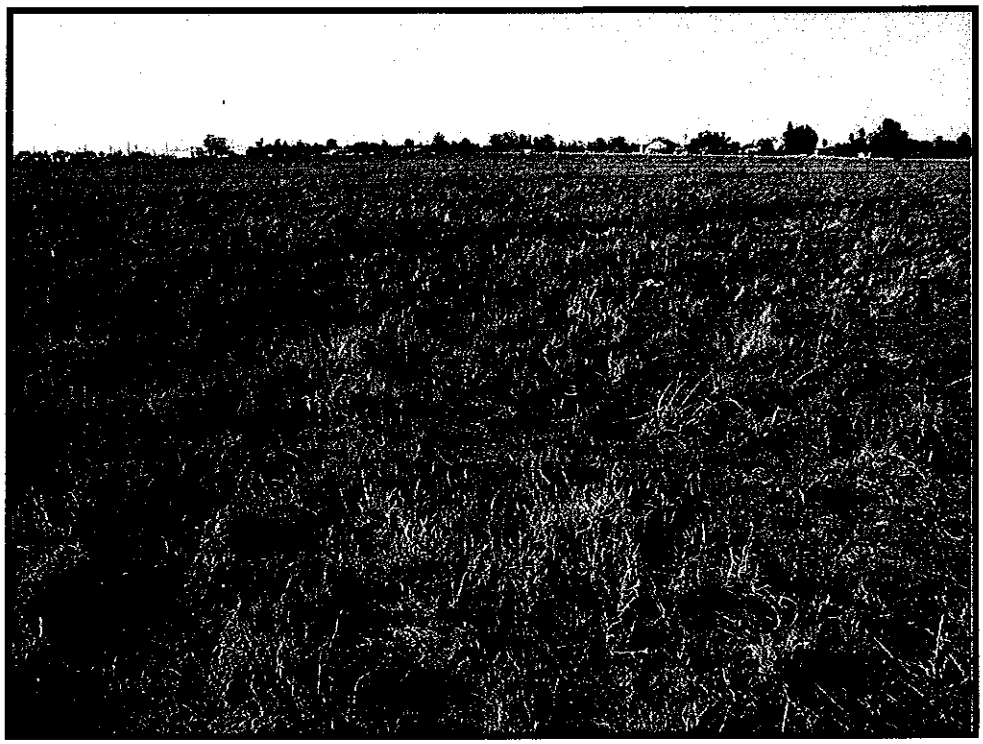


Photo 7: Looking northwest from the southeast corner of the site.

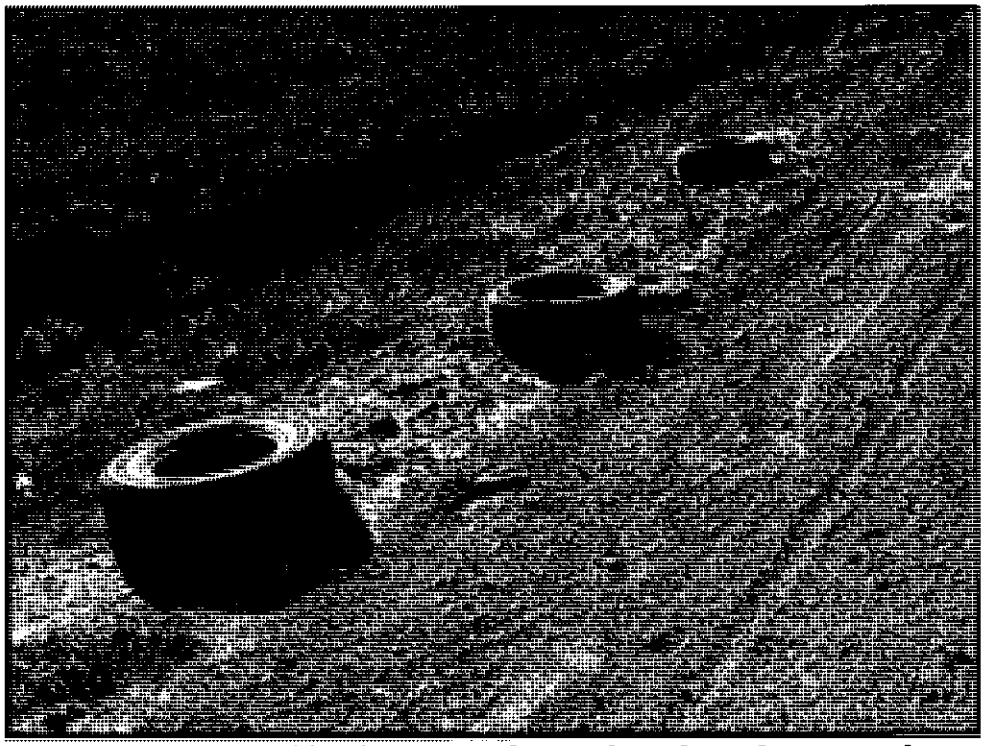
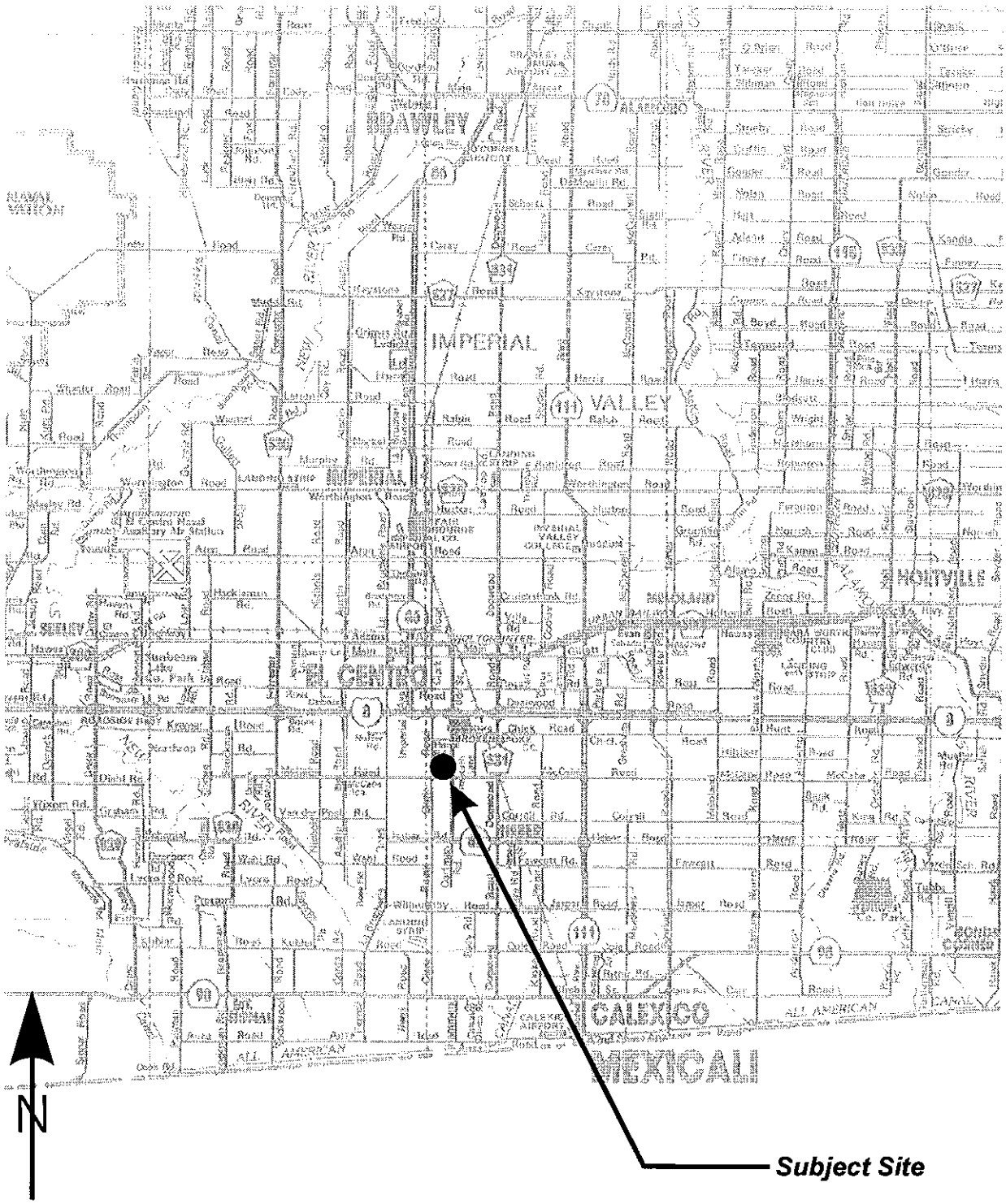


Photo 8: Automobile tires along the northern boundary near the northeast corner of the site

APPENDIX B

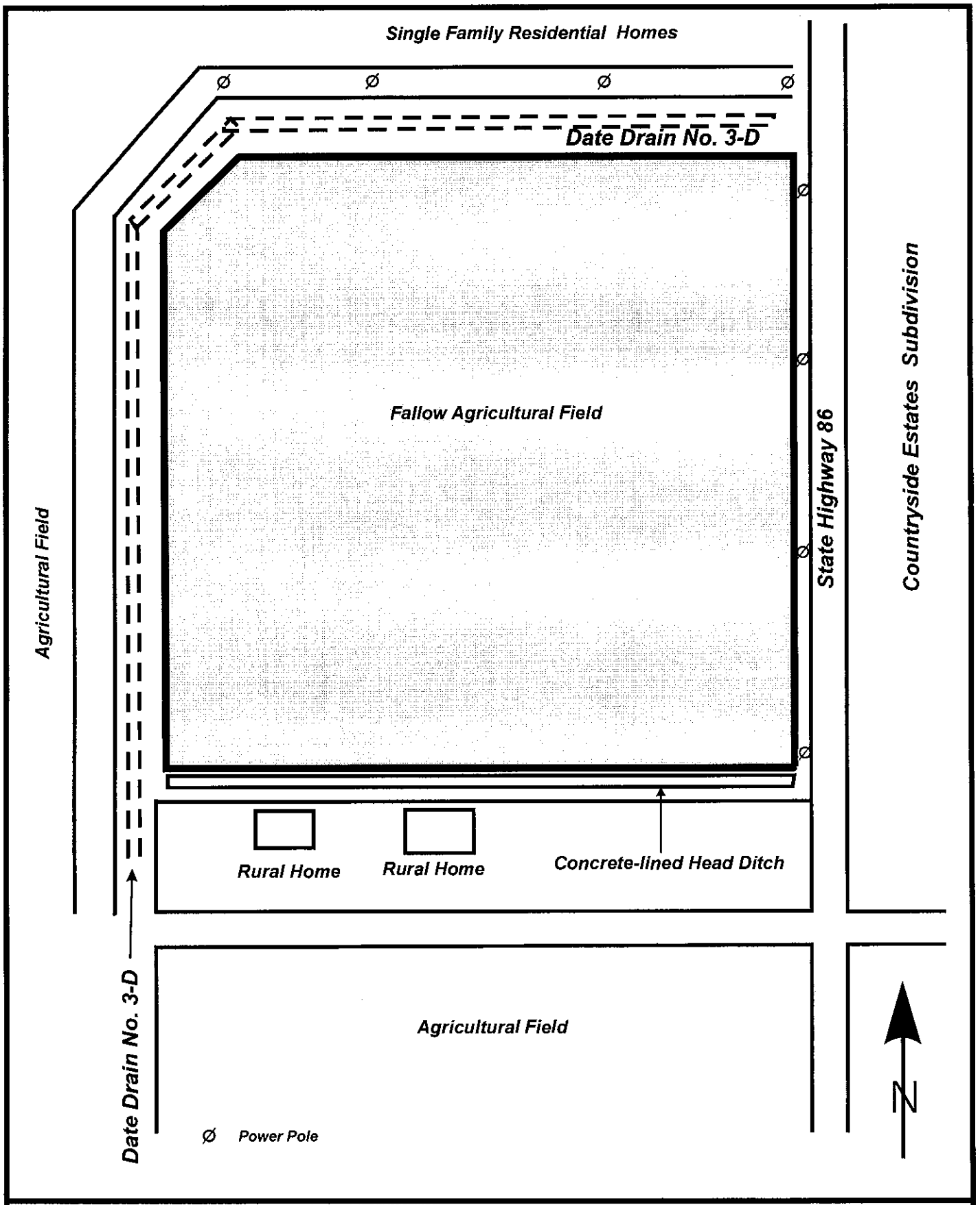


GS Lyon

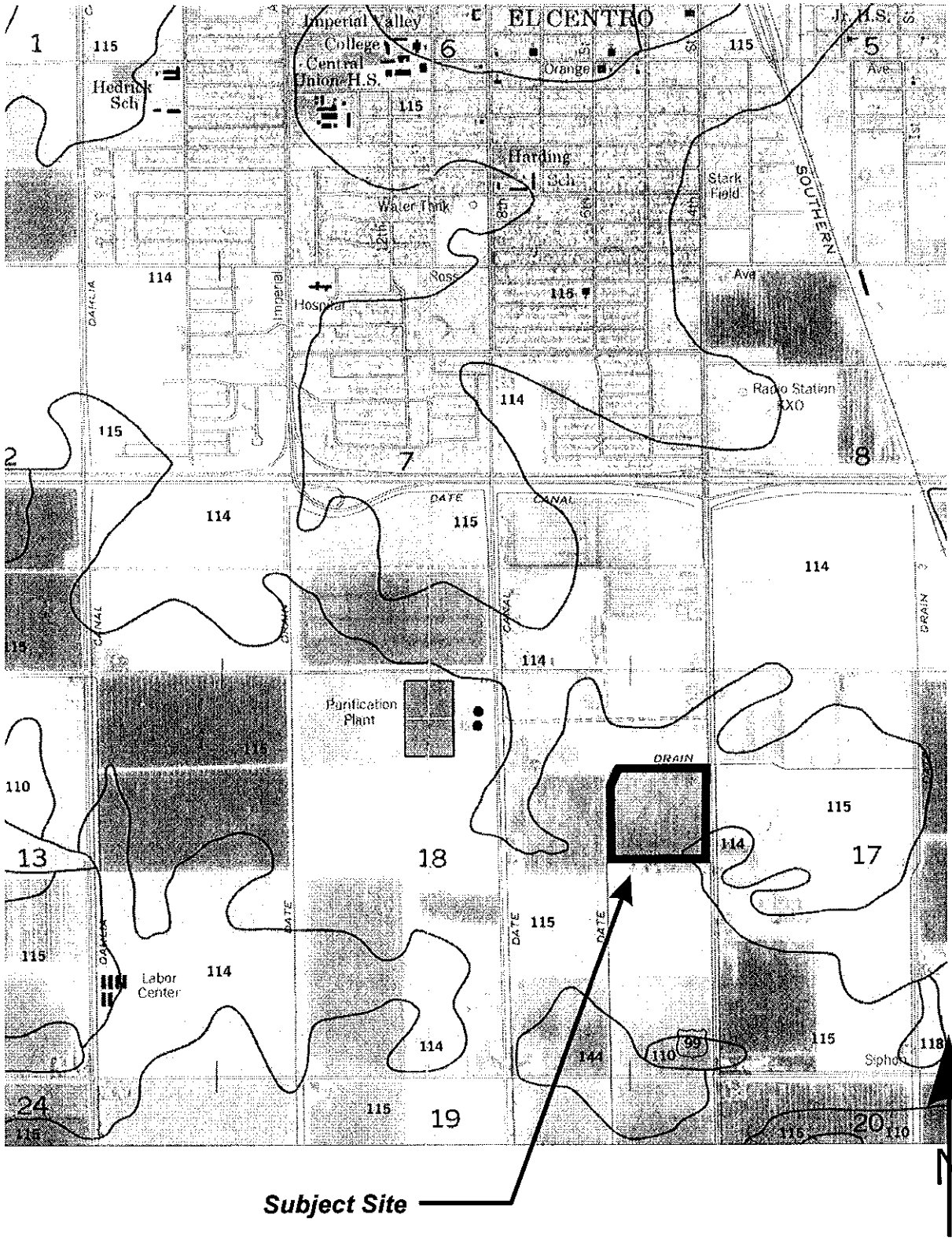
Project No.: GS0604

Vicinity Map

Plate 1



GS Lyon Project No.: GS0604	Site Map	Plate 2



GSE Lyon		
Project No.: GS0604	Soil Survey Map	Plate 3

Soil Survey of

IMPERIAL COUNTY CALIFORNIA IMPERIAL VALLEY AREA

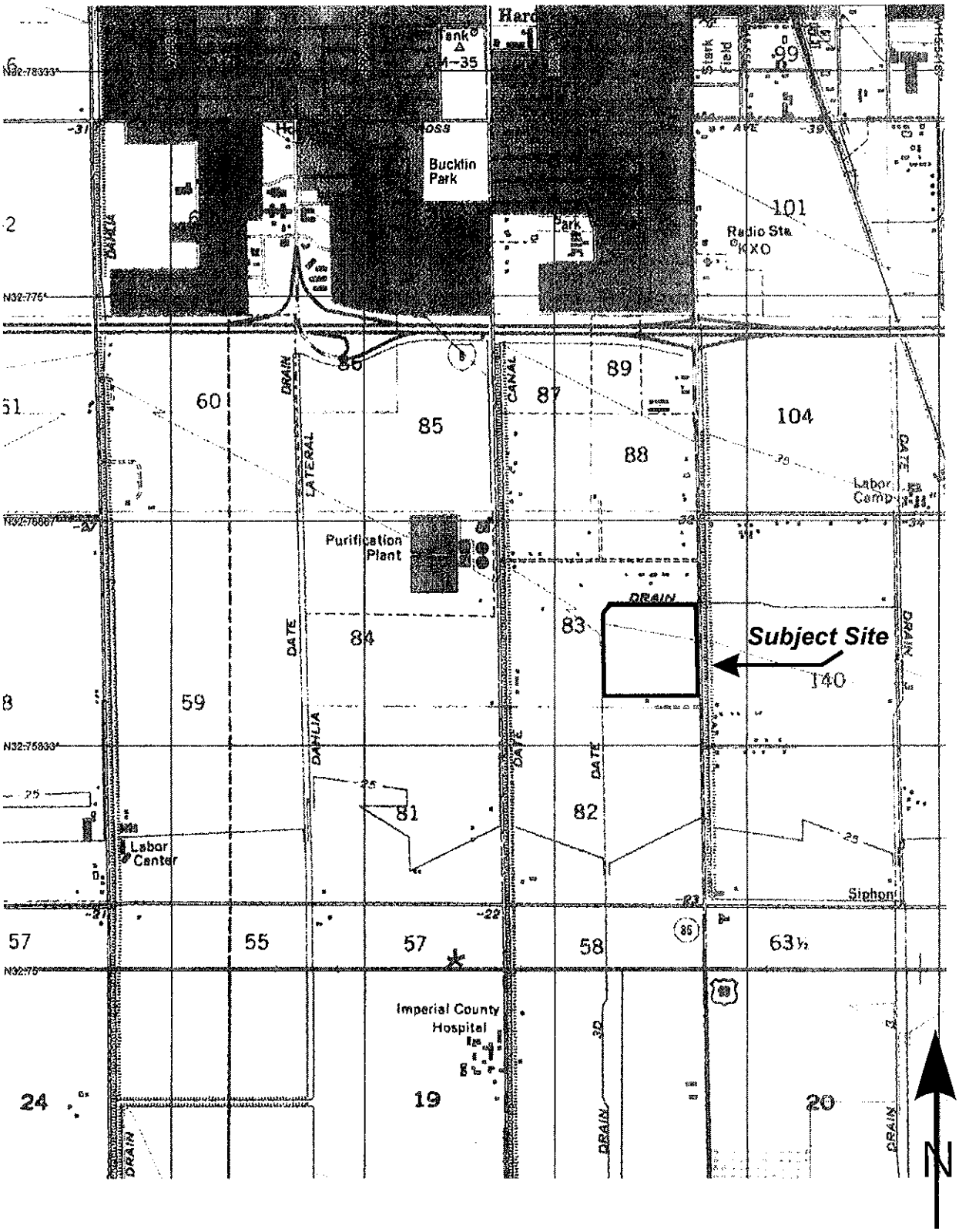


United States Department of Agriculture Soil Conservation Service
in cooperation with
University of California Agricultural Experiment Station
and
Imperial Irrigation District

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

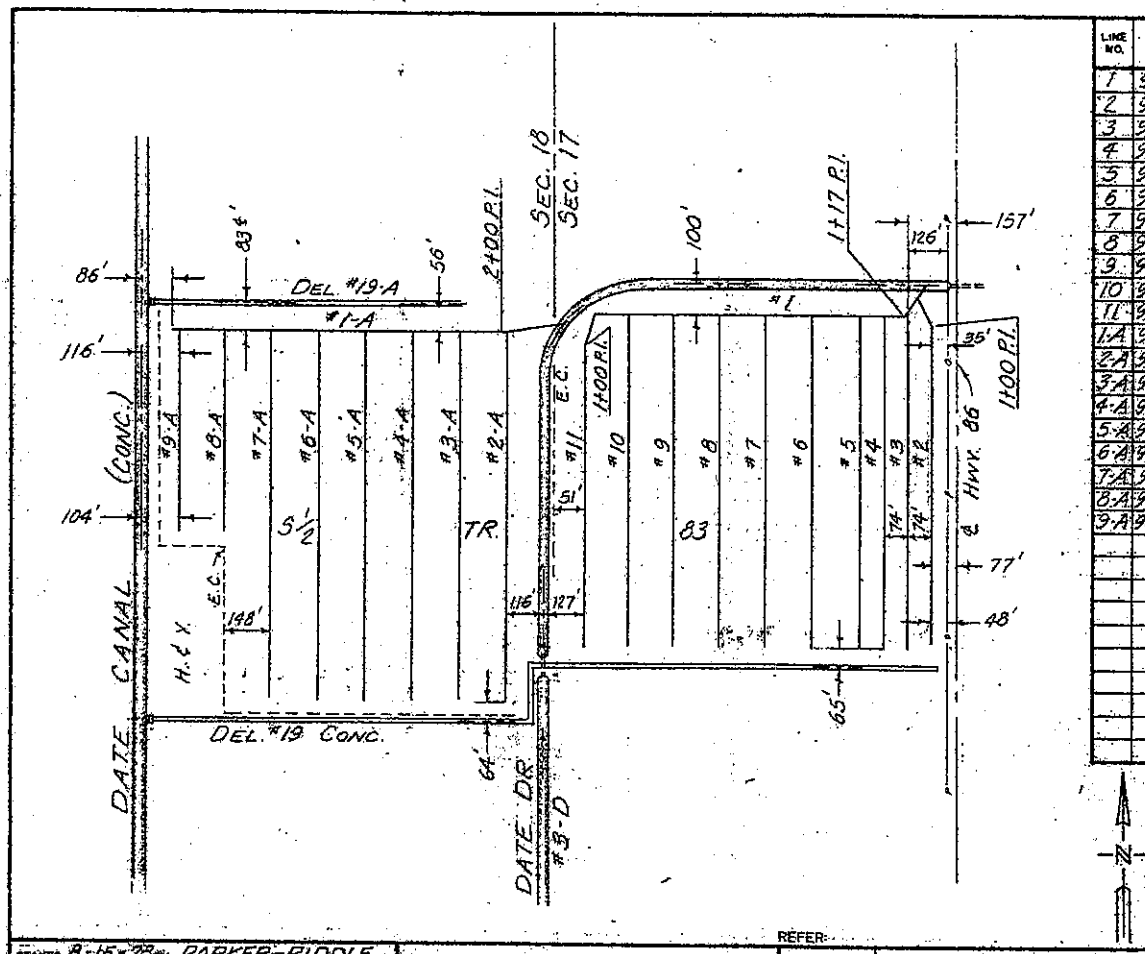
Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
111*:											
Holtville	0-10	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	10-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
112	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
113	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	100	85-95	50-70	25-45
114	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
115*:											
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
116*:											
Imperial	0-13	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	13-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
117, 118	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Indio	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
119*:											
Indio	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Vint	0-10	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	25-35	---	NP
	10-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
120*	0-12	Loam	ML, CL-ML	A-4	0	100	95-100	75-85	55-65	20-30	NP-10
Laveen	12-60	Loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	85-95	70-80	55-65	15-25	NP-10

See footnote at end of table.



GS Lyon Project No.: GS0604	Topographic Map	Plate 4

TD-3485-1



LINE NO.	OUTLET ELEV.	SLOPE	TILE DEPTH STA 1+00	TILE DEPTH END TILE	OUTLET STA. 0+00=	STAKED FOOTAGE	TILE INSTALLED 8"	8"	6"
1	963.50	.001	6.1	5.3	T.O.	1100	1100		
2	963.70	.0015	5.8	6.1	0+47 #1	1111			1111
3	963.90	.001	5.7	6.4	0+99 #1	1070			1070
4	963.90		5.6	6.4	1+79 #1	1057			1057
5	964.00		5.7	6.3	2+53 #1	1057			1057
6	964.10		5.3	6.2	4+00 #1	1057			1057
7	964.20		5.4	6.2	5+47 #1	1058			1058
8	964.40		5.3	6.1	6+95 #1	1059			1059
9	964.50		5.4	6.0	8+43 #1	1059			1059
10	964.70		5.3	5.8	9+90 #1	1060			1060
11	964.70		5.1	5.8	11+00 #1	1065			1065
1-A	964.00		5.8	5.6	T.O.	1257		1257	
2-A	964.50		5.6	6.2	1+84 #1A	1186			1186
3-A	964.60		5.7	6.4	3+36 #1A	1184			1184
4-A	964.80		5.6	6.4	4+85 #1A	1182			1182
5-A	964.90		5.5	6.5	6+35 #1A	1180			1180
6-A	965.10		5.4	6.3	7+85 #1A	1178			1178
7-A	965.20		5.4	6.3	9+35 #1A	1176			1176
8-A	965.40		5.3	5.4	10+85 #1A	640			640
9-A	965.50	.001	5.3	5.6	12+35 #1A	640			640

B.M. ~ "+" CHIPPED ON THE UPSTR. W.W. OF CHK. IN DOGWOOD LAT. 2 @ DEL. 28

Elevation 973.01 F.B. 6746 19

LEGEND

STKD 8-15-78

IMPERIAL IRRIGATION DISTRICT
ENGINEERING DEPARTMENT
IMPERIAL, CALIFORNIA

TILE DRAIN CONSTRUCTION

PT. SO. ½ TR. 83

PROP. O. ESHELMAN T. 16 S.-R. 14 E.

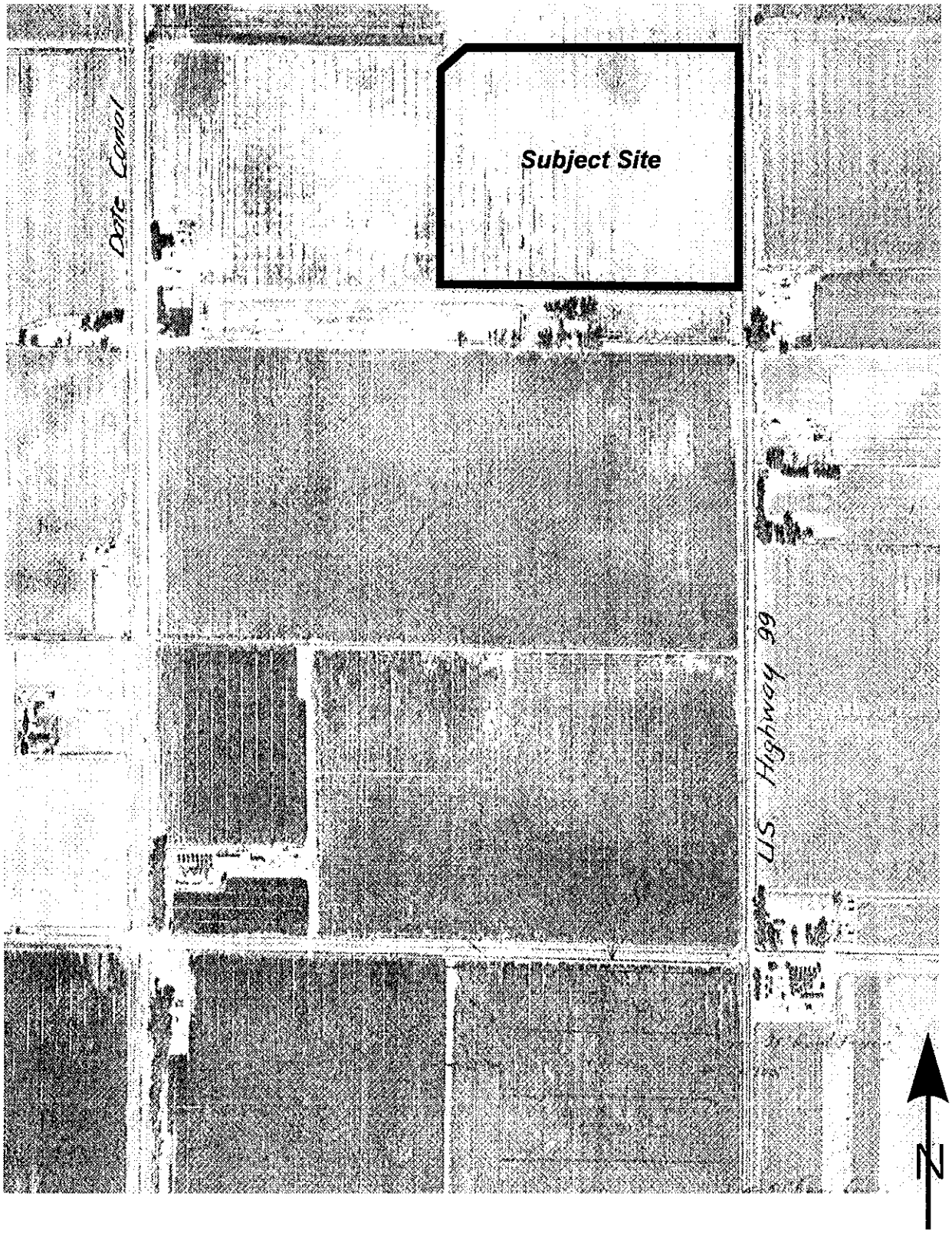
SCALE 1"=400 SH. 1 OF TD-3485

REFER:

STAKED 8-15-78 PARKER-RIDDLE	STAKED BY	ISSUE 4	
INSTALLED 10-30-78 McELVANY	INSTALLED BY	ISSUE 3	
GRAVEL EAST MESA TILE HANCOR	GRAVEL TILE	ISSUE 2	
PLOTTED D.D. CHECKED SIC F.B.	PLOTTED CHECKED F.B.	ISSUE 1	CONSTR STKS. 5-28-79 D.D.

Plate 5

APPENDIX C

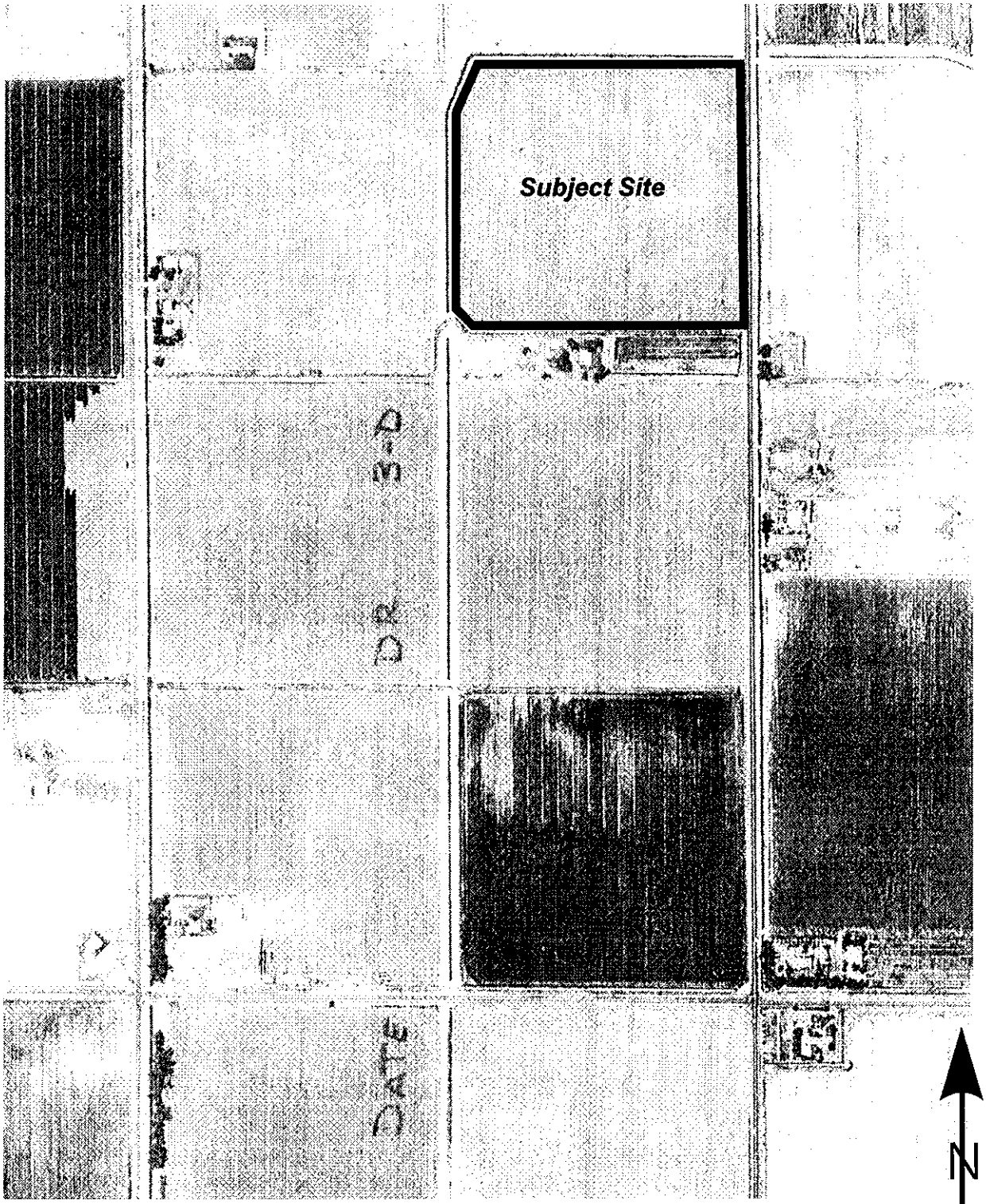


GS Lyon

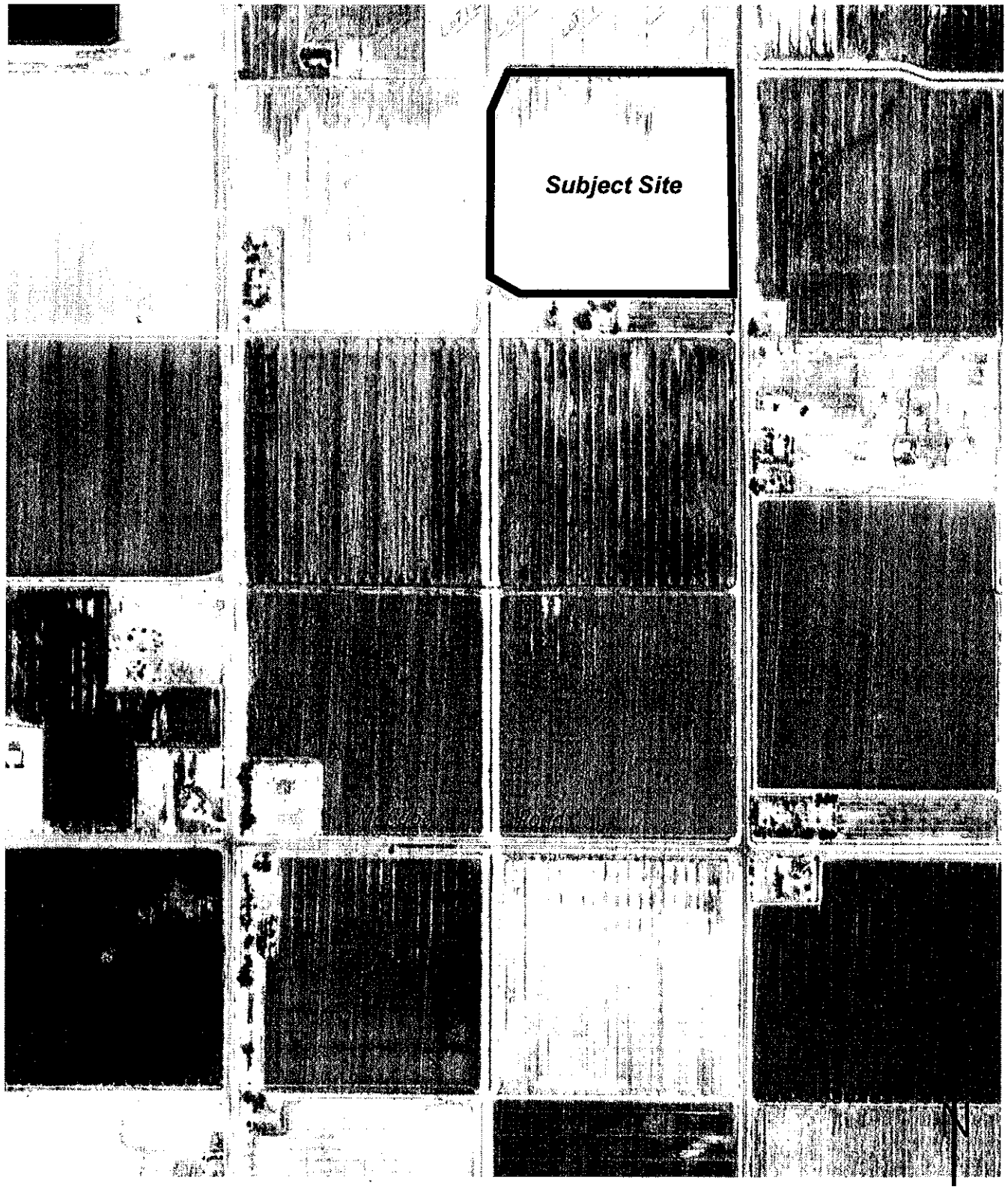
Project No.: GS0604

1949 Aerial Photograph

Plate 6



GS Lyon Project No.: GS0604	1965 Aerial Photograph	Plate 7

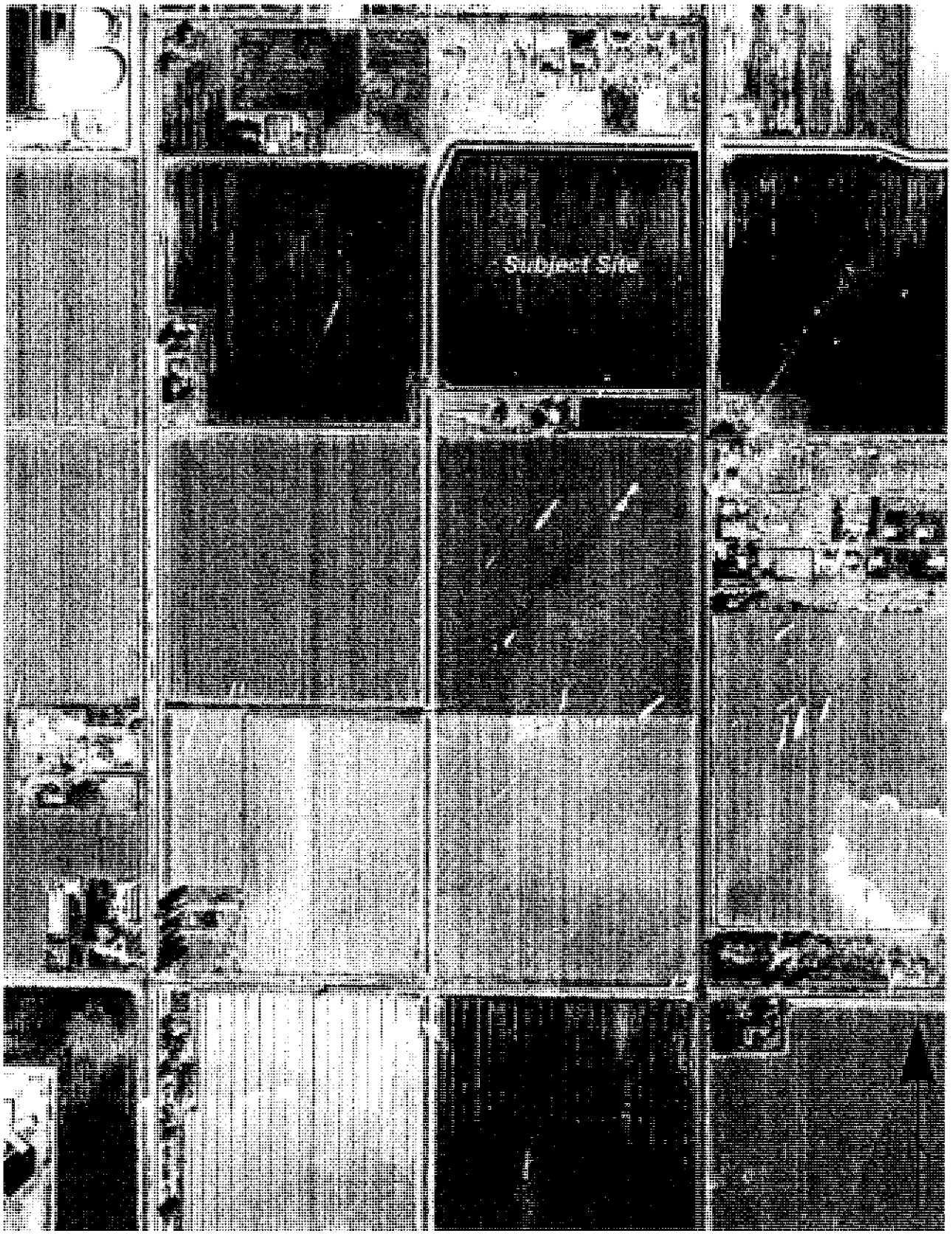


GS Lyon

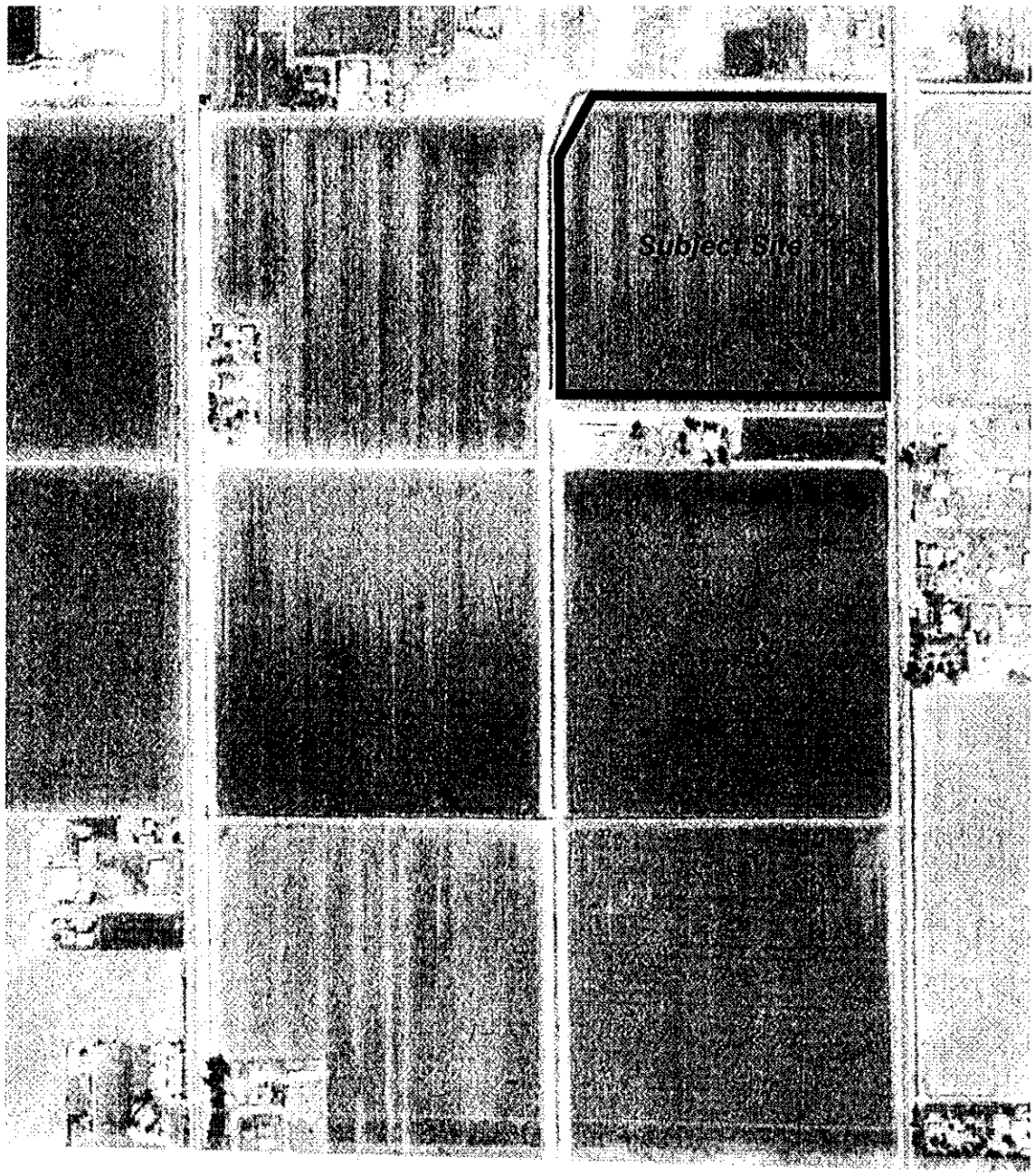
Project No.: GS0604

1972 Aerial Photograph

Plate 8



GS Lyon Project No.: GS0604	1979 Aerial Photograph	Plate 9



GS Lyon Project No.: GS0604	1984 Aerial Photograph	Plate 10



GS Lyon Project No.: GS0604	1992 Aerial Photograph	Plate 11



N

GS Lyon Project No.: GS0604	2002 Aerial Photograph	Plate 12

APPENDIX D

EDR® Environmental
Data Resources Inc

"Linking Technology with Tradition"®

Sanborn® Map Report

Ship To: Ruben Miranda
Southland Geotechnical
780 N. Fourth Street
El Centro, CA 92243

Order Date: 1/11/2006 **Completion Date:** 1/11/2006
Inquiry #: 1590413.2
P.O. #: NA
Site Name: Willowbend Subdivision
Address: SWC of Willowbend and Hwy 86
City/State: El Centro, CA 92243
Cross Streets:

Customer Project: GS0604
5013515BAR 760-370-3000

This document reports that the largest and most complete collection of Sanborn fire insurance maps has been reviewed based on client supplied information, and fire insurance maps depicting the target property at the specified address were not identified.

NO COVERAGE

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report AS IS. Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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APPENDIX E

The EDR Radius Map
with GeoCheck®

Willowbend Subdivision
SWC of Willowbend and Hwy 86
El Centro, CA 92243

Inquiry Number: 1590413.1s

January 11, 2006

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

FORM-BAR

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SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	8
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-8
Physical Setting Source Records Searched	A-9

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

SWC OF WILLOWBEND AND HWY 86
EL CENTRO, CA 92243

COORDINATES

Latitude (North):	32.761800 - 32° 45' 42.5"
Longitude (West):	115.554400 - 115° 33' 15.8"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	635412.6
UTM Y (Meters):	3625614.8
Elevation:	25 ft. below sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	32115-G5 EL CENTRO, CA
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

FEDERAL RECORDS

NPL---------- National Priority List
Proposed NPL---------- Proposed National Priority List Sites
Delisted NPL---------- National Priority List Deletions
NPL Liens---------- Federal Superfund Liens
CERCLIS---------- Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP---------- CERCLIS No Further Remedial Action Planned
CORRACTS---------- Corrective Action Report
RCRA-TSDF---------- Resource Conservation and Recovery Act Information
RCRA-LQG---------- Resource Conservation and Recovery Act Information

EXECUTIVE SUMMARY

RCRA-SQG	Resource Conservation and Recovery Act Information
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
US BROWNFIELDS	A Listing of Brownfields Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
SSTS	Section 7 Tracking Systems
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

AWP	Annual Workplan Sites
Cal-Sites	Calsites Database
CA BOND EXP. PLAN	Bond Expenditure Plan
NFA	No Further Action Determination
NFE	Properties Needing Further Evaluation
REF	Unconfirmed Properties Referred to Another Agency
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
SWF/LF	Solid Waste Information System
CA WDS	Waste Discharge System
WMUDS/SWAT	Waste Management Unit Database
Cortese	"Cortese" Hazardous Waste & Substances Sites List
SWRCY	Recycler Database
LUST	Geotracker's Leaking Underground Fuel Tank Report
CA FID UST	Facility Inventory Database
SLIC	Statewide SLIC Cases
UST	Active UST Facilities
HIST UST	Hazardous Substance Storage Container Database
AST	Aboveground Petroleum Storage Tank Facilities
SWEEPS UST	SWEEPS UST Listing
CHMIRS	California Hazardous Material Incident Report System
DEED	Deed Restriction Listing
VCP	Voluntary Cleanup Program Properties
CLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data

TRIBAL RECORDS

INDIAN RESERV	Indian Reservations

EXECUTIVE SUMMARY

INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land
INDIAN UST---------- Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

Manufactured Gas Plants--- EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STATE AND LOCAL RECORDS

NOTIFY 65: Notify 65 records contain facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk. The data come from the State Water Resources Control Board's Proposition 65 database.

A review of the Notify 65 list, as provided by EDR, has revealed that there is 1 Notify 65 site within approximately 1 mile of the target property.

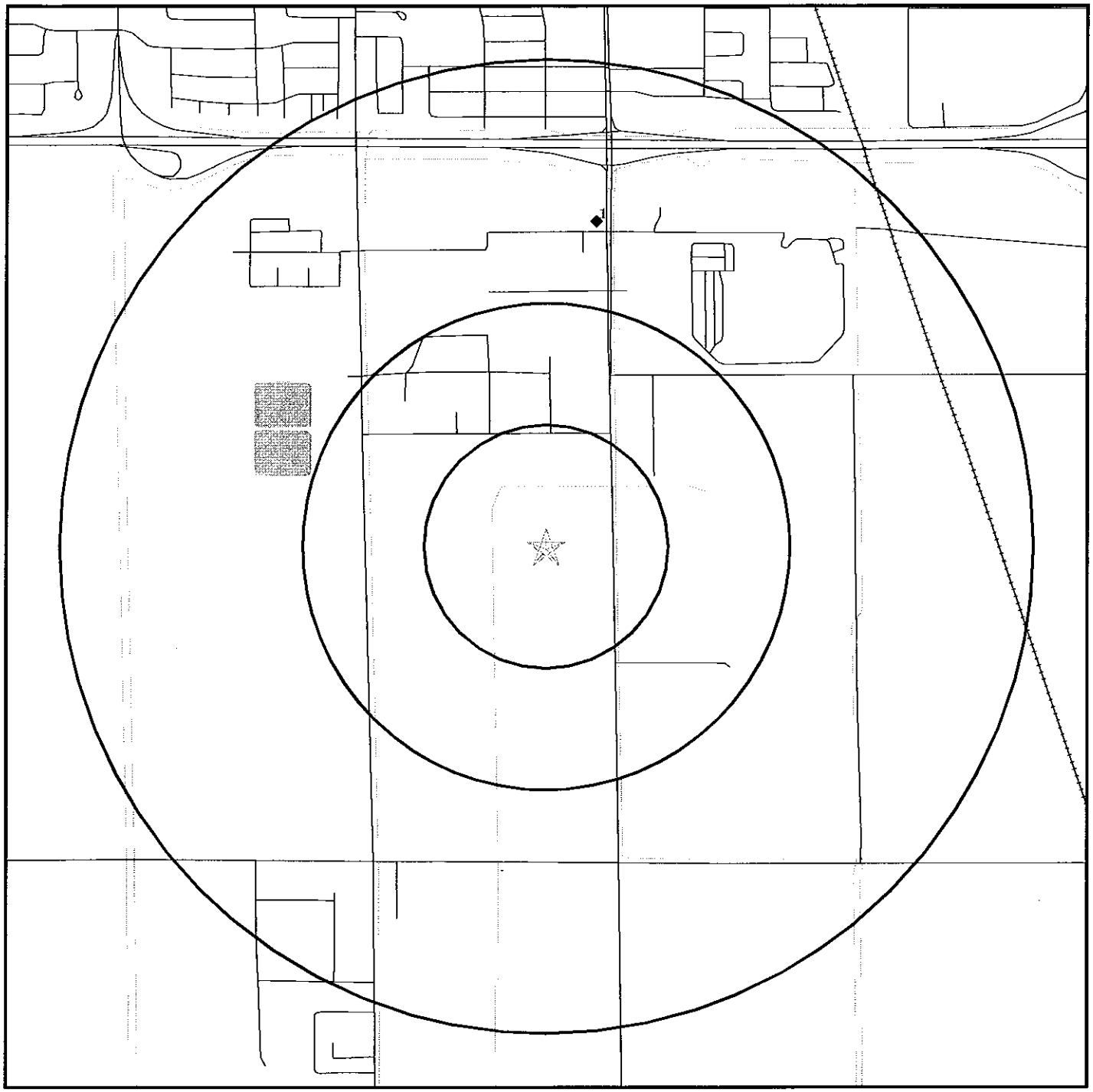
Lower Elevation	Address	Dist / Dir	Map ID	Page
GENE'S 76	***2390 SOUTH FOURTH STREE***	***1/2 - 1 N***	***1***	***6***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
SOCO OIL/ FORMERLY GASAMAT	CA FID UST, SWEEPS UST
NAVAL AIR FACILITY	CA FID UST, SWEEPS UST
MCNEECE BROS. OIL CO. INC.	SWEEPS UST
UNITED STATES GYPSUM	RCRA-SQG, FINDS, HAZNET, CA FID UST, HIST UST, CA WDS, SWEEPS UST
UNION OIL BULK PLANT	CA FID UST, SWEEPS UST
NAVAL AIR FACILITY EL CENTRO	Cal-Sites, AWP
BENNEY'S RENTALS	Notify 65, LUST, Cortese
GREYHOUND LINES BUS TERMINAL	Notify 65, LUST, Cortese
CALEXICO CLS III WMF 97-008	Cortese, WMUDS/SWAT, CA WDS
IMPERIAL IRR DIST, EL CENTRO	Toxic Pits
VALLEY IRON AND METAL (EDMAN CORP.)	CERC-NFRAP
OREPEZA SANITATION COMPANY	LUST
EAST SIDE LIFT STATION	HIST UST
SYSTEM 99	HIST UST
EL CENTRO HOT PLANT	HIST UST
USA PETROLEUM COMPANY #128	HAZNET, HIST UST
CITY SHOP	HIST UST
CALPINE CONTAINERS, INC.	HIST UST
PACIFIC BELL	AST
IMPERIAL REDI-MIX	AST
TRUCK STOP 111	AST
EL CENTRO STEAM PLANT 86-007	WMUDS/SWAT
EL CENTRO GEO WELLS NO. 1 & 2	WMUDS/SWAT
MAGAZINE RD LANDFILL 99-010	WMUDS/SWAT, CA WDS
US NAVAL AIR FAC. 95-095	WMUDS/SWAT
HOLTVILLE CLS III WMF 97-018	WMUDS/SWAT, CA WDS
EL CENTRO MOTORS	RCRA-SQG, FINDS, HAZNET
JR SIMPLOT COMPANY	RCRA-SQG
CCI	RCRA-SQG
SEARS NO 1758 6848	RCRA-SQG, FINDS
DESERT AUTO PLAZA	RCRA-LQG
IMPERIAL IRRIGATION DISTRICT	SLIC
SOUTHERN CALIFORNIA GAS CO. EL CENTRO FACILITY	SLIC
WRIGHT'S CLEANER	SLIC
U.S. GYPSUM CO.	SLIC
IMPERIAL IRRIGATION DIST EL CENTRO STEAM	REF
I V RECYCLING INC	SWRCY
ARC RECYCLING	SWRCY

OVERVIEW MAP - 1590413.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

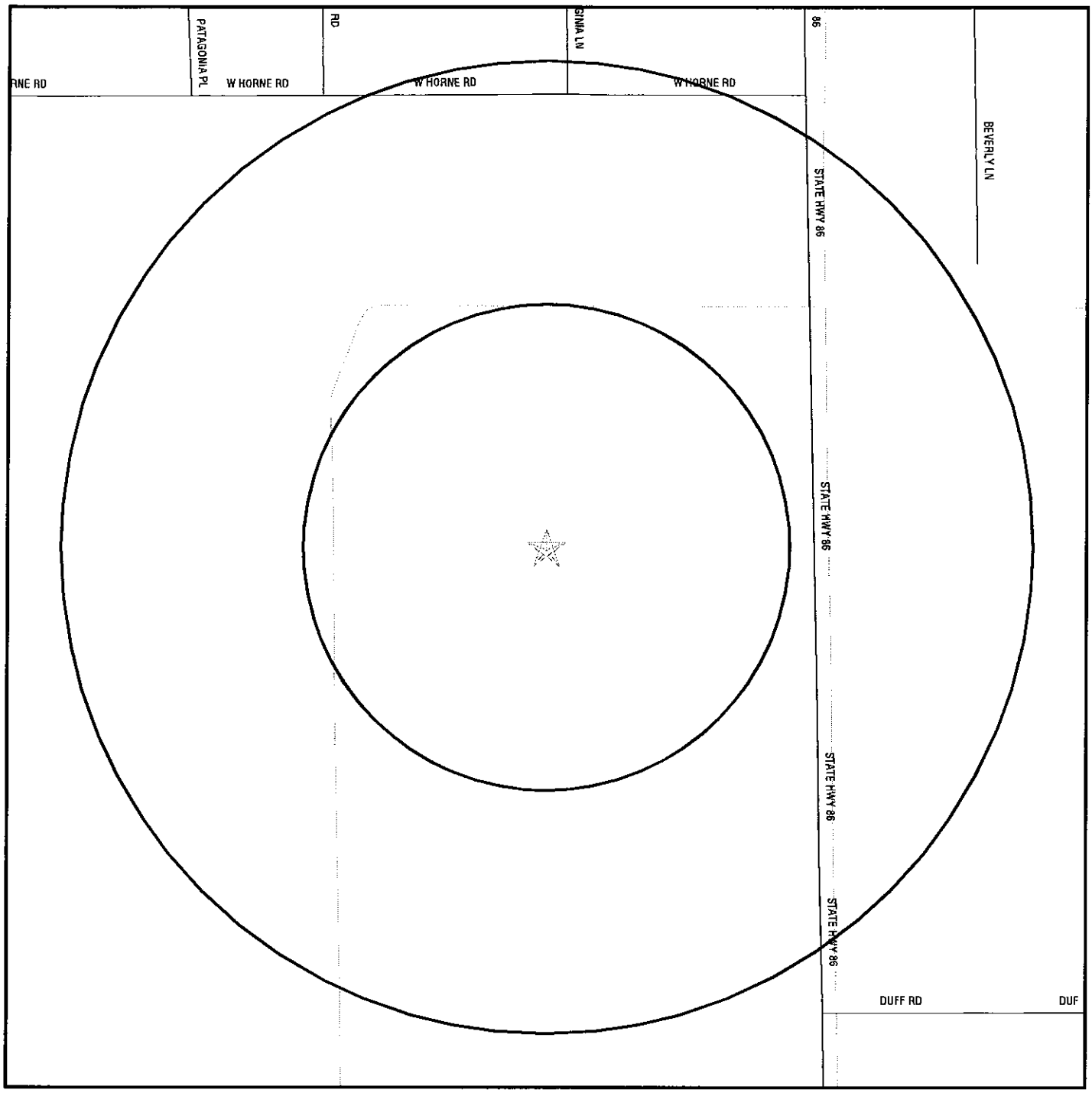
0 1/4 1/2 1 Miles

N

SITE NAME:	Willowbend Subdivision	CLIENT:	Southland Geotechnical
ADDRESS:	SWC of Willowbend and Hwy 86 El Centro CA 92243	CONTACT:	Ruben Miranda
		INQUIRY #:	1590413.1s
LAT/LONG:	32.7618 / 115.5544	DATE:	January 11, 2006

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DETAIL MAP - 1590413.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

N

SITE NAME: Willowbend Subdivision	CLIENT: Southland Geotechnical
ADDRESS: SWC of Willowbend and Hwy 86	CONTACT: Ruben Miranda
El Centro CA 92243	INQUIRY #: 1590413.1s
LAT/LONG: 32.7618 / 115.5544	DATE: January 11, 2006

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL RECORDS								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.500	0	0	0	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
STATE AND LOCAL RECORDS								
AWP		1.000	0	0	0	0	NR	0
Cal-Sites		1.000	0	0	0	0	NR	0
CA Bond Exp. Plan		1.000	0	0	0	0	NR	0
NFA		0.250	0	0	NR	NR	NR	0
NFE		0.250	0	0	NR	NR	NR	0
REF		0.250	0	0	NR	NR	NR	0
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
CA FID UST		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC		0.500	0	0	0	NR	NR	0
UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
Notify 65		1.000	0	0	0	1	NR	1
DEED		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
CLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
TRIBAL RECORDS								
INDIAN RESERV		1.000	0	0	0	0	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **GENE'S 76** Notify 65 S100179056
North **2390 SOUTH FOURTH STREET** LUST N/A
1/2-1 **EL CENTRO, CA 92243**
3572 ft.

Relative:
Lower

Actual:
-30 ft.

State LUST:

Cross Street:	WAKE AVENUE		
Qty Leaked:	Not reported		
Case Number	7T2243023		
Reg Board:	7		
Chemical:	Gasoline		
Lead Agency:	Regional Board		
Local Agency :	13000		
Case Type:	Drinking Water Aquifer affected		
Status:	Case Closed		
Abate Method:	Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming)		
Review Date:	5/30/1989	Confirm Leak:	5/30/1989
Workplan:	7/30/1990	Prelim Assess:	7/30/1990
Pollution Char:	6/30/1991	Remed Plan:	6/30/1991
Remed Action:	8/30/1991		
Monitoring:	10/19/1994		
Close Date:	9/12/1996		
Release Date:	5/5/1989		
Cleanup Fund Id :	Not reported		
Discover Date :	5/3/1989		
Enforcement Dt :	1/1/1965		
Enf Type:	None Taken		
Enter Date :	4/25/1994		
Funding:	Responsible Party		
Staff Initials:	Not reported		
How Discovered:	OM		
How Stopped:	Not reported		
Interim :	Not reported		
Leak Cause:	Corrosion		
Leak Source:	Tank		
MTBE Date :	Not reported		
Max MTBE GW :	Not reported		
MTBE Tested:	Site NOT Tested for MTBE.Includes Unknown and Not Analyzed.		
Priority:	Not reported		
Local Case # :	Not reported		
Beneficial:	Not reported		
Staff :	GS		
GW Qualifier :	Not reported		
Max MTBE Soil :	Not reported		
Soil Qualifier :	Not reported		
Hydr Basin #:	IMPERIAL VALLEY (7-3		
Operator :	SAM WEAKLEY		
Oversight Prgm:	LUST		
Review Date :	6/7/1994		
Stop Date :	9/17/1986		
Work Suspended :	Not reported		
Responsible Party	SAM WEAKLEY		
RP Address:	416 C. N. PERRY ROAD, CALEXICO, CA 92251		
Global Id:	T0602500078		
Org Name:	Not reported		
Contact Person:	Not reported		
MTBE Conc:	0		
Mtbe Fuel:	1		

GENE'S 76 (Continued) **S100179056**

Water System Name: Not reported
Well Name: Not reported
Distance To Lust: 0
Waste Discharge Global ID: Not reported
Waste Disch Assigned Name: Not reported
Summary : Not reported

NOTIFY 65:
Date Reported: Not reported Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Incident Description: 92243-9716

ORPHAN SUMMARY

City		EDR ID	Site Name	Site Address	Zip	Database(s)
CALEXICO	CA	S102266876	CALEXICO CLS III WMF 97-008	HWY 98 AT NEW RIVER	92243	Cortese, WMUDS/SWAT, CA WDS
COYOTE WELLS		A100282053	PACIFIC BELL	1-8 & GRANDON RD	92243	AST
EL CENTRO		A100176266	IMPERIAL REDI-MIX	2095 HWY. 111	92243	AST
EL CENTRO		1003879891	VALLEY IRON AND METAL (EDMAN CORP.)	2004 HIGHWAY 111	92243	CERC-NFRAP
EL CENTRO		S101582226	SOCO OIL/ FORMERLY GASAMAT	1865 W ADAMS RD	92243	CA FID UST, SWEEPS UST
EL CENTRO		S101619134	NAVAL AIR FACILITY	BENNETT RD	92243	CA FID UST, SWEEPS UST
EL CENTRO		U001573883	EAST SIDE LIFT STATION	295 COMMERCIAL	92243	HIST UST
EL CENTRO		S101480320	IMPERIAL IRRIGATION DIST EL CENTRO STEAM	SW CORNER OF DOGWOOD / VILLA ROADS	92243	REF
EL CENTRO		1007199961	JR SIMPLOT COMPANY	50 W DANENBERG	92243	RCRA-SQG
EL CENTRO		S106388980	IMPERIAL IRRIGATION DISTRICT	DATE CANAL DITCH EAST OF HWY 86		SLIC
EL CENTRO		S103442566	EL CENTRO STEAM PLANT 86-007	DOGWOOO ROAD		WMUDS/SWAT
EL CENTRO		S106929285	MCNEECE BROS. OIL CO. INC.	1870 DOGWOOD RD D	92243	SWEEPS UST
EL CENTRO		1007989109	CCI	3151 S DOGWOOD AVE	92243	RCRA-SQG
EL CENTRO		S103443212	EL CENTRO GEO WELLS NO. 1 & 2	EUCLID AVE AT FIRST ST		WMUDS/SWAT
EL CENTRO		1000399364	UNITED STATES GYPSUM	3810 W EVAN HEWES HWY	92243	RCRA-SQG, FINDS, HAZNET, CA FID UST, HIST UST, CA WDS, SWEEPS UST
EL CENTRO		S106388944	SOUTHERN CALIFORNIA GAS CO. EL CENTRO FACILITY	970 NORTH FOURTH STREET	92243	SLIC
EL CENTRO		U001573932	SYSTEM 99	GILLETTE ROAD	92243	HIST UST
EL CENTRO		S102434724	OREPEZA SANITATION COMPANY	207 EAST HIGHWAY 80		LUST
EL CENTRO		U001573888	EL CENTRO HOT PLANT	51 EAST HIGHWAY 80	92243	HIST UST
EL CENTRO		A100226682	TRUCK STOP 111	1963 S. HWY. 111	92243	AST
EL CENTRO		U001573937	USA PETROLEUM COMPANY #128	960 IMPERIAL HWY	92243	HAZNET, HIST UST
EL CENTRO		S100179081	BENNEY'S RENTALS	196 MAIN STREET		Notify 65, LUST, Cortese
EL CENTRO		S106388972	WRIGHT'S CLEANER	1693 WEST MAIN PLAZA	92243	SLIC
EL CENTRO		S106800170	NAVAL AIR FACILITY EL CENTRO	OFF OLD HWY 80, 7 MILES W OF EL CENTRO	92243	Cal-Sites, AWP
EL CENTRO		U001573880	CITY SHOP	320 ORANGE AVENUE	92243	HIST UST
EL CENTRO		U001573877	CALPINE CONTAINERS, INC.	239 ORANGE STREET	92243	HIST UST
EL CENTRO		S101582193	UNION OIL BULK PLANT	241 ORANGE ST	92243	CA FID UST, SWEEPS UST
EL CENTRO		S107137128	I V RECYCLING INC	353 E ROSS AVE	92243	SWRCY
EL CENTRO		S107136650	ARC RECYCLING	298 E ROSS AVE	92243	SWRCY
EL CENTRO		U000032025	GREYHOUND LINES BUS TERMINAL	460 STATE		Notify 65, LUST, Cortese
EL CENTRO		1000857413	EL CENTRO MOTORS	422 STATE ST	92243	RCRA-SQG, FINDS, HAZNET
EL CENTRO		S100676358	IMPERIAL IRR DIST, EL CENTRO	STEAM PLANT/ DOGWOOD ROAD		Toxic Pits
EL CENTRO		1008372175	DESERT AUTO PLAZA	602 WAKE AVE	92243	RCRA-LQG
EL CENTRO	CA	S103866308	MAGAZINE RD LANDFILL 99-010	NAVAL AIR FACILITY	92243	WMUDS/SWAT, CA WDS
EL CENTRO	,CA	S103442572	US NAVAL AIR FAC. 95-095	NAVAL AIR FACILITY, BLDG. 504	92243	WMUDS/SWAT
ESCONDIDO		1006805814	SEARS NO 1758 6848	210 E VIA RANCHO PKWY	92243	RCRA-SQG, FINDS
HOLTVILLE	CA	S102266877	HOLTVILLE CLS III WMF 97-018	WHITLOCK RD, NO OF NORRISH RD	92243	WMUDS/SWAT, CA WDS
PLASTER		S105756785	U.S. GYPSUM CO.	SOUTH SIDE OF EVAN HEWES HIGHWAY (HIGHWAY 80)	92243	SLIC

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Govemment Version: 10/14/05
Date Data Arrived at EDR: 11/02/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 11/02/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 8
Telephone: 303-312-6774

EPA Region 4
Telephone 404-562-8033

Proposed NPL: Proposed National Priority List Sites

Date of Govemment Version: 10/14/05
Date Data Arrived at EDR: 11/02/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 11/02/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/14/05
Date Data Arrived at EDR: 11/02/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 11/02/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Date Data Arrived at EDR: 02/02/94
Date Made Active in Reports: 03/30/94
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 09/19/05
Date Data Arrived at EDR: 10/21/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 6

Source: EPA
Telephone: 703-413-0223
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 08/22/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 37

Source: EPA
Telephone: 703-413-0223
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 10/13/05
Date Data Arrived at EDR: 10/27/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 41

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/06/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

RCRA: Resource Conservation and Recovery Act Information

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 10/14/05
Date Data Arrived at EDR: 10/27/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 41

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/28/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 01/27/05
Date Made Active in Reports: 03/24/05
Number of Days to Update: 56

Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Last EDR Contact: 10/24/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 08/17/05
Date Data Arrived at EDR: 10/18/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 50

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 10/18/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Annually

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/02/05
Date Data Arrived at EDR: 08/12/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 55

Source: Environmental Protection Agency
Telephone: 703-603-8867
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/10/05
Date Data Arrived at EDR: 02/11/05
Date Made Active in Reports: 04/06/05
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 703-603-8867
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 02/08/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 177

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 11/11/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 06/29/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 40

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 10/03/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: Varies

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 08/18/05
Date Data Arrived at EDR: 08/18/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Semi-Annually

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/14/04
Date Data Arrived at EDR: 02/15/05
Date Made Active in Reports: 04/25/05
Number of Days to Update: 69

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/31/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Varies

ROD: Records Of Decision
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/07/05
Date Data Arrived at EDR: 10/20/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 48

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/04/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized. In 1978, 24 inactive uranium mill tailings sites in Oregon, Idaho, Wyoming, Utah, Colorado, New Mexico, Texas, North Dakota, South Dakota, Pennsylvania, and on Navajo and Hopi tribal lands, were targeted for cleanup by the Department of Energy.

Date of Government Version: 12/29/04
Date Data Arrived at EDR: 01/07/05
Date Made Active in Reports: 03/14/05
Number of Days to Update: 66

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 10/28/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/85
Date Data Arrived at EDR: 08/09/04
Date Made Active in Reports: 09/17/04
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/04
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 07/13/05
Date Made Active in Reports: 08/17/05
Number of Days to Update: 35

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Date Data Arrived at EDR: 04/27/04
Date Made Active in Reports: 05/21/04
Number of Days to Update: 24

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 10/17/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/12/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/20/05
Number of Days to Update: 50

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Date of Government Version: 10/12/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/20/05
Number of Days to Update: 50

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 01/03/05
Date Made Active in Reports: 01/25/05
Number of Days to Update: 22

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 11/01/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Annually

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 08/30/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 44

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 12/29/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/18/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/20/05
Number of Days to Update: 50

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Quarterly

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/12/05
Date Data Arrived at EDR: 09/27/05
Date Made Active in Reports: 11/14/05
Number of Days to Update: 48

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: Semi-Annually

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 09/29/05
Date Data Arrived at EDR: 10/04/05
Date Made Active in Reports: 11/14/05
Number of Days to Update: 41

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Date Data Arrived at EDR: 07/03/95
Date Made Active in Reports: 08/07/95
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 06/17/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 48

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/12/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

AWP: Annual Workplan Sites

Known Hazardous Waste Sites. California DTSC's Annual Workplan (AWP), formerly BEP, identifies known hazardous substance sites targeted for cleanup.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: California Environmental Protection Agency
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Annually

CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/89
Date Data Arrived at EDR: 07/27/94
Date Made Active in Reports: 08/02/94
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/94
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NFA: No Further Action Determination

This category contains properties at which DTSC has made a clear determination that the property does not pose a problem to the environment or to public health.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

NFE: Properties Needing Further Evaluation

This category contains properties that are suspected of being contaminated. These are unconfirmed contaminated properties that need to be assessed using the PEA process. PEA in Progress indicates properties where DTSC is currently conducting a PEA. PEA Required indicates properties where DTSC has determined a PEA is required, but not currently underway.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

REF: Unconfirmed Properties Referred to Another Agency

This category contains properties where contamination has not been confirmed and which were determined as not requiring direct DTSC Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local regulatory agency.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/95
Date Data Arrived at EDR: 08/30/95
Date Made Active in Reports: 09/26/95
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 10/31/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: No Update Planned

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/12/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 23

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 12/13/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 09/19/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 16

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/00
Date Data Arrived at EDR: 04/10/00
Date Made Active in Reports: 05/10/00
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/01/01
Date Data Arrived at EDR: 05/29/01
Date Made Active in Reports: 07/26/01
Number of Days to Update: 58

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-9100
Last EDR Contact: 10/26/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 10/03/05
Date Data Arrived at EDR: 10/10/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 21

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Quarterly

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/03
Date Data Arrived at EDR: 09/10/03
Date Made Active in Reports: 10/07/03
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 916-542-5424
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Date of Government Version: 10/01/05
Date Data Arrived at EDR: 10/20/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 11

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 01/06/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/04
Date Data Arrived at EDR: 09/07/04
Date Made Active in Reports: 10/12/04
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Date of Government Version: 05/19/03
Date Data Arrived at EDR: 05/19/03
Date Made Active in Reports: 06/02/03
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 11/14/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Date of Government Version: 09/30/04
Date Data Arrived at EDR: 10/20/04
Date Made Active in Reports: 11/19/04
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/01
Date Data Arrived at EDR: 02/28/01
Date Made Active in Reports: 03/29/01
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-576-2220
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 10/10/05
Date Data Arrived at EDR: 10/10/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 21

Source: State Water Resources Control Board
Contact: Imperial County Environmental Health Dept, (760) 482-4236
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Quarterly

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Date of Government Version: 06/07/05
Date Data Arrived at EDR: 06/07/05
Date Made Active in Reports: 06/29/05
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-346-7491
Last EDR Contact: 01/04/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Date of Government Version: 02/26/04
Date Data Arrived at EDR: 02/26/04
Date Made Active in Reports: 03/24/04
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-346-7491
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/05
Date Data Arrived at EDR: 02/15/05
Date Made Active in Reports: 03/28/05
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-4130
Last EDR Contact: 11/07/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Varies

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/01
Date Data Arrived at EDR: 04/23/01
Date Made Active in Reports: 05/21/01
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 10/17/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/94
Date Data Arrived at EDR: 09/05/95
Date Made Active in Reports: 09/29/95
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/98
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases
The Spills, Leaks, Investigations, and Cleanups (SLIC) listings includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites.

Date of Government Version: 10/10/05
Date Data Arrived at EDR: 10/10/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 21

Source: State Water Resources Control Board
Contact: Imperial County Environmental Health Dept, (760) 482-4236
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

Date of Government Version: 04/03/03
Date Data Arrived at EDR: 04/07/03
Date Made Active in Reports: 04/25/03
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 09/30/04
Date Data Arrived at EDR: 10/20/04
Date Made Active in Reports: 11/19/04
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 11/16/05
Date Data Arrived at EDR: 11/16/05
Date Made Active in Reports: 12/12/05
Number of Days to Update: 26

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 11/14/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 11/17/04
Date Data Arrived at EDR: 11/18/04
Date Made Active in Reports: 01/04/05
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 10/24/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Unregulated sites that impact groundwater or have the potential to impact groundwater.

Date of Government Version: 04/01/05
Date Data Arrived at EDR: 04/05/05
Date Made Active in Reports: 04/21/05
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 01/06/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Date of Government Version: 05/24/05
Date Data Arrived at EDR: 05/25/05
Date Made Active in Reports: 06/16/05
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 01/06/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites

Date of Government Version: 09/07/04
Date Data Arrived at EDR: 09/07/04
Date Made Active in Reports: 10/12/04
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

Date of Government Version: 11/24/04
Date Data Arrived at EDR: 11/29/04
Date Made Active in Reports: 01/04/05
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Date of Government Version: 07/01/04
Date Data Arrived at EDR: 08/10/04
Date Made Active in Reports: 09/08/04
Number of Days to Update: 29

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 01/06/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Date of Government Version: 09/28/05
Date Data Arrived at EDR: 09/29/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 32

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 12/12/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 10/10/05
Date Data Arrived at EDR: 10/10/05
Date Made Active in Reports: 11/18/05
Number of Days to Update: 39

Source: SWRCB
Contact: Imperial County Environmental Health Dept, (760) 482-4236
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Semi-Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/90
Date Data Arrived at EDR: 01/25/91
Date Made Active in Reports: 02/12/91
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/01
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/05
Date Data Arrived at EDR: 11/23/05
Date Made Active in Reports: 12/15/05
Number of Days to Update: 22

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 11/22/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1980?s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/94
Date Data Arrived at EDR: 07/07/05
Date Made Active in Reports: 08/11/05
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/05
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 05/18/04
Date Made Active in Reports: 06/25/04
Number of Days to Update: 38

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/26/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

NOTIFY 65: Proposition 65 Records
Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/93
Date Data Arrived at EDR: 11/01/93
Date Made Active in Reports: 11/19/93
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 10/17/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 10/03/05
Date Data Arrived at EDR: 10/03/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Semi-Annually

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

CLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 04/18/05
Date Data Arrived at EDR: 04/18/05
Date Made Active in Reports: 05/06/05
Number of Days to Update: 18

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 01/04/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 11/07/05
Date Data Arrived at EDR: 11/07/05
Date Made Active in Reports: 11/29/05
Number of Days to Update: 22

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 11/07/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 10/11/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 20

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 11/07/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 07/19/05
Date Made Active in Reports: 08/11/05
Number of Days to Update: 23

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 11/01/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 02/08/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 177

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 11/11/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Semi-Annually

INDIAN LUST: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 09/07/05
Date Data Arrived at EDR: 09/08/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 53

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/10/06
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

INDIAN LUST: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 06/02/05
Date Data Arrived at EDR: 06/03/05
Date Made Active in Reports: 07/01/05
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

INDIAN UST: Underground Storage Tanks on Indian Land

Date of Government Version: 11/08/05
Date Data Arrived at EDR: 11/09/05
Date Made Active in Reports: 12/12/05
Number of Days to Update: 33

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

Date of Government Version: 11/15/05
Date Data Arrived at EDR: 12/05/05
Date Made Active in Reports: 12/28/05
Number of Days to Update: 23

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Underground Tanks

Date of Government Version: 11/08/05
Date Data Arrived at EDR: 11/10/05
Date Made Active in Reports: 12/08/05
Number of Days to Update: 28

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/24/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Semi-Annually

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 11/08/05
Date Data Arrived at EDR: 11/15/05
Date Made Active in Reports: 12/12/05
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/24/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/29/05
Date Data Arrived at EDR: 08/30/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 37

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 12/09/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/17/05
Date Data Arrived at EDR: 10/18/05
Date Made Active in Reports: 11/29/05
Number of Days to Update: 42

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/18/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 12/09/05
Date Data Arrived at EDR: 12/09/05
Date Made Active in Reports: 01/11/06
Number of Days to Update: 33

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOS ANGELES COUNTY:

List of Solid Waste Facilities

Date of Government Version: 02/01/05
Date Data Arrived at EDR: 02/18/05
Date Made Active in Reports: 03/28/05
Number of Days to Update: 38

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 11/23/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Varies

City of El Segundo Underground Storage Tank

Date of Government Version: 11/14/05
Date Data Arrived at EDR: 11/14/05
Date Made Active in Reports: 12/08/05
Number of Days to Update: 24

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 11/14/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Date of Government Version: 03/28/03
Date Data Arrived at EDR: 10/23/03
Date Made Active in Reports: 11/26/03
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 11/22/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Annually

City of Torrance Underground Storage Tank

Date of Government Version: 11/29/05
Date Data Arrived at EDR: 12/01/05
Date Made Active in Reports: 12/16/05
Number of Days to Update: 15

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 11/28/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Semi-Annually

City of Los Angeles Landfills

Date of Government Version: 03/01/05
Date Data Arrived at EDR: 03/18/05
Date Made Active in Reports: 04/08/05
Number of Days to Update: 21

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 12/13/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Varies

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 08/31/05
Date Data Arrived at EDR: 10/26/05
Date Made Active in Reports: 11/29/05
Number of Days to Update: 34

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 11/14/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Semi-Annually

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/25/05
Date Data Arrived at EDR: 05/27/05
Date Made Active in Reports: 07/01/05
Number of Days to Update: 35

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 11/14/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Annually

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/98
Date Data Arrived at EDR: 07/07/99
Date Made Active in Reports: N/A
Number of Days to Update: 35

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 07/06/99
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/26/05
Date Made Active in Reports: 09/28/05
Number of Days to Update: 33

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 10/31/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination

Date of Government Version: 09/28/05
Date Data Arrived at EDR: 09/29/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 32

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites

Date of Government Version: 12/27/05
Date Data Arrived at EDR: 12/28/05
Date Made Active in Reports: 01/11/06
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: Annually

ORANGE COUNTY:

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 09/01/05
Date Data Arrived at EDR: 09/19/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 17

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 12/07/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 12/01/05
Date Data Arrived at EDR: 12/16/05
Date Made Active in Reports: 01/11/06
Number of Days to Update: 26

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 12/07/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 09/01/05
Date Data Arrived at EDR: 09/19/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 17

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 12/07/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Annually

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 10/12/05
Date Data Arrived at EDR: 10/12/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 19

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 12/20/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 11/22/05
Date Data Arrived at EDR: 11/23/05
Date Made Active in Reports: 12/12/05
Number of Days to Update: 19

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Date of Government Version: 11/22/05
Date Data Arrived at EDR: 11/23/05
Date Made Active in Reports: 12/16/05
Number of Days to Update: 23

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS - Contaminated Sites

Date of Government Version: 08/19/05
Date Data Arrived at EDR: 09/02/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 34

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/02/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 07/25/05
Date Data Arrived at EDR: 08/19/05
Date Made Active in Reports: 09/13/05
Number of Days to Update: 25

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/02/05
Next Scheduled EDR Contact: 01/30/06
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 09/20/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 16

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 08/01/00
Date Data Arrived at EDR: 12/13/01
Date Made Active in Reports: 01/15/02
Number of Days to Update: 33

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 12/12/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/05
Date Data Arrived at EDR: 05/18/05
Date Made Active in Reports: 06/16/05
Number of Days to Update: 29

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 01/06/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Quarterly

SAN FRANCISCO COUNTY:

Local Oversite Facilities

Date of Government Version: 09/07/05
Date Data Arrived at EDR: 09/08/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 28

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

Underground Storage Tank Information

Date of Government Version: 12/07/05
Date Data Arrived at EDR: 12/07/05
Date Made Active in Reports: 01/11/06
Number of Days to Update: 35

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SAN MATEO COUNTY:

Fuel Leak List

Date of Government Version: 11/28/05
Date Data Arrived at EDR: 11/28/05
Date Made Active in Reports: 12/12/05
Number of Days to Update: 14

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Semi-Annually

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 08/17/05
Date Data Arrived at EDR: 08/17/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 35

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 01/09/06
Next Scheduled EDR Contact: 04/10/06
Data Release Frequency: Annually

SANTA CLARA COUNTY:

LOP Listing

A listing of open leaking underground storage tanks.

Date of Government Version: 10/24/05
Date Data Arrived at EDR: 11/28/05
Date Made Active in Reports: 12/12/05
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: No Update Planned

Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/05
Date Data Arrived at EDR: 03/30/05
Date Made Active in Reports: 04/21/05
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: Semi-Annually

Hazardous Material Facilities

Date of Government Version: 09/13/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 23

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks

Date of Government Version: 10/13/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 11/29/05
Number of Days to Update: 29

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/12/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

Underground Storage Tanks

Date of Government Version: 10/13/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/08/05
Number of Days to Update: 38

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/12/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

Date of Government Version: 10/01/05
Date Data Arrived at EDR: 10/24/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 7

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 10/24/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks

Date of Government Version: 01/29/04
Date Data Arrived at EDR: 01/29/04
Date Made Active in Reports: 02/23/04
Number of Days to Update: 25

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/01/06
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 16

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 08/30/05
Date Data Arrived at EDR: 09/26/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 35

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/14/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 09/28/05
Date Data Arrived at EDR: 10/27/05
Date Made Active in Reports: 11/18/05
Number of Days to Update: 22

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/12/05
Next Scheduled EDR Contact: 01/09/06
Data Release Frequency: Quarterly

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 08/30/05
Date Data Arrived at EDR: 09/29/05
Date Made Active in Reports: 10/31/05
Number of Days to Update: 32

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/14/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Date of Government Version: 10/18/05
Date Data Arrived at EDR: 11/16/05
Date Made Active in Reports: 12/08/05
Number of Days to Update: 22

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/17/05
Next Scheduled EDR Contact: 01/16/06
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data

Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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GEOCHECK®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

WILLOWBEND SUBDIVISION
SWC OF WILLOWBEND AND HWY 86
EL CENTRO, CA 92243

TARGET PROPERTY COORDINATES

Latitude (North):	32.761799 - 32° 45' 42.5"
Longitude (West):	115.554398 - 115° 33' 15.8"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	635412.6
UTM Y (Meters):	3625614.8
Elevation:	25 ft. below sea level

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

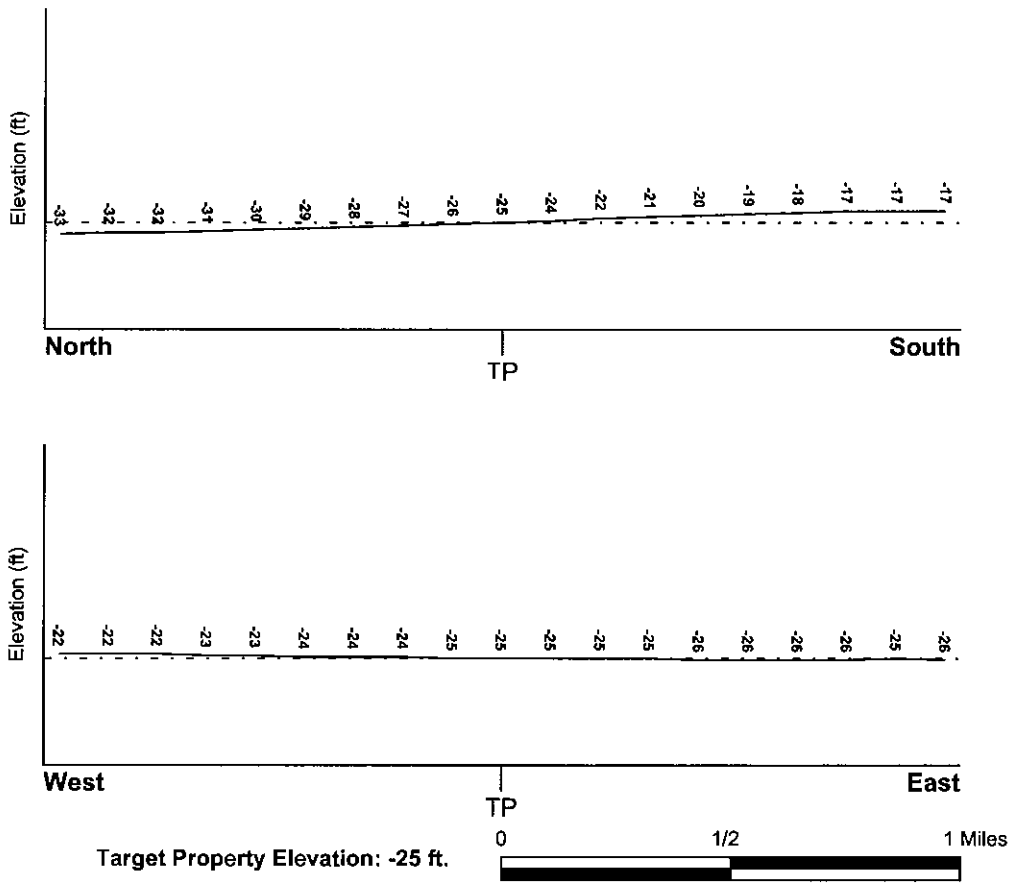
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

USGS Topographic Map:	32115-G5 EL CENTRO, CA
General Topographic Gradient:	General NNE
Source:	USGS 7.5 min quad index

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
IMPERIAL, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property:	0600651000B
Additional Panels in search area:	0600650800B 0606700800B 0606701000B

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
EL CENTRO	Not Available

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT **GEOLOGIC AGE IDENTIFICATION**

Era:	Cenozoic	Category:	Stratifed Sequence
System:	Quaternary		
Series:	Quaternary		
Code:	Q *(decoded above as Era, System & Series)*		

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	IMPERIAL
Soil Surface Texture:	silty clay loam
Hydrologic Group:	Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.
Soil Drainage Class:	Not reported

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	12 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.20 Min: 0.06	Max: 8.40 Min: 7.90
2	12 inches	60 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.20 Min: 0.06	Max: 8.40 Min: 7.90

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures:
loam
loamy fine sand
silty clay
silt loam
gravelly - sand
loamy very fine sand
very fine sandy loam
sand
fine sandy loam

Surficial Soil Types:
loam
loamy fine sand
silty clay
silt loam
gravelly - sand
loamy very fine sand
very fine sandy loam
sand
fine sandy loam

Shallow Soil Types: No Other Soil Types

Deeper Soil Types:
clay loam
loam
very gravelly - coarse sand
sandy clay loam
clay
sand
stratified
silty clay
loamy fine sand

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

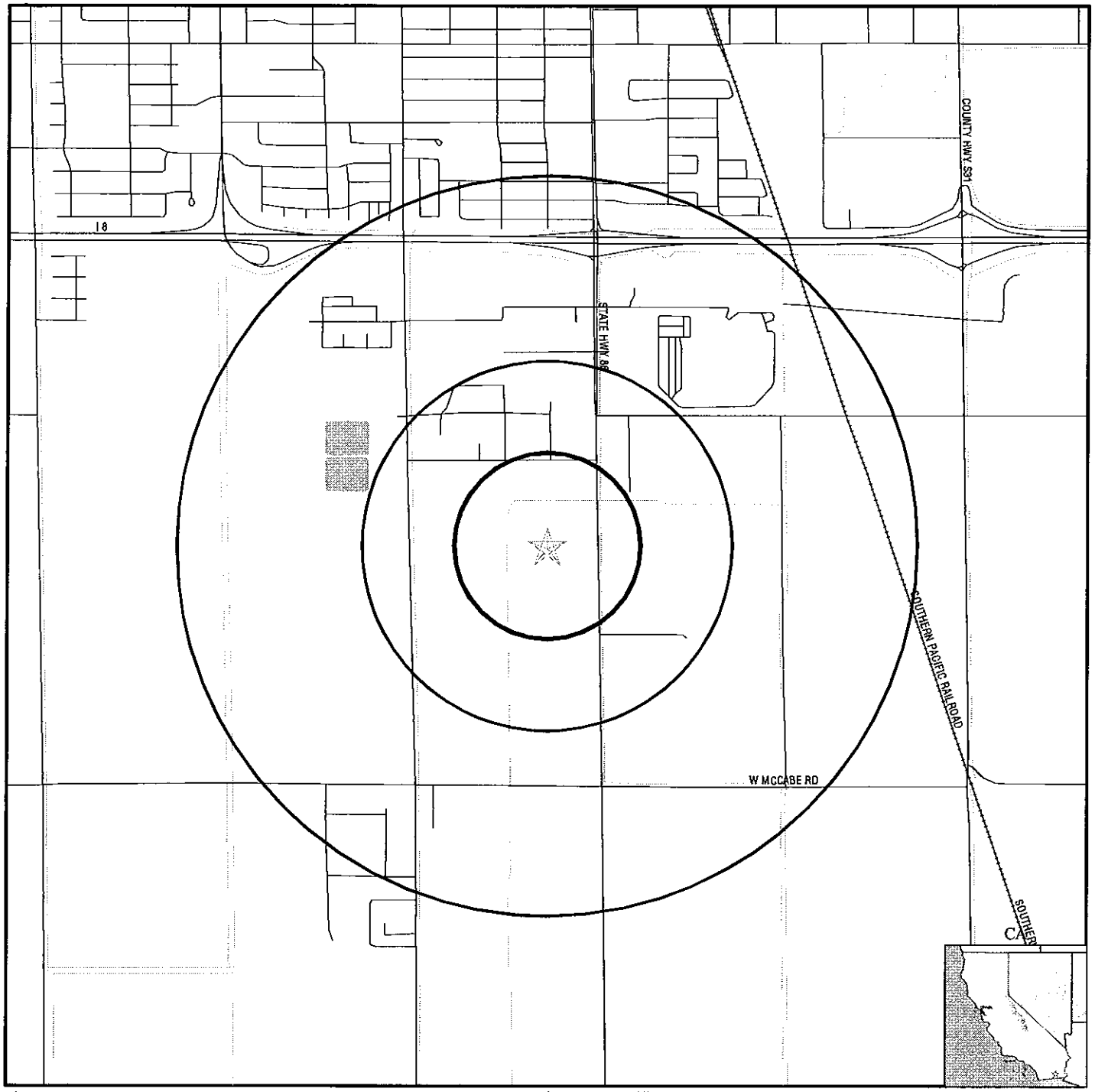
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 1590413.1s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

No contour lines were detected within this map area.

SITE NAME: Willowbend Subdivision	CLIENT: Southland Geotechnical
ADDRESS: SWC of Willowbend and Hwy 86 El Centro CA 92243	CONTACT: Ruben Miranda
LAT/LONG: 32.7618 / 115.5544	INQUIRY #: 1590413.1s DATE: January 11, 2006

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for IMPERIAL County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for IMPERIAL COUNTY, CA

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.450 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^R Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations for District 2, 3, 5 and 6
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

APPENDIX F

GS Lyon

Steven K. Williams, CEG
Project Engineering Geologist

Education
M.S. Geology
University of Utah, 1993
B.S. Geology
University of Utah, 1989

Registration
Registered Geologist
Arizona 3759
California 6975
Certified Engineering Geologist
California 2261

Professional Experience

2000 – Present	Project Geologist GS Lyon Consultants, Inc.
1994 - 2000	Staff Geologist GS Lyon Consultants, Inc.
1994	Field Geologist Bureau of Land Management
1991 - 1992	Exploration Geologist Kennecott Corporation

Summary of Experience
Mr. Williams has performed geotechnical investigations in southern California and southwestern Arizona. His field experience includes logging of soil borings and exploratory trenches, collection and documentation of soil samples, collection of field geotechnical data, and monitoring pile driving operations. Mr. Williams is also responsible for preparing computer generated data and figures, drafting and subsequent writing of geotechnical reports for a variety of projects including road improvements, fault studies, liquefaction potential evaluation, foundation preparation, seepage studies, structural distress, and soil investigations. He has performed geotechnical, geologic, and environmental studies for a wide variety of projects including correctional facilities, water and wastewater facilities, schools, residential subdivisions, commercial developments, and landfills throughout southern California and southwestern Arizona.

Mr. Williams also performs Phase I Environmental Site Assessments throughout the Imperial and Coachella Valleys. The scope of work for these projects typically include a site reconnaissance, review of government records pertaining to previous site uses, and preparation of a report identifying potential environmental risks. He also conducts investigations for the potential of asbestos-containing materials and lead-based paint in old building projects and potential for soil contamination by hydrocarbons, pesticides, and other hazardous materials.

Professional Affiliations
Geological Society of America, Member

Selected Project Experience
- **El Centro Seniors Apartments, El Centro, CA**

Performed Phase I and Phase II environmental site assessments for apartment complex at old school district office site with underground storage tanks.
- **Central Main Canal Seepage Study, Imperial, CA**

Conducted 6-month groundwater seepage study for Imperial Irrigation District to evaluate high groundwater levels in Sandalwood Glen Subdivision
- **Gateway to the Americas, Calexico, CA**

Conducted Phase I ESA, geologic hazards study and geotechnical investigation including liquefaction evaluation for 1,700 acre development associated with new Port of Entry east of Calexico
- **El Centro Magistrate Court, El Centro, CA**

Conducted geotechnical investigation and Phase I ESA for new Federal Magistrate Court building at site with soft soil conditions requiring foundation settlement analysis
- **El Centro Regional Medical Center, El Centro, CA**

Conducted Phase I ESA and geotechnical investigation for 50,000 sf, 2-story addition to the medical center's emergency room, operating rooms, and recovery rooms.
- **Brawley Union High School, Brawley, CA**

Conducted Phase II investigation for PCB and lead contamination of surficial soil and hydrocarbon contamination of subsurface soil of a property proposed for purchase.
- **Cal Energy Geothermal Plants, Calipatria, CA**

Conducted geotechnical investigation using CPT and hollow-stem auger methods for proposed geothermal power plant, mineral extraction facilities, and pipelines
- **EW Corporation Site, Westmorland, CA**

Conducted Phase II investigation for hydrocarbon contamination of subsurface soil of a service station site with leaking underground storage tanks prior to property purchase
- **Various Apartment Complexes, Imperial County, CA**

Conducted Phase I environmental investigation at numerous proposed apartment complex site within the Imperial Valley

GS Lyon

Jeffrey O. Lyon, PE
Principal Engineer

Education

B.S. Civil Engineering (Magna Cum Laude)
California Polytechnic University, Pomona Campus 1978

Technical Seminars

- Reinforced Masonry Design and Construction
  Joseph Amerheim, 1984
- Guidelines for Use and Interpretations of the Electric Cone Penetrometer
  Robertson and Campanella, 1986
- Laterally Loaded Piles
  Kleinfelder, Inc., 1986
- Floor Flatness and Levelness
  American Concrete Institute, 1989
- Designing with Geosynthetics
  Robert Koerner, 1989
- Flexible Pavement Design
  Asphalt Council of California, 1989
- Drilled Foundation Design and Construction
  ADSC, 1990

Registration

Registered Civil Engineer No. 31921, California
Registered Civil Engineer No. 16994, Arizona

Professional Experience

1987 - Present	Principal Engineer Southland Geotechnical, Inc.
1982 - 1987	Principal Engineer Lyon Engineers, Inc.
1978 - 1981	Partner/Senior Engineer Tesco Engineering
1974 - 1977	Survey Party Chief Tesco Engineering
1972 - 1973	Survey Party Chief Lyon & Associates

Summary of Experience

As Principal Engineer, Mr. Lyon is responsible for financial and technical management of all employees in Southland Geotechnical's four branch offices. Mr. Lyon has performed site investigations for residential subdivisions, geogrid-reinforced slopes, shopping centers, military airfields, roadways, administration and office buildings, elementary and high schools, goldmine mill processing facilities, hydro-electric plants, power transmission lines, electrical substations, co-generation power plants and geothermal power plants. He has provided design for drilled piers, driven piles, stone columns and floating (rigid) mats, and has performed seismic risk evaluations, ground shaking analyses, liquefaction studies and liquefaction induced settlements studies. Mr. Lyon has conducted Phase I and Phase II ESA's throughout the Imperial and Coachella Valleys for over 7 years. Mr. Lyon's experience also includes forensic investigations for foundation/structural distress to residential, commercial and educational facilities, and has performed pressure grout stabilization and lifting for distress remediation.

Selected Project Experience

- Management of materials quality assurance program for Drop 1 and EHL hydroelectric plants with 24 hour pile driving and large mass concrete structure on All American Canal, Imperial County, California
- Coordinator of dry utilities for Gateway of the Americas County Service Area since inception
- Designer of sewage treatment plant for Gateway of the Americas CSA
- Actively participates with county staff in forecasting costs for future development
- Geotechnical feasibility report, construction materials quality assurance program, and pile inspections for manure fired co-generation power plant on soft liquefiable soils for Western Power Group and Lurgi Engineers/Constructors, Imperial County, California
- Geotechnical report for DOE deep drilling program (10,000 sf) in lake bed sediments at the Salton Sea for Bechtel, Inc., Imperial County, California
- Geotechnical reports and quality assurance administration for six geothermal energy power plants requiring deep foundations (piles/stone columns) for Magma Power/California Energy in Imperial County, California
- Geotechnical report and construction materials quality assurance program for complete Southwest High School campus on expansive soils with high groundwater for Central Union High School District, El Centro, California

Professional Affiliations

American Society of Civil Engineers, Member
American Society of Testing Materials, Member
American Concrete Institute, Certified Examiner
Association of Professional Firms Practicing in the Geosciences, Member

GS Lyon

Engineering And
Information Technology

February 8, 2006

DR Horton
c/o Development Design & Engineering
1122 State Street
El Centro, CA 92243

Attn: Ms. Danielle DuBose

Pesticide Scan
40-Acre Willowbend Subdivision
El Centro, California
GSL Report No. GS0604

Dear Ms. DuBose:

GS Lyon Consultants, Inc. conducted a Pesticide Scan for the approximately 40-acre property located at the southwest corner of Willowbend Drive and State Highway 86 in El Centro, California (Plate 1). It is our understanding that it is planned for the future development of residential homes on the property.

INTRODUCTION

The subject site is an approximately a 40-acre, flat-lying agricultural field which is currently fallow. Dried crop stubble and weeds cover the site. The site is almost square in plan view and bounded by the Date Drain No. 3, an earthen irrigation run-off water ditch, on the north and west. State Highway 86 (South Fourth Street) defines the eastern boundary, and a concrete lined farm irrigation ditch forms the southern boundary to the subject site.

FIELD INVESTIGATION

GS Lyon Consultants collected four (4) surface soil samples for pesticide residue analysis. The samples were collected on January 16, 2006 from locations scattered throughout the subject site (see Plate 2 for sampling locations). Samples were taken from the upper 6 to 12 inches of soil.

LABORATORY ANALYSIS

The samples were placed in airtight, 4-oz. glass jar containers and shipped to Del Mar Analytical in Irvine, California for analysis for Organochlorine Pesticides (EPA Method 8081A). Del Mar Analytical is accredited by the American Association of Laboratory Accreditation and is certified by the State Health Department in California.

SUMMARY OF FINDINGS

The analytical results show the pesticide DDE was found each of the four samples. Other pesticides that were tested for were either below detectible limits or non-existent in the samples. The concentrations for the pesticide DDE in the soil encountered at the sites are below the current threshold (action) limits (Preliminary Remediation Goals) as determined by the State Department of Toxic Substance Control (DTSC).

Sample ID	**DDE (ppb)**
WB-1	19
WB-2	29
WB-3	26
WB-4	11
Regulatory Limits	**1,700**

CONCLUSIONS

The analytical test results indicate the presence of pesticides in the near surface soils on the subject property. The concentrations of the pesticides found are below regulatory limits in the samples taken from the property.

This report should be presented to the California Department of Toxic Substance Control for review and evaluation of the data presented in this report. Additional investigation or evaluation of the property may be required by this agency.

CLOSURE

The findings of this report are representative of the conditions encountered at the specific sample locations on the site at the time of the investigation. Changes in the conditions in the surface and subsurface of the property can occur with time. No warranty, express or implied, is made. Our services were provided according to the generally accepted standard of environmental engineering practice which existed in the Imperial County area at the time that our work was conducted.

If you have any questions or require additional information, please do not hesitate to contact the undersigned at (760) 337-1100. We appreciate the opportunity to provide our professional review for this project.

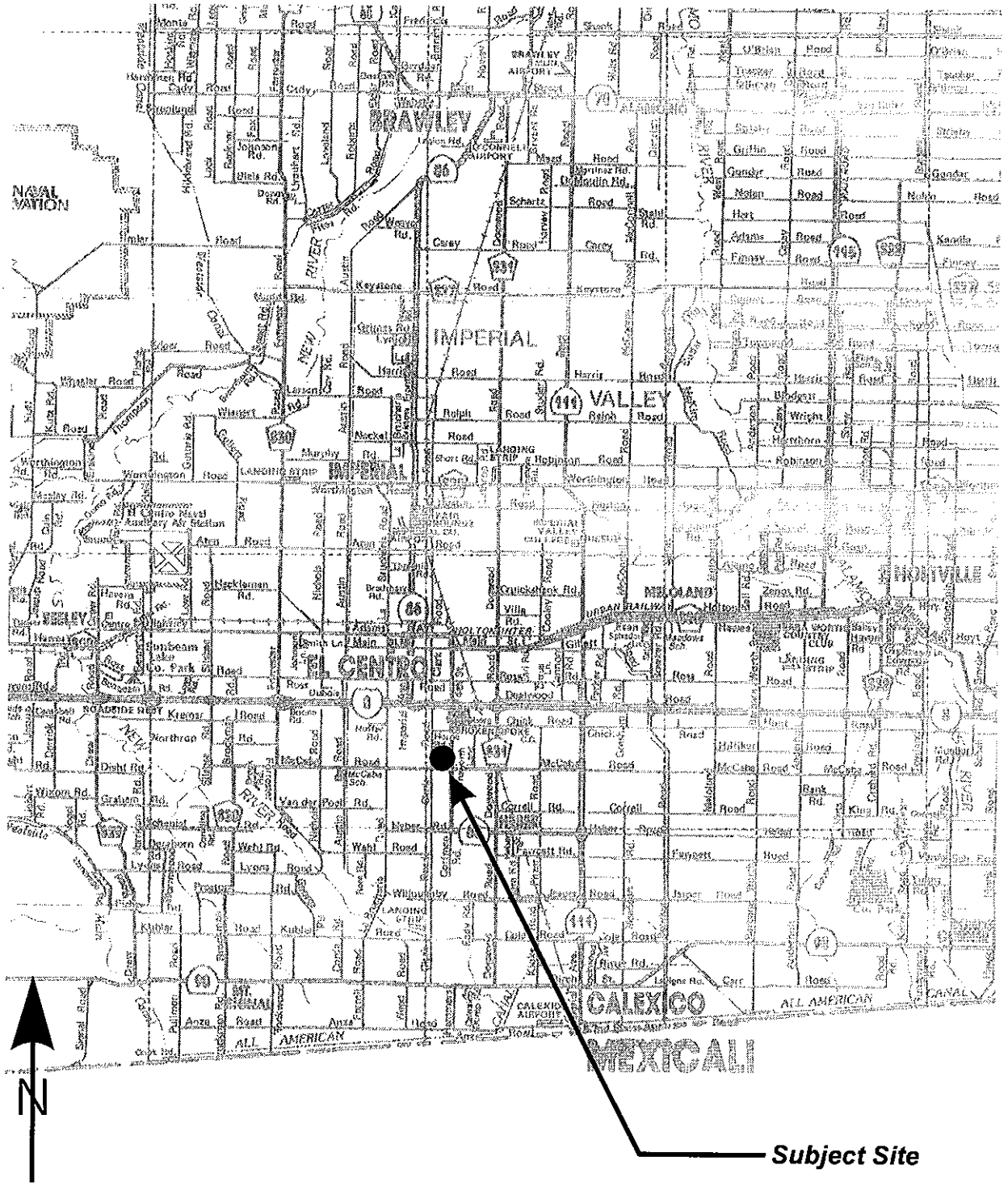
Respectfully Submitted,
GS Lyon Consultants, Inc.

PROFESSIONAL GEOLOGIST
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CERTIFIED ENGINEERING GEOLOGIST
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STATE OF CALIFORNIA

Steven K. Williams, PG, CEG
Senior Engineering Geologist

REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

Jeffrey O. Lyon, P.E.
Principal Engineer

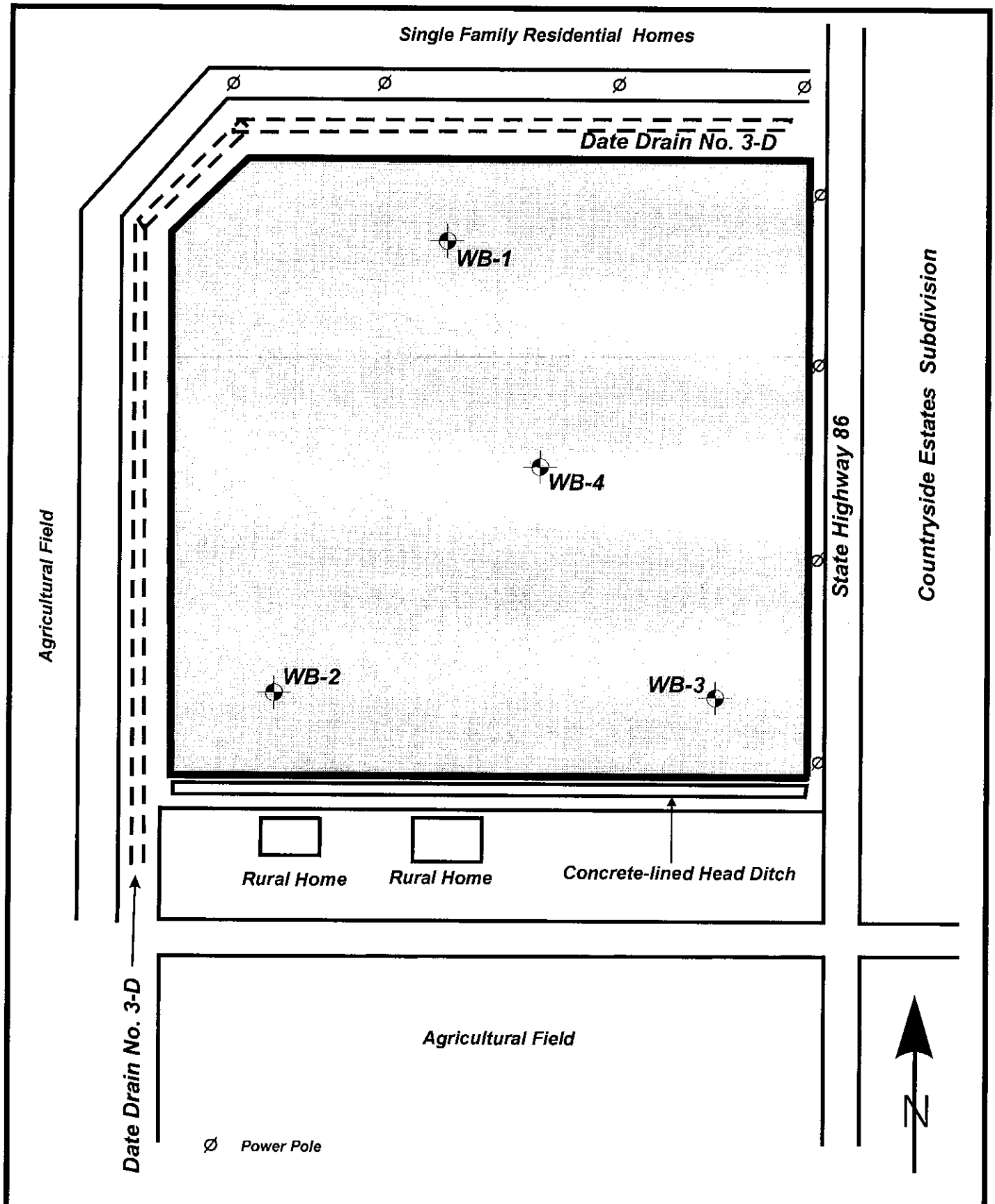


GS Lyon

Project No.: GS0604

Vicinity Map

Plate 1



GS Lyon

Project No.: GS0604

Map of Pesticide Sampling Locations

Plate 2

Del Mar Analytical

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LABORATORY REPORT

Prepared For: GS-Lyon, Inc.
780 N. 4th Street
El Centro, CA 92243
Attention: Steven Williams

Project: GS0604

Sampled: 01/16/06
Received: 01/20/06
Issued: 01/31/06 13:21

NELAP #01108CA California ELAP#1197 CSDLAC #10117

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
IPA1743-01	WB-4	Soil
IPA1743-02	WB-3	Soil
IPA1743-03	WB-2	Soil
IPA1743-04	WB-1	Soil

Reviewed By:

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

Del Mar Analytical

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GS-Lyon, Inc.
780 N. 4th Street
El Centro, CA 92243
Attention: Steven Williams

Project ID: GS0604

Report Number: IPA1743

Sampled: 01/16/06
Received: 01/20/06

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPA1743-01 (WB-4 - Soil)								
Reporting Units: ug/kg								
Aldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
alpha-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
beta-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
delta-BHC	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
gamma-BHC (Lindane)	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Chlordane	EPA 3545/8081A	6A25090	50	ND	1	1/25/2006	1/26/2006	
4,4'-DDD	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
4,4'-DDE	EPA 3545/8081A	6A25090	5.0	**19**	1	1/25/2006	1/26/2006	
4,4'-DDT	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Dieldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan I	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan II	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan sulfate	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
Endrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin aldehyde	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin ketone	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor epoxide	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Methoxychlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Toxaphene	EPA 3545/8081A	6A25090	200	ND	1	1/25/2006	1/26/2006	
Surrogate: Tetrachloro-m-xylene (35-115%)				*74 %*				
Surrogate: Decachlorobiphenyl (45-120%)				*75 %*				

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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Attention: Steven Williams

Project ID: GS0604

Report Number: IPA1743

Sampled: 01/16/06
Received: 01/20/06

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPA1743-02 (WB-3 - Soil)								
Reporting Units: ug/kg								
Aldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
alpha-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
beta-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
delta-BHC	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
gamma-BHC (Lindane)	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Chlordane	EPA 3545/8081A	6A25090	50	ND	1	1/25/2006	1/26/2006	
4,4'-DDD	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
4,4'-DDE	EPA 3545/8081A	6A25090	5.0	**29**	1	1/25/2006	1/26/2006	
4,4'-DDT	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Dieldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan I	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan II	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan sulfate	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
Endrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin aldehyde	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin ketone	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor epoxide	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Methoxychlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Toxaphene	EPA 3545/8081A	6A25090	200	ND	1	1/25/2006	1/26/2006	
Surrogate: Tetrachloro-m-xylene (35-115%)				*76 %*				
Surrogate: Decachlorobiphenyl (45-120%)				*71 %*				

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Lisa Reightley
Project Manager

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Sampled: 01/16/06
Received: 01/20/06

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPA1743-03 (WB-2 - Soil)								
Reporting Units: ug/kg								
Aldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
alpha-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
beta-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
delta-BHC	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
gamma-BHC (Lindane)	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Chlordane	EPA 3545/8081A	6A25090	50	ND	1	1/25/2006	1/26/2006	
4,4'-DDD	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
4,4'-DDE	EPA 3545/8081A	6A25090	5.0	26	1	1/25/2006	1/26/2006	
4,4'-DDT	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Dieldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan I	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan II	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan sulfate	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
Endrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin aldehyde	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin ketone	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor epoxide	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Methoxychlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Toxaphene	EPA 3545/8081A	6A25090	200	ND	1	1/25/2006	1/26/2006	
Surrogate: Tetrachloro-m-xylene (35-115%)				*75 %*				
Surrogate: Decachlorobiphenyl (45-120%)				*72 %*				

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Report Number: IPA1743

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Received: 01/20/06

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPA1743-04 (WB-1 - Soil)								
Reporting Units: ug/kg								
Aldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
alpha-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
beta-BHC	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
delta-BHC	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
gamma-BHC (Lindane)	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Chlordane	EPA 3545/8081A	6A25090	50	ND	1	1/25/2006	1/26/2006	
4,4'-DDD	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
4,4'-DDE	EPA 3545/8081A	6A25090	5.0	**11**	1	1/25/2006	1/26/2006	
4,4'-DDT	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Dieldrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan I	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan II	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endosulfan sulfate	EPA 3545/8081A	6A25090	10	ND	1	1/25/2006	1/26/2006	
Endrin	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin aldehyde	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Endrin ketone	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Heptachlor epoxide	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Methoxychlor	EPA 3545/8081A	6A25090	5.0	ND	1	1/25/2006	1/26/2006	
Toxaphene	EPA 3545/8081A	6A25090	200	ND	1	1/25/2006	1/26/2006	
Surrogate: Tetrachloro-m-xylene (35-115%)				*63 %*				
Surrogate: Decachlorobiphenyl (45-120%)				*62 %*				

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Lisa Reightley
Project Manager

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 6A25090 Extracted: 01/25/06										
Blank Analyzed: 01/26/2006 (6A25090-BLK1)										
Aldrin	ND	5.0	ug/kg							
alpha-BHC	ND	5.0	ug/kg							
beta-BHC	ND	5.0	ug/kg							
delta-BHC	ND	10	ug/kg							
gamma-BHC (Lindane)	ND	5.0	ug/kg							
Chlordane	ND	50	ug/kg							
4,4'-DDD	ND	5.0	ug/kg							
4,4'-DDE	ND	5.0	ug/kg							
4,4'-DDT	ND	5.0	ug/kg							
Dieldrin	ND	5.0	ug/kg							
Endosulfan I	ND	5.0	ug/kg							
Endosulfan II	ND	5.0	ug/kg							
Endosulfan sulfate	ND	10	ug/kg							
Endrin	ND	5.0	ug/kg							
Endrin aldehyde	ND	5.0	ug/kg							
Endrin ketone	ND	5.0	ug/kg							
Heptachlor	ND	5.0	ug/kg							
Heptachlor epoxide	ND	5.0	ug/kg							
Methoxychlor	ND	5.0	ug/kg							
Toxaphene	ND	200	ug/kg							
Surrogate: Tetrachloro-m-xylene	*26.4*		*ug/kg*	*33.3*		*79*	*35-115*			
Surrogate: Decachlorobiphenyl	*27.6*		*ug/kg*	*33.3*		*83*	*45-120*			
LCS Analyzed: 01/26/2006 (6A25090-BS1)										
Aldrin	28.3	5.0	ug/kg	33.3		85	45-120			
alpha-BHC	28.5	5.0	ug/kg	33.3		86	55-120			
beta-BHC	31.5	5.0	ug/kg	33.3		95	55-120			
delta-BHC	30.3	10	ug/kg	33.3		91	60-120			
gamma-BHC (Lindane)	29.3	5.0	ug/kg	33.3		88	50-120			
4,4'-DDD	30.1	5.0	ug/kg	33.3		90	60-120			
4,4'-DDE	32.3	5.0	ug/kg	33.3		97	60-120			
4,4'-DDT	30.5	5.0	ug/kg	33.3		92	60-120			
Dieldrin	31.8	5.0	ug/kg	33.3		95	60-120			
Endosulfan I	31.1	5.0	ug/kg	33.3		93	60-120			
Endosulfan II	31.8	5.0	ug/kg	33.3		95	60-120			
Endosulfan sulfate	33.7	10	ug/kg	33.3		101	65-120			

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 6A25090 Extracted: 01/25/06										
LCS Analyzed: 01/26/2006 (6A25090-BS1)										
Endrin	33.1	5.0	ug/kg	33.3		99	60-120			
Endrin aldehyde	31.8	5.0	ug/kg	33.3		95	55-120			
Endrin ketone	31.8	5.0	ug/kg	33.3		95	65-120			
Heptachlor	30.5	5.0	ug/kg	33.3		92	55-115			
Heptachlor epoxide	31.2	5.0	ug/kg	33.3		94	55-120			
Methoxychlor	31.7	5.0	ug/kg	33.3		95	60-120			
Surrogate: Tetrachloro-m-xylene	*27.9*		*ug/kg*	*33.3*		*84*	*35-115*			
Surrogate: Decachlorobiphenyl	*28.1*		*ug/kg*	*33.3*		*84*	*45-120*			
Matrix Spike Analyzed: 01/26/2006 (6A25090-MS1)					**Source: IPA1743-01**					
Aldrin	27.2	5.0	ug/kg	33.3	2.5	74	35-120			
alpha-BHC	26.6	5.0	ug/kg	33.3	2.7	72	35-120			
beta-BHC	29.4	5.0	ug/kg	33.3	ND	88	40-120			
delta-BHC	30.9	10	ug/kg	33.3	3.0	84	40-120			
gamma-BHC (Lindane)	27.7	5.0	ug/kg	33.3	ND	83	35-120			
4,4'-DDD	30.6	5.0	ug/kg	33.3	ND	92	40-125			
4,4'-DDE	53.9	5.0	ug/kg	33.3	19	105	40-125			
4,4'-DDT	32.1	5.0	ug/kg	33.3	3.5	86	40-125			
Dieldrin	33.4	5.0	ug/kg	33.3	1.2	97	40-120			
Endosulfan I	29.2	5.0	ug/kg	33.3	ND	88	40-120			
Endosulfan II	31.5	5.0	ug/kg	33.3	ND	95	45-120			
Endosulfan sulfate	32.1	10	ug/kg	33.3	ND	96	40-120			
Endrin	34.5	5.0	ug/kg	33.3	3.1	94	45-120			
Endrin aldehyde	29.7	5.0	ug/kg	33.3	3.0	80	25-120			
Endrin ketone	32.9	5.0	ug/kg	33.3	2.7	91	35-125			
Heptachlor	29.2	5.0	ug/kg	33.3	ND	88	35-115			
Heptachlor epoxide	31.9	5.0	ug/kg	33.3	ND	96	40-120			
Methoxychlor	35.4	5.0	ug/kg	33.3	ND	106	35-130			
Surrogate: Tetrachloro-m-xylene	*26.2*		*ug/kg*	*33.3*		*79*	*35-115*			
Surrogate: Decachlorobiphenyl	*25.0*		*ug/kg*	*33.3*		*75*	*45-120*			

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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GS-Lyon, Inc.
780 N. 4th Street
El Centro, CA 92243
Attention: Steven Williams

Project ID: GS0604

Report Number: IPA1743

Sampled: 01/16/06
Received: 01/20/06

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 6A25090 Extracted: 01/25/06										
Matrix Spike Dup Analyzed: 01/26/2006 (6A25090-MSD1)					**Source: IPA1743-01**					
Aldrin	26.2	5.0	ug/kg	33.3	2.5	71	35-120	4	30	
alpha-BHC	26.0	5.0	ug/kg	33.3	2.7	70	35-120	2	30	
beta-BHC	28.8	5.0	ug/kg	33.3	ND	86	40-120	2	30	
delta-BHC	30.5	10	ug/kg	33.3	3.0	83	40-120	1	30	
gamma-BHC (Lindane)	26.9	5.0	ug/kg	33.3	ND	81	35-120	3	30	
4,4'-DDD	29.1	5.0	ug/kg	33.3	ND	87	40-125	5	30	
4,4'-DDE	51.3	5.0	ug/kg	33.3	19	97	40-125	5	30	
4,4'-DDT	30.5	5.0	ug/kg	33.3	3.5	81	40-125	5	30	
Dieldrin	31.1	5.0	ug/kg	33.3	1.2	90	40-120	7	30	
Endosulfan I	27.6	5.0	ug/kg	33.3	ND	83	40-120	6	30	
Endosulfan II	30.7	5.0	ug/kg	33.3	ND	92	45-120	3	30	
Endosulfan sulfate	32.4	10	ug/kg	33.3	ND	97	40-120	1	30	
Endrin	32.9	5.0	ug/kg	33.3	3.1	89	45-120	5	30	
Endrin aldehyde	29.9	5.0	ug/kg	33.3	3.0	81	25-120	1	30	
Endrin ketone	31.0	5.0	ug/kg	33.3	2.7	85	35-125	6	30	
Heptachlor	28.6	5.0	ug/kg	33.3	ND	86	35-115	2	30	
Heptachlor epoxide	28.4	5.0	ug/kg	33.3	ND	85	40-120	12	30	
Methoxychlor	29.0	5.0	ug/kg	33.3	ND	87	35-130	20	30	
Surrogate: Tetrachloro-m-xylene	*25.7*		*ug/kg*	*33.3*		*77*	*35-115*			
Surrogate: Decachlorobiphenyl	*25.0*		*ug/kg*	*33.3*		*75*	*45-120*			

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Lisa Reightley
Project Manager

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Attention: Steven Williams

Project ID: GS0604
Report Number: IPA1743

Sampled: 01/16/06
Received: 01/20/06

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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Sampled: 01/16/06
Received: 01/20/06

Certification Summary

Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 3545/8081A	Soil	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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2520 E. Sunset Rd. #3 Las Vegas NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

Client Name/Address: GS Lyon Consultants, 760 N. 4th Street, El Centro, CA 92243	P.O. #:
Project Manager/Phone Number: S. Williams (760)351-1100	Project: 45066.4
Sampler: R. Miranda	Phone Number: (760) 337-1100
	Fax Number: (760) 337-8900

ANALYSIS REQUIRED

1PA1743

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	8081A Pesticides	Special Instructions
WB-4	Soil	4oz Jar	1	1/16/06	None	X	
WB-3	↓	↓	1	↓	↓	X	
WB-2	↓	↓	1	↓	↓	X	
WB-1	↓	↓	1	↓	↓	X	

Relinquished By: [signature]	Date/Time: 1/19/06 @2:30p	Received By: [signature]	Date/Time: 1/20/06 1830
Relinquished By	Date/Time:	Received By	Date/Time:
Relinquished By	Date/Time:	Received By	Date/Time:

Turnaround Time: (check)
Same Day ____ 72 Hours ____
24 Hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
Intact X On Ice: X 4°C

Appendix H: Noise Assessment

NOISE IMPACT ASSESMENT

WILLOW BEND DEVELOPMENT
STATE ROUTE 86 & DUFF ROAD
EL CENTRO, CALIFORNIA

PREPARED BY

VRPA TECHNOLOGIES, INC.
FRESNO, CALIFORNIA

June 28, 2006

VRPA Technologies, Inc.

4630 W. Jennifer, Ste. 105 • Fresno, CA 93722 • (559) 271-1200 • (559) 271-1269 Fax

Proposed Willow Bend Development
NOISE IMPACT ASSESSMENT

INTRODUCTION

This Noise Impact Assessment (NIA) has been prepared for the purpose of identifying potential noise impacts for the proposed Willow Bend residential development. The proposed Project is located in the City of El Centro.

DESCRIPTION OF THE REGION/PROJECT

Figure 1 identifies the location of the Project along with major roadways within the vicinity of the Project site. The project site is located in Imperial County within the City of El Centro. For noise impact assessment purposes, the "Project" is defined as 131 Single Family Dwelling Units located west of State Route 86 and approximately 4500 feet south of Interstate 8 in the City of El Centro's sphere-of-Influence. Existing Noise sources in the area include road traffic.

METHODOLOGY

When preparing an NIA, guidelines set by affected agencies must be followed. Acoustical terminology used for this NIA is documented in Appendix A. In analyzing noise levels, the Federal Highway Administration's (FHWA) Highway Traffic Noise Prediction methodology must be applied. Safety concerns must also be analyzed to determine the need for appropriate mitigation resulting from increased noise due to increased traffic adjacent to the Project and other evaluations such as the need for noise barriers and other noise abatement improvements. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dBA). A-weighing de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards use A-weighing, as it provides a high degree of correlation with human annoyance and health effects.

First, existing "baseline" traffic noise levels are established based on previously collected traffic data and using Sound2000 modeling. Sound2000 is the Caltrans version of FHWA's STAMINA 2.0/OPTIMA Traffic Noise Prediction Programs. Once existing levels are established, future levels, based on expected traffic growth, are calculated and compared to both the existing noise level and the maximum allowable noise exposure based on the El Centro General Plan. Referencing Table 1 the El Centro Noise Element of the General Plan identifies a maximum exterior noise exposure level of 60 L_{dn} dB for outdoor residential recreational areas. For interior areas a maximum of 45 L_{dn} dB is required.

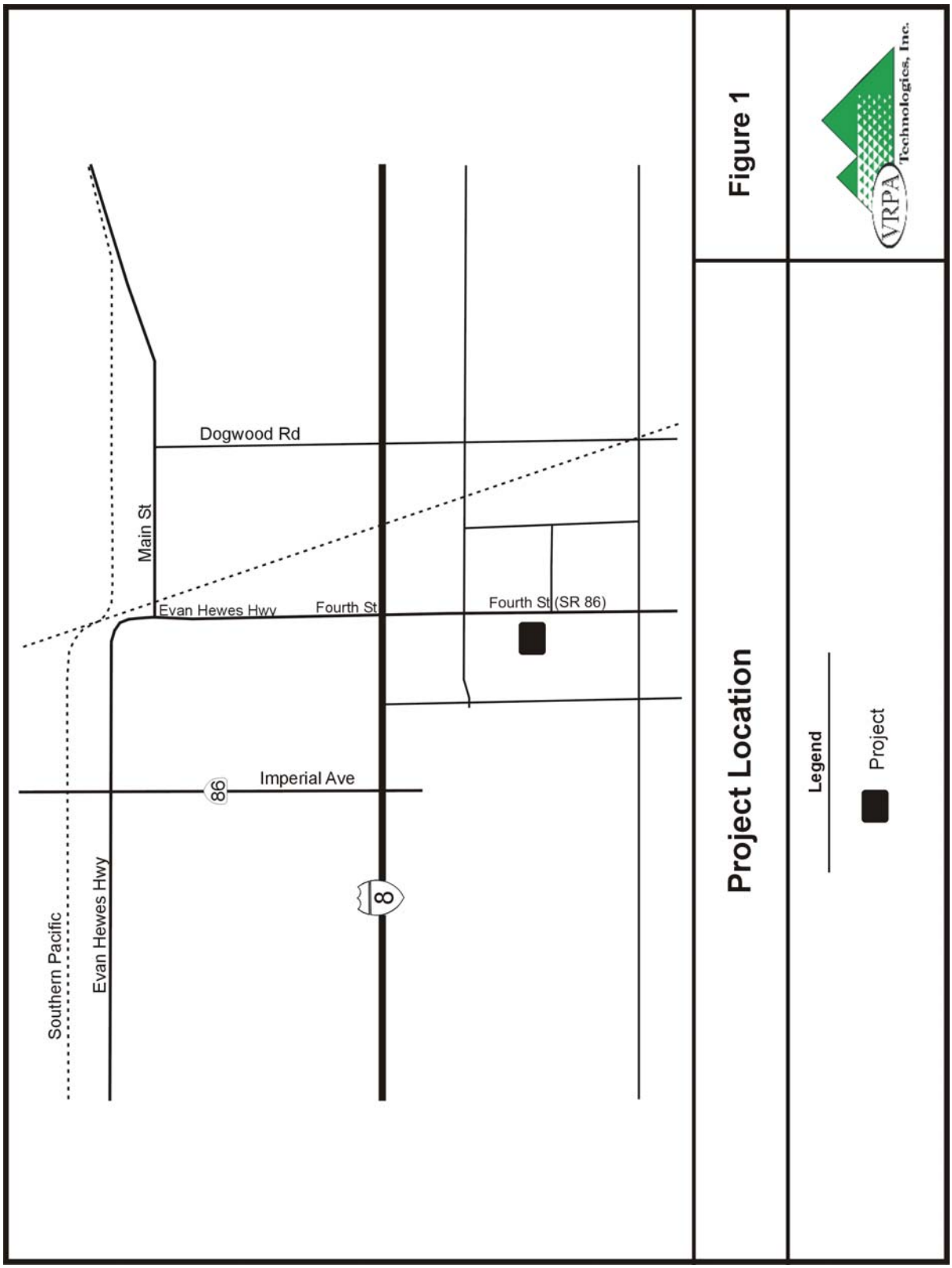

Figure 1
Project Location
Legend
Project
Dogwood Rd
Main St
Evan Hewes Hwy
Fourth St
Fourth St (SR 86)
Imperial Ave
86
8
Evan Hewes Hwy
Southern Pacific

TABLE 1

MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES El Centro General Plan			
Land Use Category	**Outdoor Activity Areas L_{eq} dB**	**Interior Spaces**	
		L_{eq} dB	**L_{dn} dB**
Residential – Low density, Single Family, Duplex, Mobile Homes	60	45	--
Residential – Multi-family	65	45	--
Transient Lodging	60	45	--
Schools, Libraries, Churches, Hospitals, Nursing Homes	70	45	--
Amphitheaters, Auditoriums, Concert Halls	70	--	--
Sports Arena, Outdoor Spectator Sports	75	--	--
Playgrounds, Neighborhood Parks	70	--	--

Source: El Centro General Plan, Noise Element

EXISTING TRAFFIC NOISE

Existing traffic noise levels were evaluated using the Sound 2000 Prediction Model. Traffic volumes collected from Katz, Okitsu & Associates and speeds of 40 miles per hour along State Route 86 were entered into the model to estimate noise levels at the proposed residential development.

To assess the traffic noise impacts from the adjacent roads on the project, the first step is to determine the baseline or the existing noise condition. The second is to then compare the baseline to future level results, based on expected traffic growth, and the maximum allowable noise exposure.

To assess existing noise conditions, VRPA Technologies staff compiled current traffic counts and existing geometric conditions. Staff conducted noise level measurements within the project site on November 17, 2005. The purpose of the measurements was to evaluate the accuracy of the model in describing traffic noise exposure within the project site. The project site plan and noise-monitoring sites are shown in Figure 2.

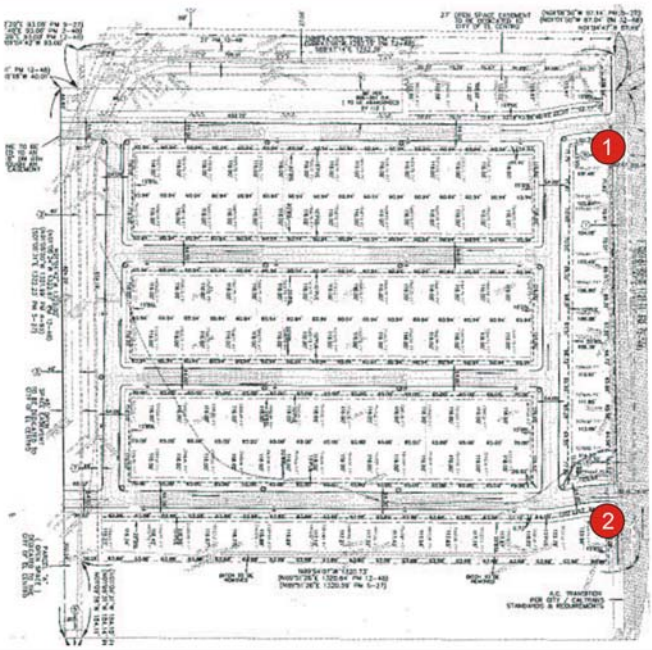
Noise monitoring equipment consisted of an Extech Type 2 sound level meter datalogger. Noise measurements were conducted in terms of the equivalent energy

sound level (L_{eq}). Measured L_{eq} were compared to L_{eq} values calculated (predicted) by the Sound 2000 model. Traffic volumes, truck mix and vehicle speeds were used as inputs to the model. The results of this comparison are shown in Table 2.

The locations described below and as shown on Figure 2, are representative of the approximate location of the closest proposed building setback from State Route 86.

- Location 1: 50 feet west of SR 86 center-line (North side of site plan)
- Location 2: 50 feet west of SR 86 center-line (South side of site plan)

Existing noise measurements were taken at the project site. Results of the noise analysis are reflected in Table 2, and are further described in technical worksheets at the back of this NIA. The existing noise levels at each receptor are currently above the City of El Centro's General Plan standards for exterior noise.



Receptor Location | **Figure 2**

Legend

Receptor

TABLE 2

NOISE IMPACTS FOR EXISTING, BUILD-OUT, AND FUTURE CONDITIONS

Receptor	Existing Leq Measured	2008 No Project Predicted	2008 Plus Project Predicted	Future No Project Predicted	Future Plus Project Predicted	Future No Project & Future Plus Project Difference
Receptor 1	60.7	61.5	64.3	65.1	66.5	1.4
Receptor 2	61.0	61.7	64.5	65.3	66.6	1.3

2008 Build-Out Conditions

Impacts in the Project area resulting from full project build-out (through 2008) are described in this Section. In this scenario forecasted traffic volumes for the year 2008 were used in the model to analyze 'Opening Day' traffic conditions. Results are identified in Table 2.

Future Conditions

Impacts in the Project area resulting from 20 years of growth and development (through 2025) are described in this Section. In this scenario forecasted traffic volumes for the year 2025 were used in the model to analyze future year conditions. Results are identified in Table 2.

Interior Noise Analysis

Residential construction methods complying with current building code requirements will reduce exterior noise levels by at least 20-25 dB if windows and doors are closed. An evaluation of existing and predicted future noise levels indicate that this reduction will be sufficient for compliance with the City's 45 dB DNL interior standard.

Exterior Noise Analysis

Results of the analysis indicate that Receptors 1 and 2 will exceed El Centro's acceptability criterion of 60 dB L_{eq} within the outdoor activity areas of noise sensitive land uses. For the undeveloped site, the future traffic noise exposure from State Route 86 at the closest proposed building setback is 66.6 L_{eq}. Since 2025 traffic represents worst-case condition, it provides the basis for assessing noise mitigation requirements.

Project Impacts

An analysis of the projects impact on sensitive receptors in the surrounding area was conducted to determine whether or not the projects traffic would have an impact on these sensitive receptors. Approximately 700 feet north of the proposed project is a

home that is located approximately 50 feet from the centerline of SR 86. This home will be used to represent all sensitive receptors in the area because of its close proximity to SR 86. Table 3 shows the impacts of the proposed project traffic to off-site receptors. Results of the analysis indicate that the proposed traffic alone would not cause significant impacts to nearby receptors. It should also be noted that when the project traffic is added to the future no project conditions, there is only an increase of 1.4 L_{eq}.

TABLE 3
NOISE IMPACTS FROM PROPOSED PROJECT

Receptor	Project Traffic Impacts Predicted	Future No Project Predicted	Future Plus Project Predicted	Future No Project & Future Plus Project Difference
Receptor 1	59.5	65.1	66.5	1.4

Construction Noise

Use of construction equipment during the development of the Project could lead to a temporary increase in noise levels in the immediate project area. The operation of typical equipment for road construction projects can range in noise levels from 80 dBA to 87 dBA. Construction will be restricted to the hours of 7 a.m. to 7 p.m.

Noise Mitigation

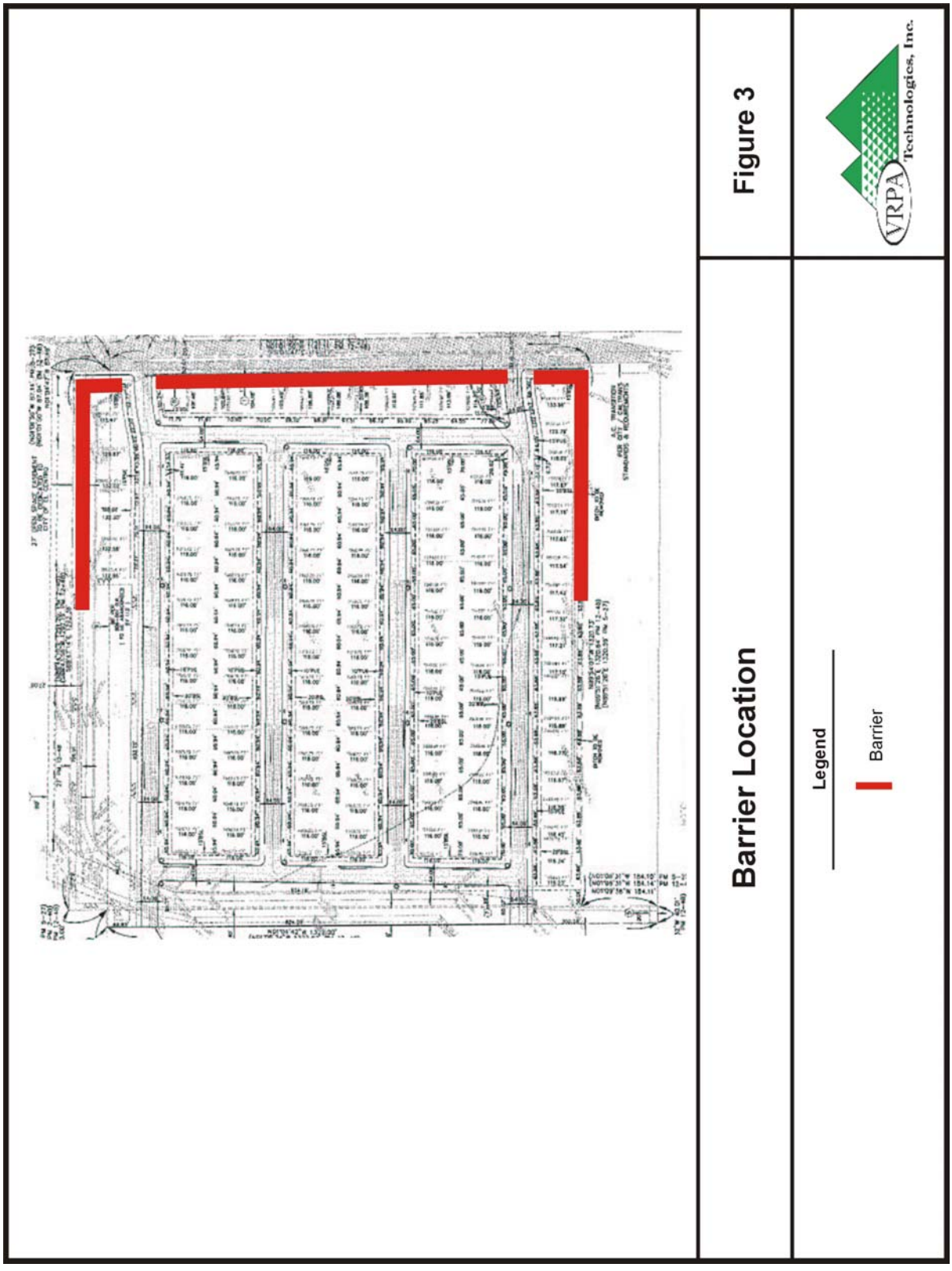
Noise barriers should be considered to attenuate noise impacts when the predicted worst-case noise is expected to approach or exceed El Centro's noise abatement criteria for appropriate land use categories. A potential mitigation measure that would decrease traffic noise exposure to the project site would be to build a 6-foot sound wall along the eastern portion of the project site that is closest to State Route 86 as shown in Figure 3. This wall will provide acoustical shielding of individual backyards and reduce the amount of noise affecting the interior of proposed residences. Sound wall noise attenuation was calculated using the same receptor locations with a 6.0-foot wall. The model calculates future noise levels with the wall of a given height in place based on the height of the receptor, distance from the receptor to the wall, and distance from the noise source to the wall. Results of the analysis as indicated in Table 4 show a sound-wall of 6-feet would attenuate noise levels to under 60 dBA for future traffic noise levels.

TABLE 4
FUTURE TRAFFIC NOISE EXPOSURE WITH MITIGATION

Receptor	Sound Wall Height, Ft.	Predicted Future L_{eq}, dB with Mitigation
1	6.0	59.3
2	6.0	59.6

Mitigation Measures

- A 6-foot high sound wall should be constructed along the project site. The sound wall must be continuous and constructed of a dense material such as masonry blocks or stucco on both sides of a wood/steel frame.
- The applicant shall follow the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) concerning interior noise exposure for multi-family housing, hotels and motels.
- Mechanical ventilation or air conditioning must be provided for all homes so that windows and doors may remain closed for the required acoustical insulation.


Figure 3
Barrier Location
Legend
Barrier

APPENDIX A

ACOUSTICAL TERMINOLOGY

The following terminology has been used for purposes of this NIA:

Ambient Noise Level: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7 p.m. to 10p.m. and ten decibels to sound levels in the night before 7 a.m. and after 10 p.m.

Decibel, dBA: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micro-newtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition often decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

L_{eq}(h): The hourly value of $L_{eq.}$

L_{max}: The maximum noise level recorded during a noise event

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). L_{10} equals the level exceeded 10 percent of the time.

L_n(h): The hourly value of L_n.

Noise Exposure Contours: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to the duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and the reference duration of one second

Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighing filter network. The A-weighing filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

Note: *CNEL and DNL represent daily levels of noise exposure averaged on an annual basis,* while L_n *represents the average noise exposure for a shorter time period, typically one hour.*

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND EXISTING

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
REC 1	61.0
REC 2	61.2

Page 1

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND 2008 NO PROJECT

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
REC 1	61.5
REC 2	61.7

Page 1

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND 2008 PLUS PROJECT

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
REC 1	64.3
REC 2	64.5

Page 1

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND FUTURE

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
REC 1	65.1
REC 2	65.3

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND FUTURE PLUS PROJECT

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
REC 1	66.5
REC 2	66.6

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND PROJECT TRAFFIC

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
REC 1	59.5

Page 1

sound32

SOUND32 - RELEASE 07/30/91, MODIFIED 04/22/00

TITLE:
WILLOW BEND FUTURE PLUS PROJECT

1

BARRIER DATA
****

BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	6.*							WALL	1000.0	

	0	1	2	3	4	5	6	7

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	REC 1	67.	500.	59.3
2	REC 2	67.	500.	59.6

BARRIER HEIGHT INDEX FOR EACH BARRIER SECTION
1
CORRESPONDING BARRIER HEIGHTS FOR EACH SECTION
6.

Page 1

Appendix I: Traffic Impact Study

Willow Bend
Addendum Traffic Impact Study

July 2006

Prepared for:
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, California, 92602

Prepared by:

Katz, Okitsu & Associates
2251 San Diego Avenue, Suite A270
San Diego, CA 92110
(619) 683-2933
Fax: (619) 683-7982

Job No.: JA5520

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1.0 The Project

This traffic impact analysis has been prepared for the proposed Willow Bend residential project. The proposed development is located in the County of Imperial within the Sphere-of-Influence of the City of El Centro. The project is located on the west side of State Route 86, south of Interstate 8 between McCabe and Horne Roads.

Project Description

The project consists of 131 single-family dwelling units. The existing site is vacant. Implementation of the proposed project includes a zone change from County zoning, General Agriculture/Urban Overlay (A2U) to City zoning Single Family Residential (R-1). The project will result in the subdivision of approximately 38 farmland acres into 131 lots. Using recommended trip generation rates for a single-family dwelling unit (detached homes), the project will generate a total of 1,333 daily driveway trips.

Project Access

The project is adjacent to State Route 86 (SR-86) between McCabe and Horne Roads. Access to the project site would be provided from SR-86 by two project driveways, Willow Bend Drive and Countryside Drive. SR-86 also connects to Interstate 8, which provides regional access to the project site.

Study Area

The study area for this project includes those locations that are expected to be affected by the project. The scope of the study area is based on a review of on-going traffic studies, and a working knowledge of the local transportation system. Figure 1-1 shows the project vicinity and study area. Figure 1-2 shows the project site plan. The specific study area includes eight intersections and five roadway segments:

Study Intersections

1. SR-86 & I-8 Westbound Ramps (signalized)
2. SR-86 & I-8 Eastbound Ramps (signalized)
3. SR-86 & Wake Avenue (signalized)
4. SR-86 & Danenberg Road (signalized)
5. SR-86 & Horne Road (side-street stop controlled)
6. SR-86 & Willow Bend Drive (project access) (side-street stop controlled)
7. SR-86 & Countryside Drive (project access) (side-street stop controlled)
8. SR-86 & West McCabe Road (side-street stop controlled)

Study Roadway Segments

1. SR-86 between McCabe Road and Project Access (South of Horne Road)
2. SR-86 between Project Access and Danenberg Road
3. SR-86 between Danenberg Road and Wake Avenue
4. SR-86 between Wake Avenue and I-8 Eastbound Ramps
5. SR-86 between I-8 Westbound Ramps and Aurora Drive

Project Trip Generation

Trip generation is a measure or forecast of the number of trips that begin or end at the project site. The traffic generated is a function of the extent and type of development proposed for the site. These trips will result in some traffic increases on the streets where they occur. Vehicular traffic generation characteristics for projects are estimated based on established rates. These rates identify the probable traffic generation of various land uses based studies of developments in comparable settings. The rates used in this analysis were determined based on rates contained in the *ITE Trip Generation (7th Edition)* 2003. This publication provides standards and recommendations for the probable traffic generation of various land uses based upon local, regional and nationwide studies of existing developments in comparable settings. Appendix C contains excerpts from this manual.

Table 1-1
Project Trip Generation

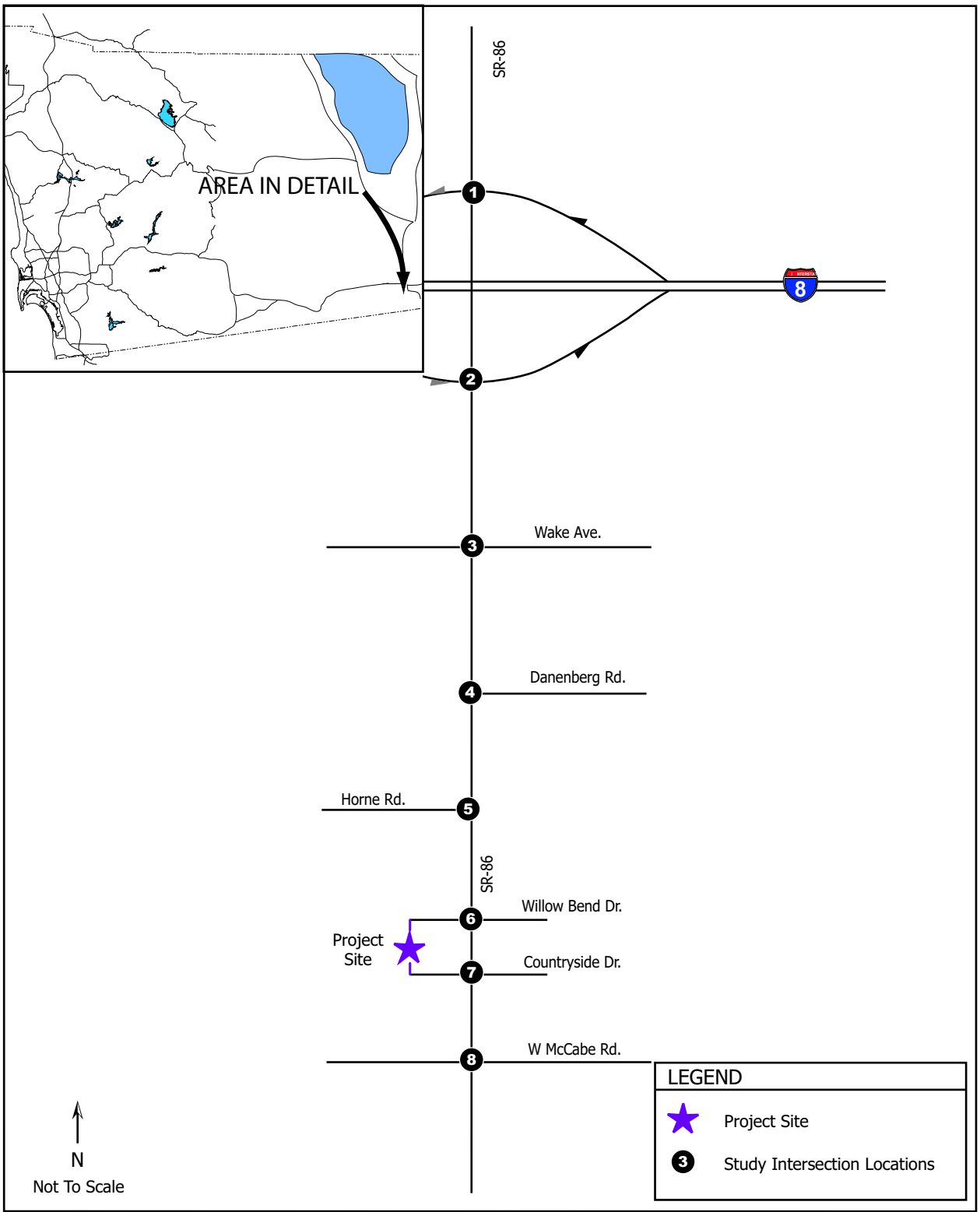
Land Use	*Amount*	*Daily Trips*	*AM Peak Hour*	*AM In*	*AM Out*	*PM Peak Hour*	*PM In*	*PM Out*
Trip Generation Rate								
Single Family Dwelling Unit	*1*	*1*	*2*	*25%[3]*	*75%[3]*	*4*	*63%[3]*	*37%[3]*
Project Generated Trips								
Single Family Dwelling Unit	131	1,333	101	25	76	137	86	51

[1] Ln(T) = 0.92 Ln(x) + 2.71
[2] T = 0.70(x) + 9.43
[3] Percent of Peak Hour Trips
[4] Ln(T) = 0.90 Ln(x) + 0.53

Trip Distribution and Assignment

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. Trip distribution and assignment information can be estimated from observed traffic patterns, experience or through use of a computerized travel forecast model. Once the proposed developments trips have been estimated, they are assigned to the study area network. The trip distribution and assignment for this project is based on observed traffic patterns and experience.

The trip distribution and assignment for the project-related trips is shown in Figure 1-3. Figure 1-4 shows the daily and peak hour project trips.



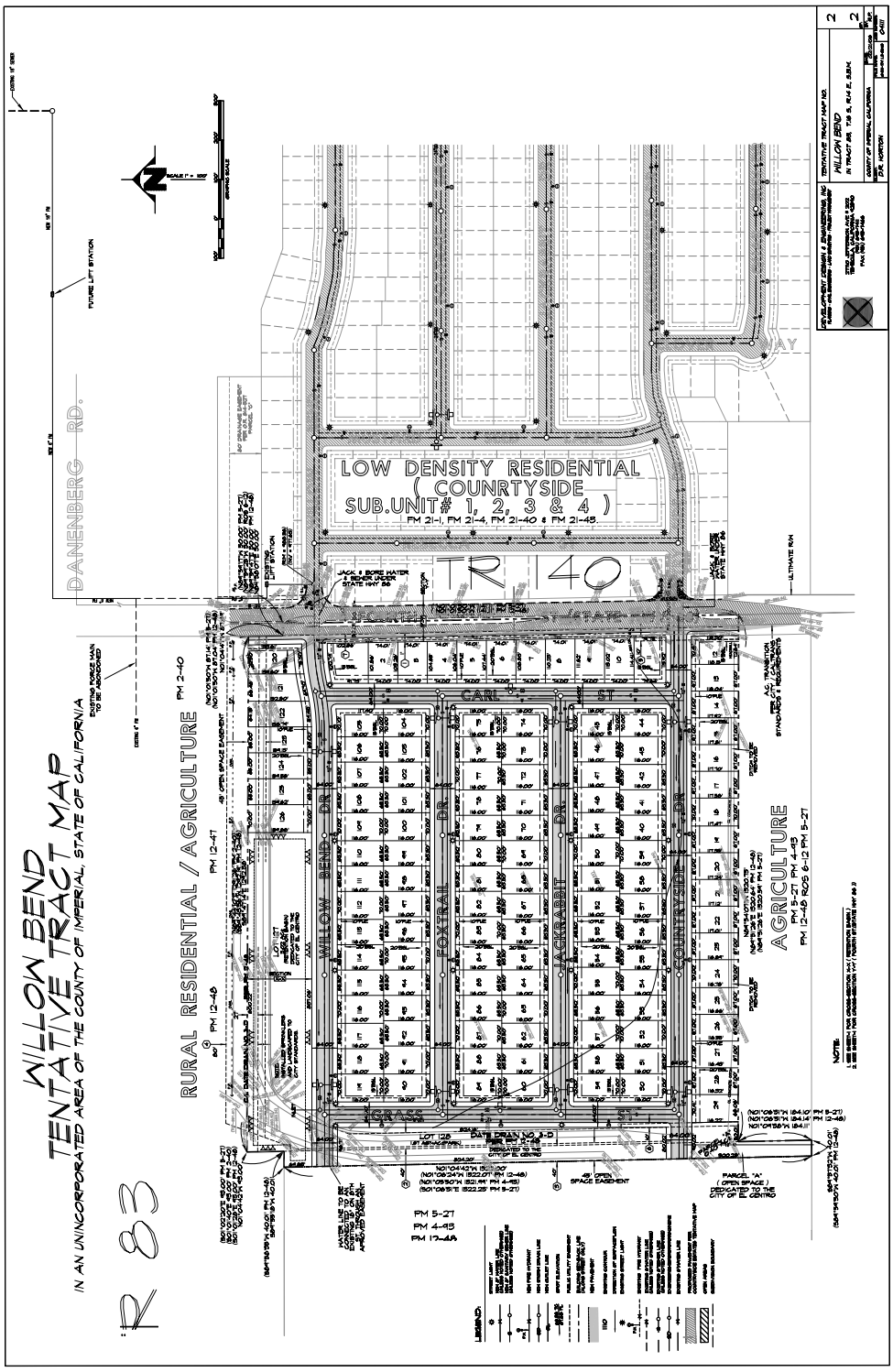
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Figure 1-1

Project Study Area

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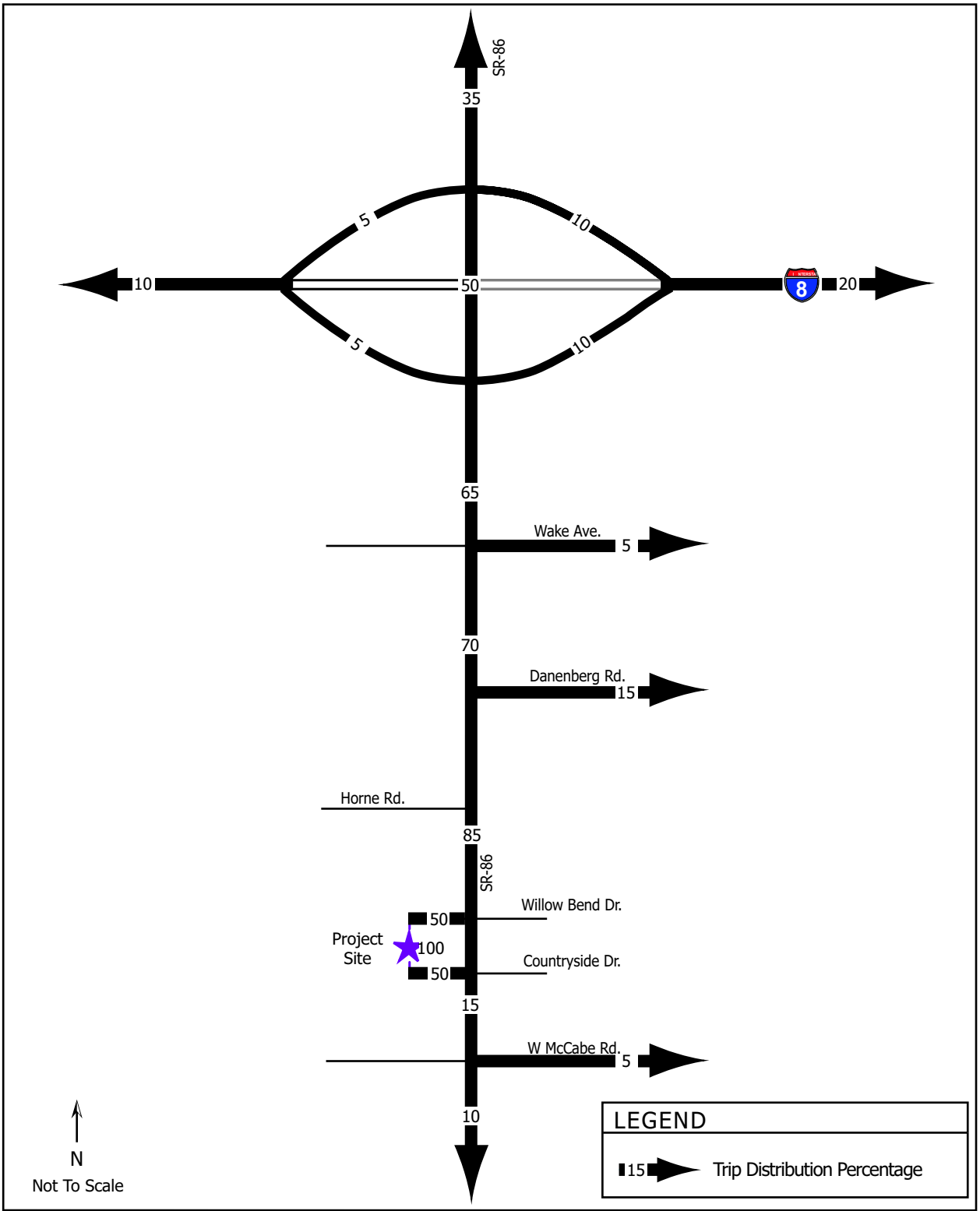
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Figure 1-2

Project Site Plan



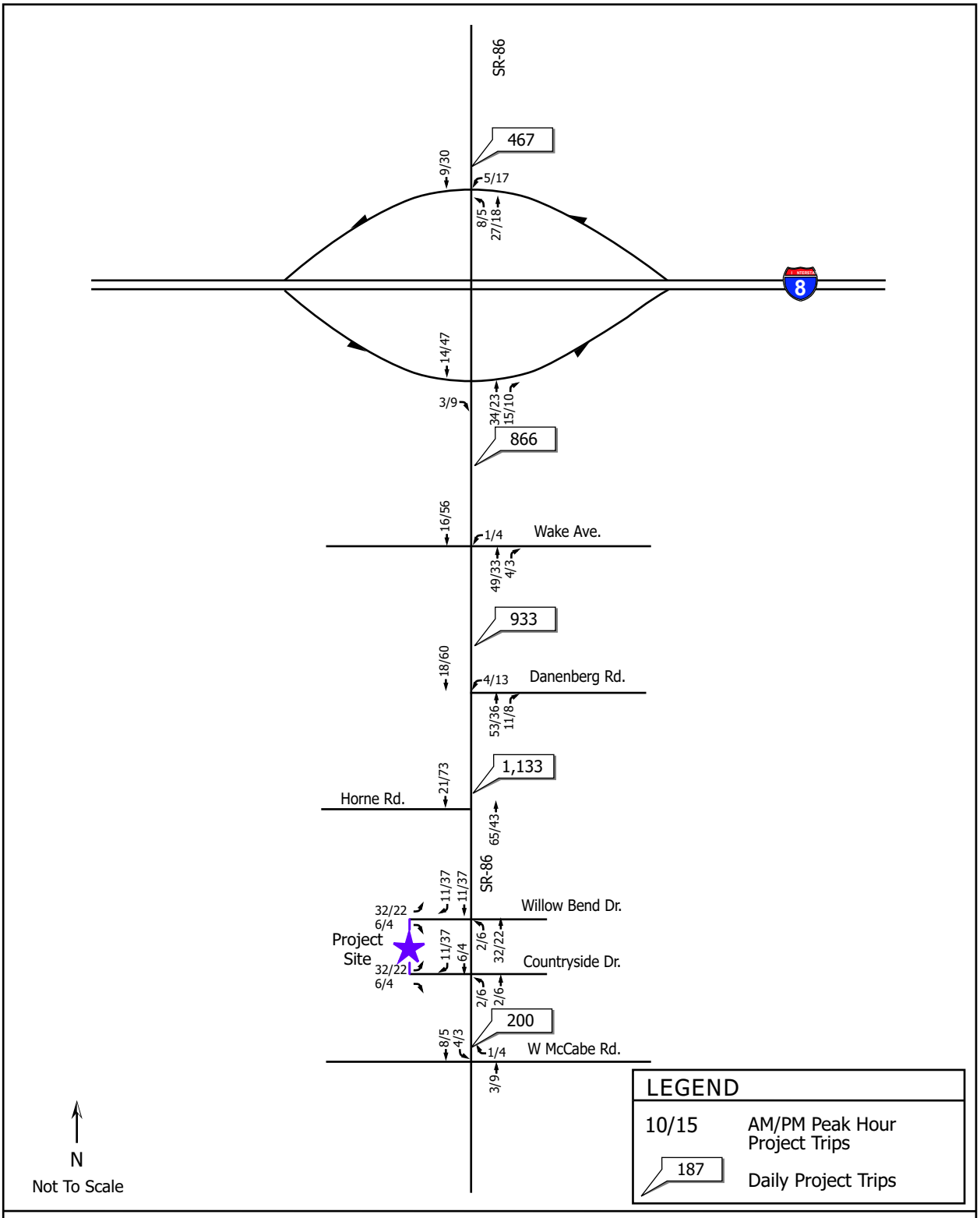
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Figure 1-3

Project Trip Distribution

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Figure 1-4

Project Trips

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2.0 Methodologies

This chapter documents the methodologies and assumptions used to conduct the traffic impact analysis for the project. This section contains the following background information:

- Study scenarios
- Study time periods
- Capacity analysis methodologies

Study Scenarios

This report presents an analysis of the following analysis scenarios:

- Existing Conditions
- Existing Conditions Plus Project
- Near-term Conditions Plus Project (Existing Conditions with Cumulative Projects and Site Traffic)
- Horizon Year Conditions (Year 2025)

Analysis Methodologies

Street system operating conditions are typically described in terms of "level of service." Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). A more detailed description of the concepts described in this section is provided in Appendix A of this document.

Roadway Segment Capacity Analysis

The City of El Centro has published daily traffic volume standards for roadways within its jurisdiction *(City of El Centro General Plan Circulation Element, 2004)*. To determine existing service levels on study area roadway segments, we compared the appropriate average daily traffic thresholds for level of service to the daily capacity of the study area roadway segments, and the existing and future volumes in the study area. The thresholds for determining level of service used in this analysis are summarized in Appendix A.

Intersection Capacity Analysis

Analyses of peak hour intersection conditions were conducted using the TRAFFIX software program. Appendix A briefly defines the level of service concept as applied to surface-street intersections.

Signalized Intersections

All signalized intersections were analyzed based on the "operational analysis" procedure for signalized intersections as defined in the 2000 Highway Capacity Manual (HCM). This technique uses 1,900 passenger cars per hour of green per lane (pcphgpl) as the maximum saturation flow of a single lane at an intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition, (e.g., percent that is trucks) and shared lane movements (e.g., through and right-turn movements from the same lane). Level of service for signalized intersections is based on the average time (seconds) that vehicles entering an intersection are stopped or delayed. Appendix A lists the HCM LOS/delay criteria for signalized intersections.

All-Way Stop-Controlled Intersections

Level of Service for all-way stop-controlled (AWSC) intersections is also based on the average time in seconds that vehicles are stopped or delayed. However, AWSC intersections have different threshold values than those applied to signalized intersections. This is based on the rationale that drivers expect AWSC intersections to carry lower traffic volumes than at signalized intersections. Therefore, a higher level of delay is acceptable at a signalized intersection for the same LOS. Appendix A lists the HCM LOS/delay criteria for all-way stop-controlled intersections.

Side Street Stop-Controlled Intersections

All intersections with minor-street stop control were also analyzed based on the recommended HCM analysis method. The HCM analysis method for evaluating unsignalized, minor street stop intersections is based on the average total delay for each impeded movement. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The resulting delay is used to determine the level of service. Appendix A summarizes the level of service criteria for minor-street stop controlled intersections.

Analysis of Significance

To determine direct and cumulative roadway segment and intersection project impacts, KOA in concert with the City of El Centro has developed a series of thresholds based on allowable increases in volume-to-capacity ratios for roadway segments and increases in seconds of delay for intersections that become more stringent as level of service worsens. Roadway segments and intersections operating at LOS C or better in the existing condition with the addition of the proposed project are not considered significantly impacted. Under the near-term analysis, which includes the addition of all planned cumulative projects including the proposed project, roadway segments and intersections operating at LOS D or better are not considered cumulatively impacted. Table 2-1 summarizes the significance criteria for both intersections and roadway segments.

Table 2-1
City of El Centro Significance Criteria

Intersection Significance Criteria[1]

Existing Plus Project Scenario		
Existing	**Existing + Project**	**Impact Type**
LOS C or better	LOS C or better	None
LOS C or better	LOS D or worse	Direct
LOS D or worse	Project adds < 2.0 seconds of delay	None
LOS D or worse	Project adds > 2.0 seconds of delay	Direct
Existing + Project + Cumulative Project Scenario		
Existing	**Existing + Project + Cumulative Projects**	**Impact Type**
LOS D or better	LOS D or better	None
LOS D or better	LOS E or worse	Cumulative
LOS E or worse	Project + Cumulative Projects add < 2.0 seconds of delay	None
LOS E or worse	Project + Cumulative Projects add > 2.0 seconds of delay	Cumulative

Roadway Segment Significance Criteria[1]

Existing Plus Project Scenario		
Existing	**Existing + Project**	**Impact Type**
LOS C or better	LOS C or better	None
LOS C or better	LOS D or worse	Direct[2]
LOS D or worse	Project adds < .02 v/c[3]	None
LOS D or worse	Project adds > .02 v/c[3]	Direct
Existing + Project + Cumulative Project Scenario		
Existing	**Existing + Project + Cumulative Projects**	**Impact Type**
LOS D or better	LOS D or better	None
LOS D or better	LOS E or worse	Cumulative
LOS E or worse	Project + Cumulative Projects add < .02 v/c [3]	None
LOS E or worse	Project + Cumulative Projects add > .02 v/c [3]	Cumulative

[1] Study area intersections and segments are defined by the assignment of 500 daily trips or 50 peak hour peak direction trips along with guidance provided by City staff.

[2] Not a direct impact when with project segment operation is LOS D and intersections along the segment operate at LOS D or better.

[3] v/c = Volume to Capacity Ratio

3.0 Existing Conditions

Traffic Volumes

The intersection turning movement counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM and during the weekday evening peak period from 4:00 PM to 6:00 PM. All peak hour intersection turning movement counts were conducted in October 2005 with the exception of the SR-86/ Horne Road intersection which was conducted in 2004 by Linscott, Law & Greenspan Engineers. In addition, intersection peak hour traffic volumes for the intersections of SR-86/Willow Bend Drive and SR-86/Coutryside Drive were estimated in order to account for the existing traffic from the adjacent Countryside Estates residential development on the east side of SR-86. The trip generation for this project was obtained from the "Countryside Estates" traffic study conducted by LLG (2005) with the trip distribution derived from this project given the similar residential land uses.

Average daily traffic volumes were obtained through machine data collection for all roadway segments collected in 2005 with the exception of the SR-86 south of I-8 eastbound ramps roadway segment, which was collected from the Caltrans *Traffic Data Systems Unit* 2004 databank. The resultant existing weekday morning and evening peak hour intersection volumes are shown in Figures 3-2 and 3-3. The daily traffic volumes are shown in Figure 3-4.

Roadway Network

The principal roadways in the project study area are described briefly below. The description includes the physical characteristics, adjacent land uses, and traffic control devices along these roadways. The existing roadway geometry and control conditions are shown in Figure 3-1. Additional details regarding specific intersection operating conditions can be found in the capacity analysis worksheets in Appendix D and E.

State Route 86 runs north/south connecting the project traffic to Interstate 8 and the City of El Centro north of the project area. South of the project area it connect the City of El Centro to Calexico with connections to Mexicali south of the U.S. border. SR-86 is classified as a State Highway in the Imperial County Circulation Element. It is currently constructed as a four lane arterial north of Wake Avenue. Between Wake Avenue and Countryside Drive, SR-86 is constructed as a three lane arterial with 2 northbound lanes and one southbound lane. Along this section of the roadway, there are raised medians and median breaks with left-turn pockets providing access to local streets. South of Countryside Drive, SR-86 transitions to a two lane undivided roadway with a paved roadway width of 32 feet. The General Plan recommends an ultimate classification of four lanes along the corridor. There are no bike lanes or bus stops and parking is generally prohibited in the project area. Sidewalks are missing on the west side of the roadway between Wake Avenue and McCabe Road and on the east side of the roadway between Danenberg and McCabe Roads, with the exception of the sidewalk improvements

which were constructed along the adjacent Countryside Estates' frontage. The posted speed limit varies between 40 and 55 MPH in the project area.

Interstate 8 is an east/west freeway connecting the City of El Centro to the San Diego region west of the project and the City of Yuma, Arizona east of the project. It provides four lanes, with two travel lanes in each direction. Connections to the project area are possible via both eastbound and westbound ramps at its intersection with State Route 86.

Danenberg Road runs east/west north of the project and is classified as a Collector in the Imperial County Circulation Element. In its current configuration, it is constructed as a two lane undivided roadway. There are no bike lanes and parking is generally permitted. The speed limit is posted at 40 MPH in the project area.

Horne Road runs east/west north of the project and is classified as a Collector in the Imperial County Circulation Element. It is constructed as a two lane undivided roadway. There are no bike lanes and parking is generally permitted. The speed limit is posted at 35 MPH in the project area.

McCabe Road runs east/west south of the project area and is classified as a Major Collector in the Imperial County Circulation Element. It is constructed as a two lane undivided roadway. There are no bike lanes and parking is generally prohibited in the project area. The speed limit is posted at 55 MPH.

Wake Avenue runs east/west north of the project area in the City of El Centro and intersects with both SR-86 and 8th Street. It is constructed as a four-lane roadway from 8th Street and continues east of SR-86. It has no raised or painted medians, bike lanes or bus stops. There are contiguous sidewalks along the corridor but parking is prohibited.

Table 3-1
Existing Roadway Segment Conditions

Roadway Segment	Lanes/Class	LOS E Capacity	Existing No Project		
			ADT	V/C	LOS
State Route 86					
Between McCabe Rd & Project Access (South of Horne Rd)[1]	2/Arterial	17,500	7,631	0.436	C
Between Project Access & Danenberg Rd[1]	3/Arterial	27,750	7,631	0.275	A
Between Danenberg Rd & Wake Ave[2]	3/Arterial	27,750	13,575	0.489	B
Between Wake Ave and I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B
Between I-8 Westbound Ramps and Aurora Dr.[3]	4/Arterial	37,000	13,576	0.367	A

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004)

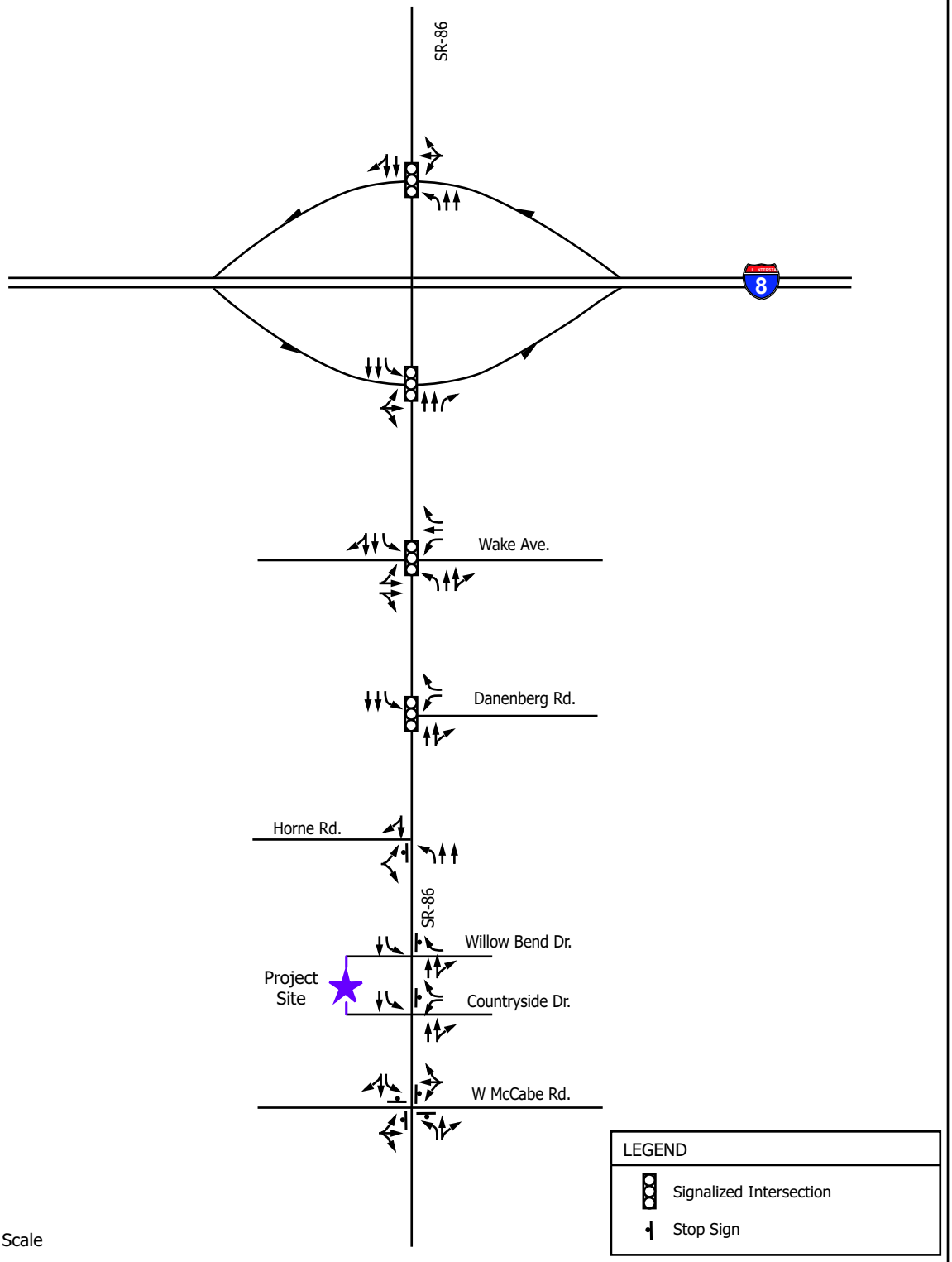
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given the three lane alignment with a raised median

[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004)

Table 3-2
Existing Intersection Conditions

Intersection	*Delay (Seconds)*	*LOS*
AM Peak Hour		
SR-86 & I-8 WB Ramp	19.0	B
SR-86 & I-8 EB Ramp	19.9	B
SR-86 & Wake Ave	17.2	B
SR-86 & Danenberg Rd	13.5	B
SR-86 & Horne Rd*	11.3	B
SR-86 & Willow Bend Dr (Project Access)*	10.9	B
SR-86 & Countryside Dr (Project Access)*	10.7	B
SR-86 & W McCabe Rd*	19.7	C
PM Peak Hour		
SR-86 & I-8 WB Ramp	23.1	C
SR-86 & I-8 EB Ramp	25.7	C
SR-86 & Wake Ave	18.0	B
SR-86 & Danenberg Rd	14.8	B
SR-86 & Horne Rd*	13.7	B
SR-86 & Willow Bend Dr (Project Access)*	11.3	B
SR-86 & Countryside Dr (Project Access)*	11.1	B
SR-86 & W McCabe Rd*	19.7	C

Note: *Stop-controlled intersection



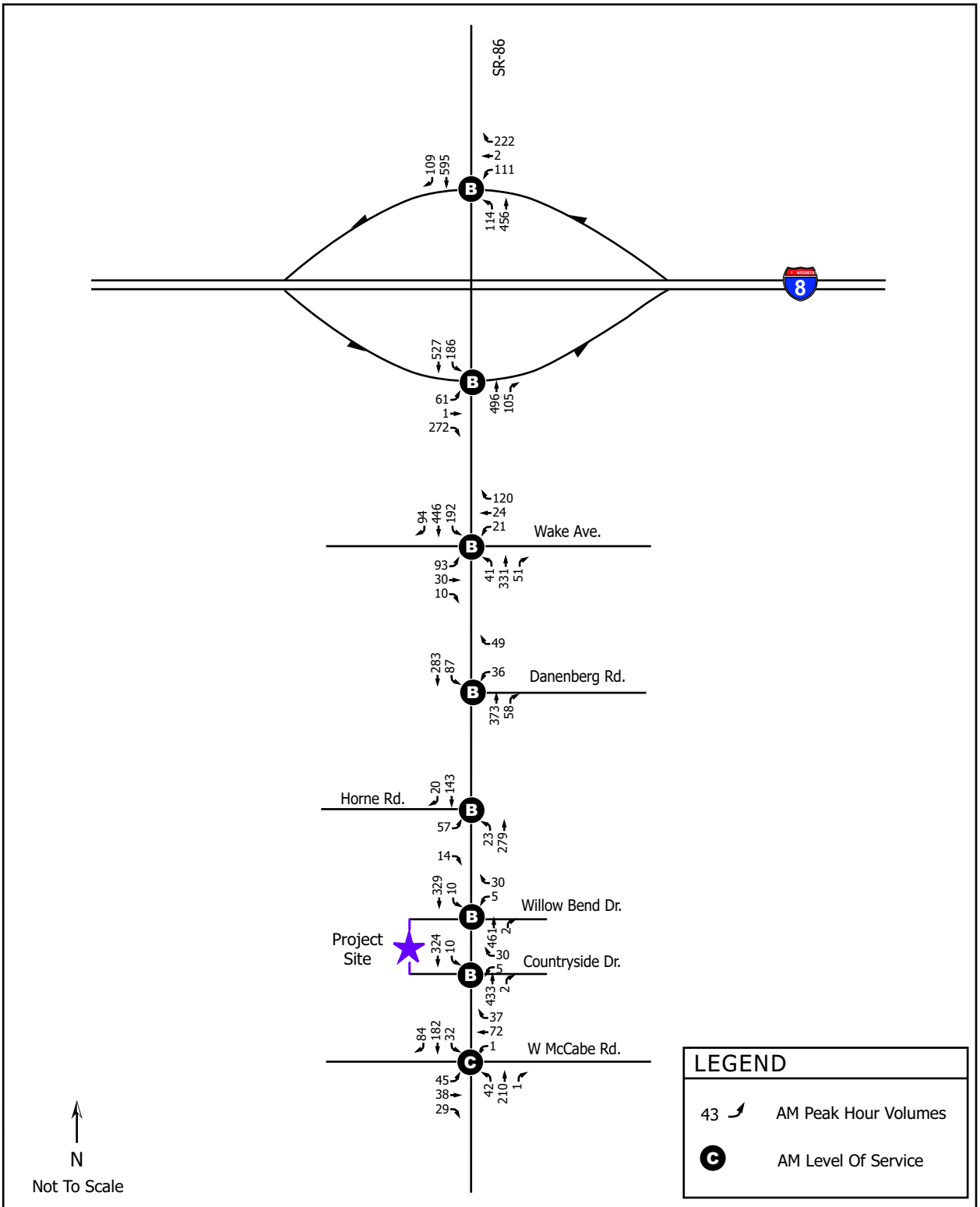
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Figure 3-1

Existing Circulation Network

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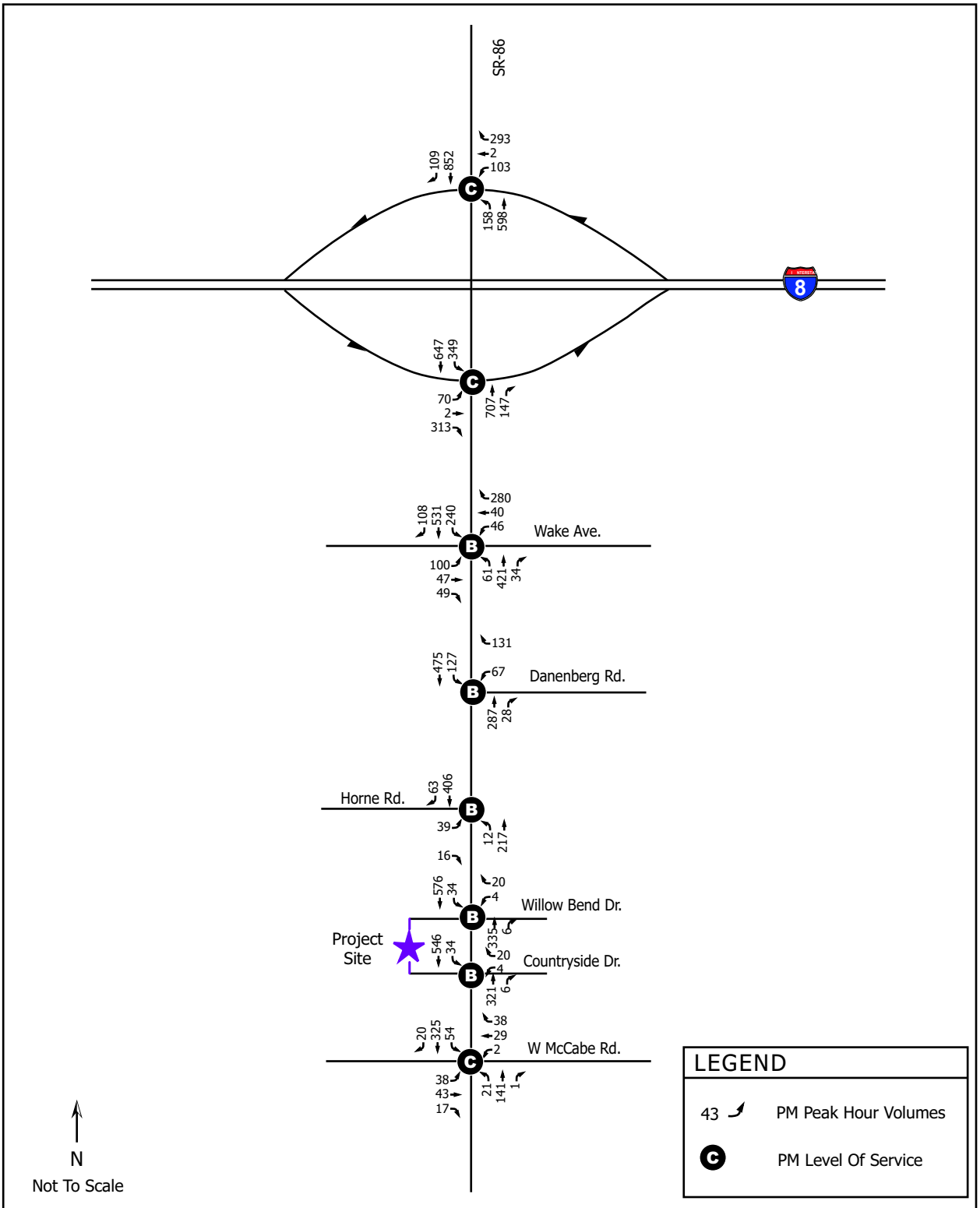
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Figure 3-2

Existing AM Peak Hour Intersection Conditions

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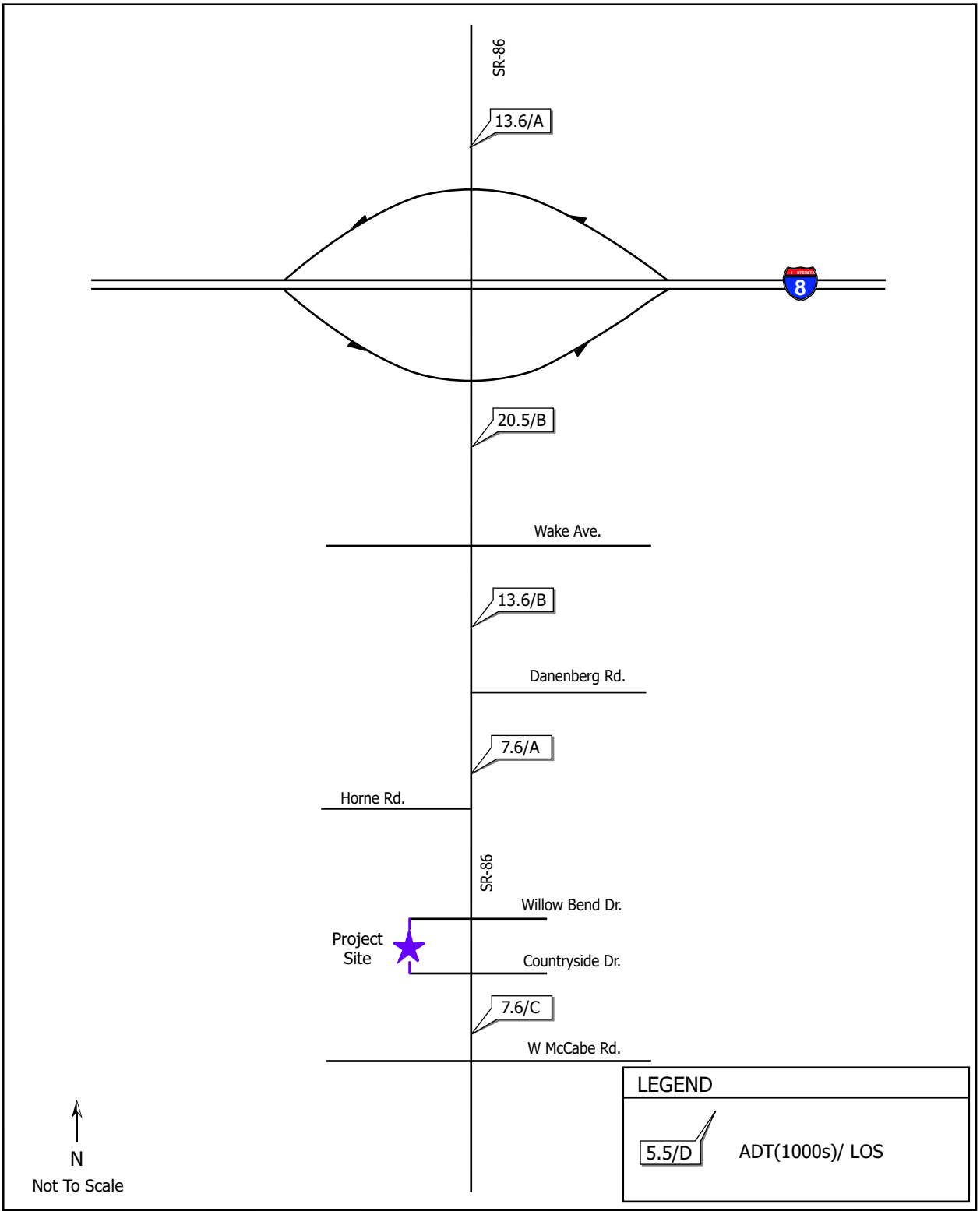
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Figure 3-3

Existing PM Peak Hour Intersection Conditions

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Figure 3-4

Existing Roadway Segment Conditions

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4.0 Existing Plus Project Conditions

Existing Plus Project conditions represent opening day of the proposed project where project traffic volumes are added to the existing base volumes to create the "plus project" scenario.

Existing Circulation Network

No other circulation network changes were assumed under the Existing Plus Project scenario.

Existing Plus Project Roadway Segment and Intersection Analysis

The effect of the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis. The resultant existing weekday morning and evening peak hour intersection volumes with the proposed project are shown in Figures 4-1 and 4-2. The existing plus project daily traffic volumes are shown in Figure 4-3.

Table 4-1
Existing Plus Project Roadway Segment Conditions

Roadway Segment	Lanes/Class	LOS E Capacity	Project traffic	Plus Project			Comparison	
				ADT	V/C	LOS	Δ V/C	Significant?
State Route 86								
Between McCabe Rd & Project Access (South of Horne Rd)[1]	2/Arterial	17,500	200	7,831	0.447	D	0.011	No
Between Project Access & Danenberg Rd[1]	3/Arterial	27,750	1,133	8,764	0.316	A	0.041	No
Between Danenberg Rd & Wake Ave[2]	3/Arterial	27,750	933	14,508	0.523	B	0.034	No
Between Wake Ave and I-8 Eastbound Ramps[3]	4/Arterial	37,000	866	21,366	0.577	B	0.023	No
Between I-8 Westbound Ramps and Aurora Dr.[3]	4/Arterial	37,000	467	14,043	0.380	A	0.013	No

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004)

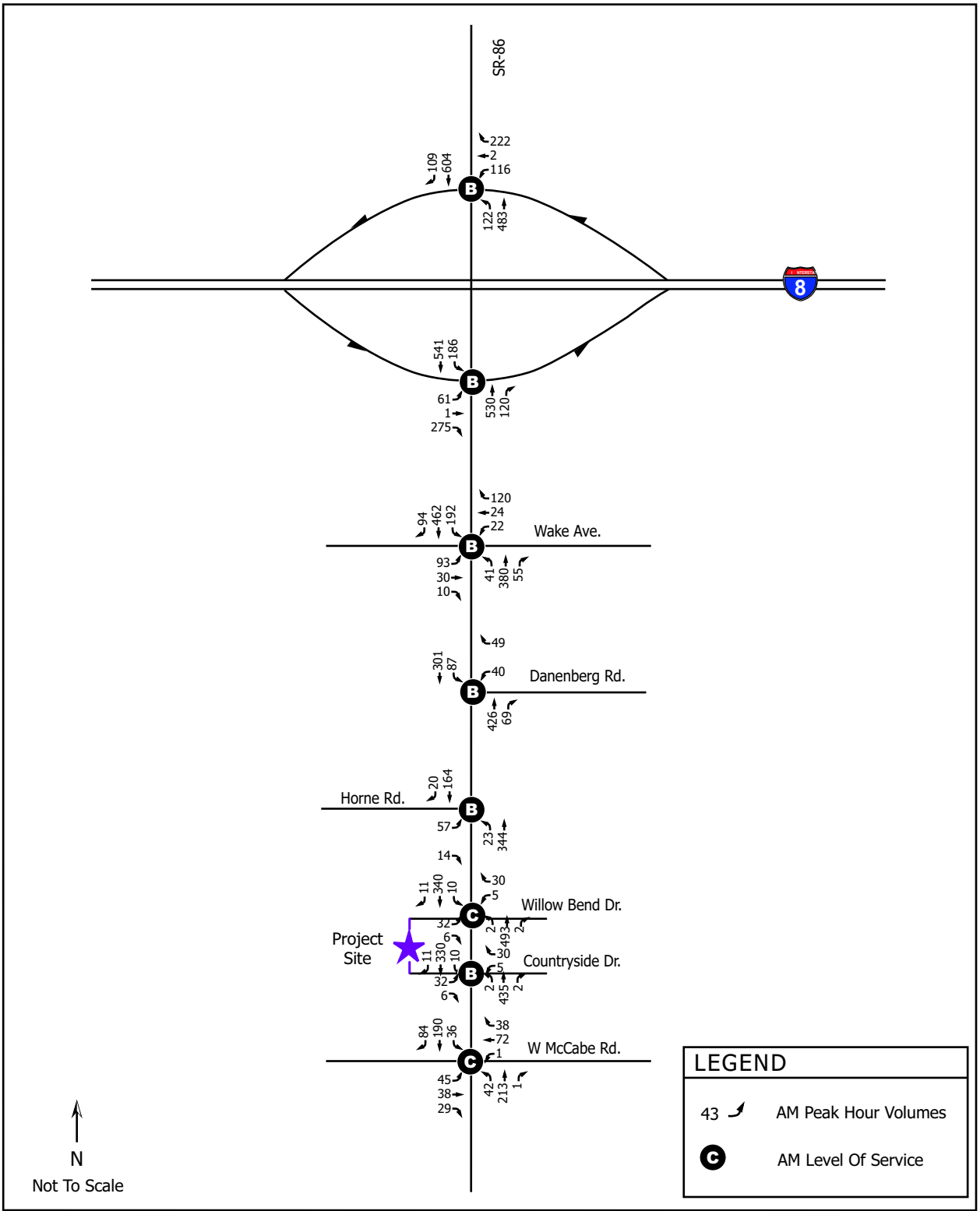
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given the three lane alignment with a raised median

[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004)

Table 4-2
Existing Plus Project Intersection Conditions

Intersection	No Project		Plus Project			
	Delay (Sec)	LOS	Delay (Sec)	LOS	Δ (Sec)	Sig
AM Peak Hour						
SR-86 & I-8 WB Ramp	19.0	B	19.2	B	0.2	No
SR-86 & I-8 EB Ramp	19.9	B	19.9	B	0.0	No
SR-86 & Wake Ave	17.2	B	17.2	B	0.0	No
SR-86 & Danenberg Rd	13.5	B	12.8	B	-0.7	No
SR-86 & Horne Rd*	11.3	B	11.8	B	0.5	No
SR-86 & Willow Bend Dr (Project Access)*	10.9	B	15.6	C	4.7	No
SR-86 & Countryside Dr (Project Access)*	10.7	B	14.9	B	4.2	No
SR-86 & W McCabe Rd*	19.7	C	20.5	C	0.8	No
PM Peak Hour						
SR-86 & I-8 WB Ramp	23.1	C	24.4	C	1.3	No
SR-86 & I-8 EB Ramp	25.7	C	26.5	C	0.8	No
SR-86 & Wake Ave	18.0	B	18.8	B	0.8	No
SR-86 & Danenberg Rd	14.8	B	14.4	B	-0.4	No
SR-86 & Horne Rd*	13.7	B	15.0	C	1.3	No
SR-86 & Willow Bend Dr (Project Access)*	11.3	B	21.7	C	10.4	No
SR-86 & Countryside Dr (Project Access)*	11.1	B	19.5	C	8.4	No
SR-86 & W McCabe Rd*	19.7	C	20.4	C	0.7	No

Note: *Stop-controlled intersection



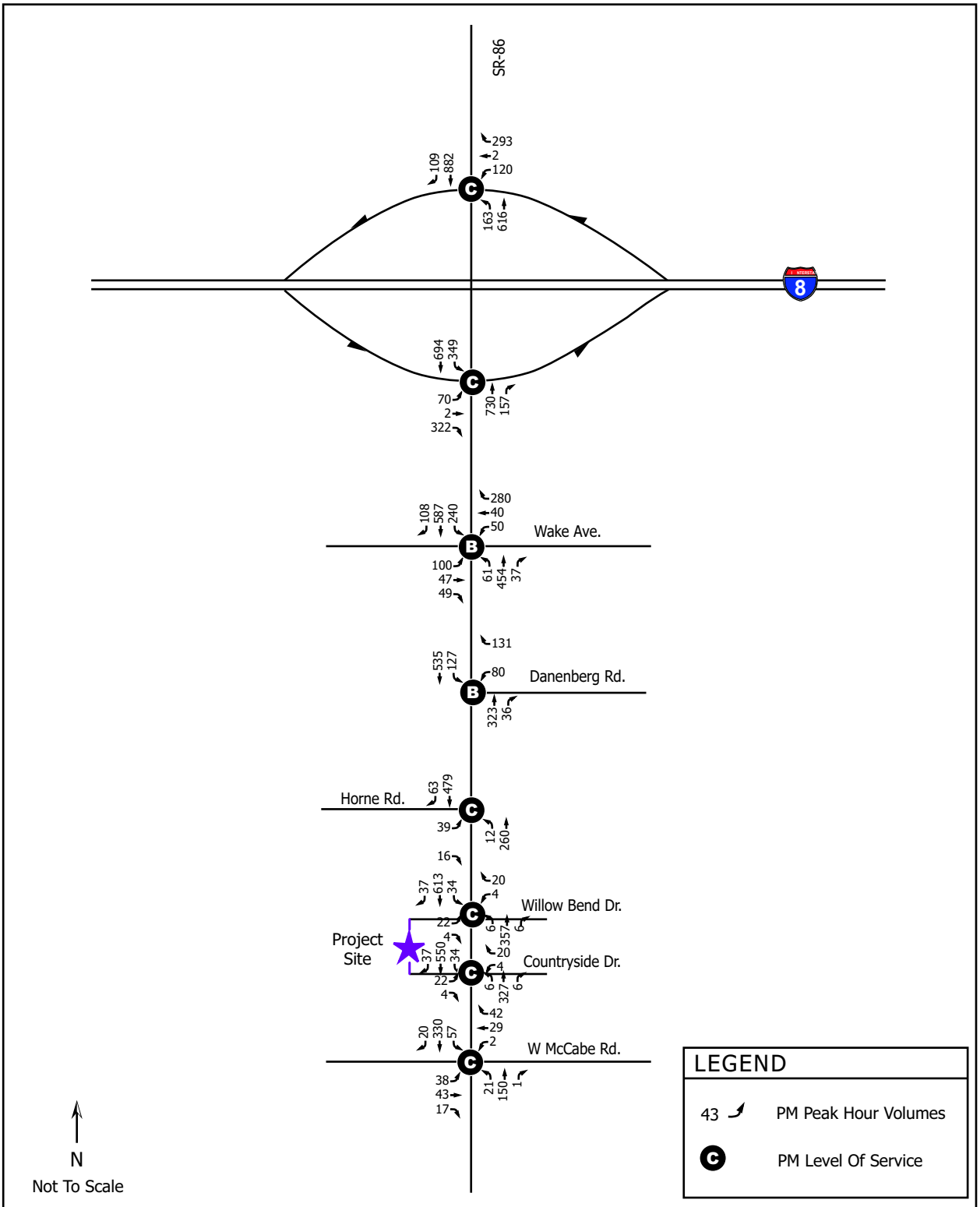
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Figure 4-1

Existing Plus Project AM Peak Hour Intersection Conditions

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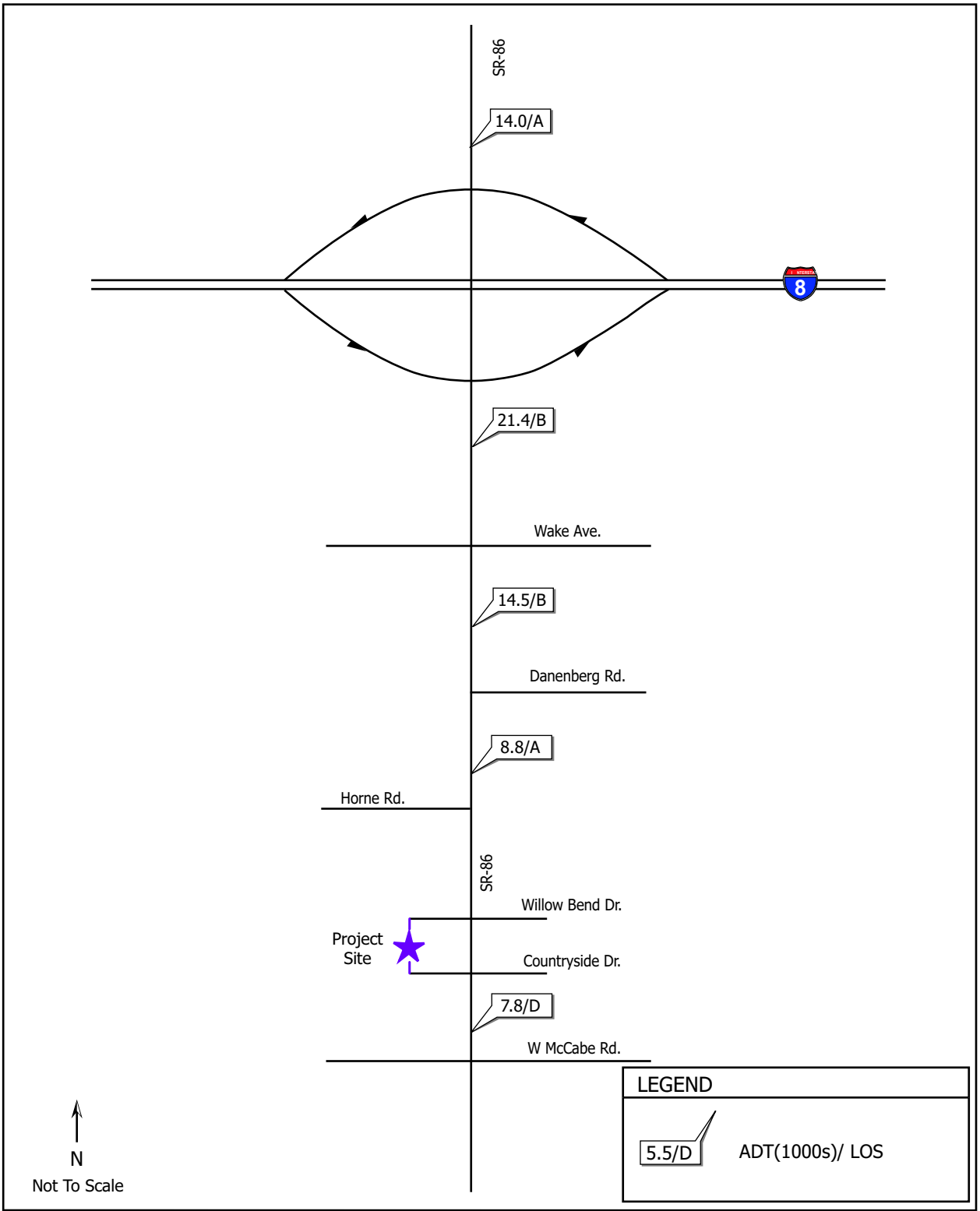
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Figure 4-2

Existing Plus Project PM Peak Hour Intersection Conditions

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Figure 4-3

Existing Plus Project Roadway Segment Conditions

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5.0 Near-term Conditions

Near-term conditions represent the addition of the proposed project to the future near-term traffic volumes.

Near-term Traffic Volumes

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. For this analysis, traffic from proposed project and other cumulative projects were added to existing traffic counts to develop near-term traffic volumes. Other than the proposed project, cumulative projects are planned new developments that will add traffic to the study area roadways. The type and size of each project are shown in the table below.

Table 5-1
Cumulative Projects

Project Name	***Type***	***Size***	***Daily Trips***	***AM Trips***	***PM Trips***
Buena Vista Park	Residential	465 SFDU	4,450	NA	NA
Calexico International Center – Phase I	Mixed Use	Hotel, Restaurant, Gas Station, and RV Park	5,130	84	420
Calexico Wal-Mart	Commercial	230 KSF[1]	1,960	80	157
Countryside Subdivision	Residential	330 SFDU	3,300	264	330
Desert Village Mixed-Use	Mixed Use	95 SFDU, 260 MFDU, 318 KSF Commercial	8,741	331	818
Farmer Estates	Residential	89 SFDU	934	79	97
Heber Elementary School	Elementary School	600 Students	1,740	539	322
Heber Meadows	Residential	222 SFDU 476 MFDU	5,270	391	500
Imperial Center	Mixed Use	722 KSF (Gas Station, Hotel, and Shopping Center)	25,397	723	2,334
Imperial Valley Commons	Commercial	700 KSF[1]	21,603	441	1,979
Imperial Valley Mall	Commercial	1,460 KSF[1]	47,300	1,095	4,440
Lerno-Verhaegen Specific Plan	Mixed Use	680 AC	41,553	2,860	4,227
Linda Vista Mixed Use	Mixed Use	173 DU, 4.46 AC Commercial, 600 Student Elementary School	7,223	580	799
McCabe Ranch	Residential	428 SFDU	3,550	282	385
Smoketree Drive Apartments	Residential	5.23 AC	860	60	77
Wake Avenue Auto Park	Commercial	34.62	11,040	442	940

[1] Thousand square feet

Near-term Circulation Network

No other circulation network changes were assumed under the Near-term scenario.

Near-term Roadway Segment and Intersection Analysis

The effects of the cumulative projects including the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis. The near-term plus project weekday morning and evening peak hour intersection volumes and corresponding levels of service are shown in Figures 5-1 and 5-2. The near-term plus project daily traffic volumes including levels of service are shown in Figure 5-3.

Table 5-2
Near-term Roadway Segment Conditions

Roadway Segment	Lanes/Class	LOS E Capacity	Existing No Project			Project traffic	Near-Term (Existing + Cumulative + Project)			Comparison	
			ADT	V/C	LOS		ADT	V/C	LOS	Δ V/C	Significant?
State Route 86											
Between McCabe Rd & Project Access (South of Horne Rd)[1]	2/Arterial	17,500	7,631	0.436	C	200	14,731	0.842	E	0.406	**Cumulative**
Between Project Access & Danenberg Rd[2]	3/Arterial	27,750	7,631	0.275	A	1,133	15,664	0.564	B	0.289	No
Between Danenberg Rd & Wake Ave[2]	3/Arterial	27,750	13,575	0.489	B	933	22,108	0.797	C	0.307	No
Between Wake Ave and I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B	866	35,426	0.957	E	0.403	**Cumulative**
Between I-8 Westbound Ramps and Aurora Dr.[3]	4/Arterial	37,000	13,576	0.367	A	467	24,743	0.669	C	0.302	No

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004)

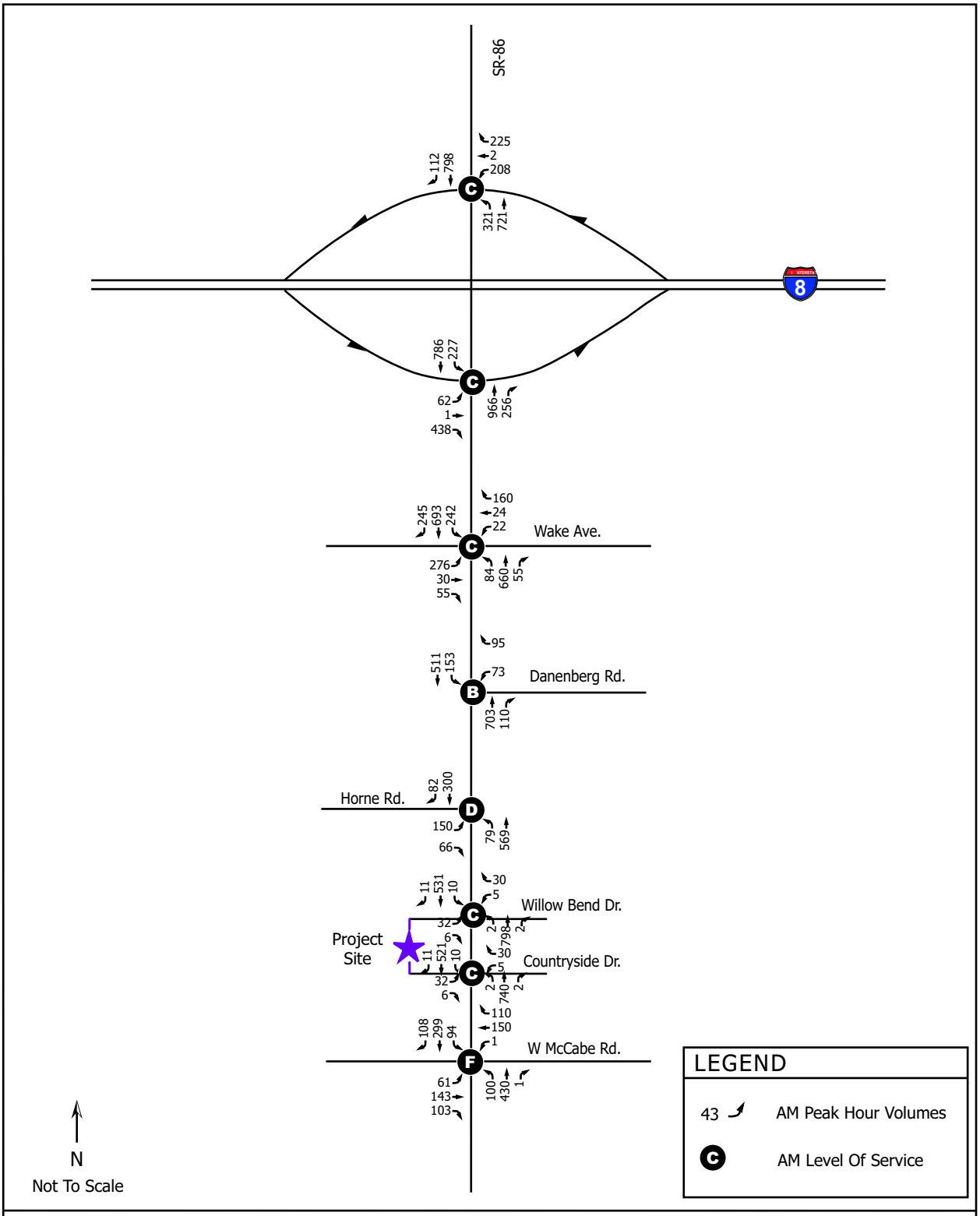
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given three lane alignment with raised median

[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004)

Table 5-3
Near-term Intersection Conditions

Intersection	Existing No Project		Existing + Cumulative + Project			
	Delay (Sec)	LOS	Delay (Sec)	LOS	Δ (Sec)	Significant
AM Peak Hour						
SR-86 & I-8 WB Ramp	19.0	B	32.9	C	13.9	No
SR-86 & I-8 EB Ramp	19.9	B	31.6	C	11.7	No
SR-86 & Wake Ave	17.2	B	26.1	C	8.9	No
SR-86 & Danenberg Rd	13.5	B	13.5	B	0.0	No
SR-86 & Horne Rd*	11.3	B	29.2	D	17.9	No
SR-86 & Willow Bend Dr (Project Access)*	10.9	B	24.9	C	14.0	No
SR-86 & Countryside Dr (Project Access)*	10.7	B	23.4	C	12.7	No
SR-86 & W McCabe Rd*	19.7	C	OVR	F	n/a	Cumulative
PM Peak Hour						
SR-86 & I-8 WB Ramp	23.1	C	144.7	F	121.6	Cumulative
SR-86 & I-8 EB Ramp	25.7	C	142.3	F	116.6	Cumulative
SR-86 & Wake Ave	18.0	B	75.3	E	57.3	Cumulative
SR-86 & Danenberg Rd	14.8	B	27.9	C	13.1	No
SR-86 & Horne Rd*	13.7	B	360.1	F	346.4	Cumulative
SR-86 & Willow Bend Dr (Project Access)*	11.3	B	61.9	F	50.6	Cumulative
SR-86 & Countryside Dr (Project Access)*	11.1	B	52.7	F	41.6	Cumulative
SR-86 & W McCabe Rd*	19.7	C	OVR	F	n/a	Cumulative

Note: *Stop-controlled intersection



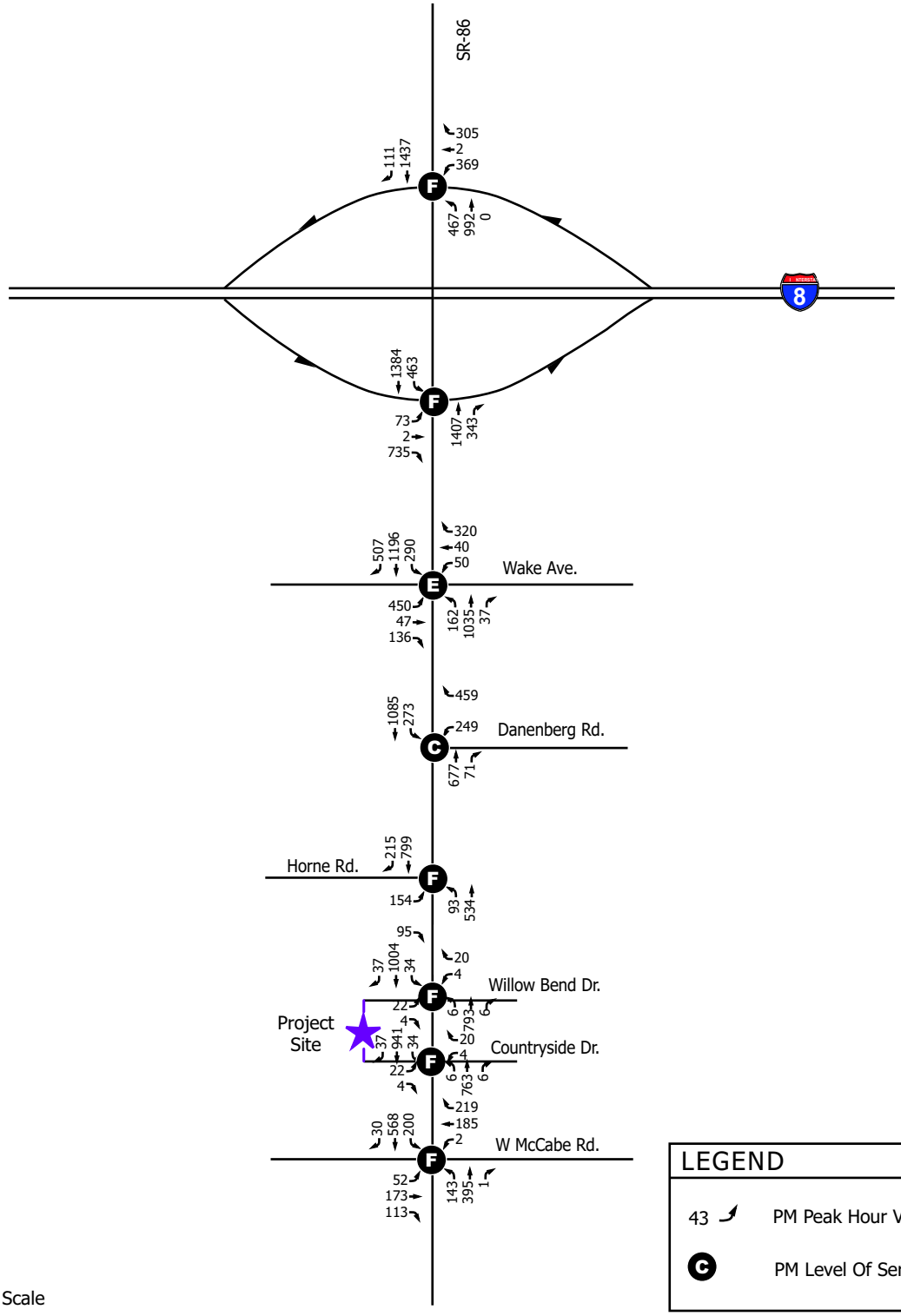
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Figure 5-1

Existing + Cumulative + Project AM Peak Hour Intersection Conditions

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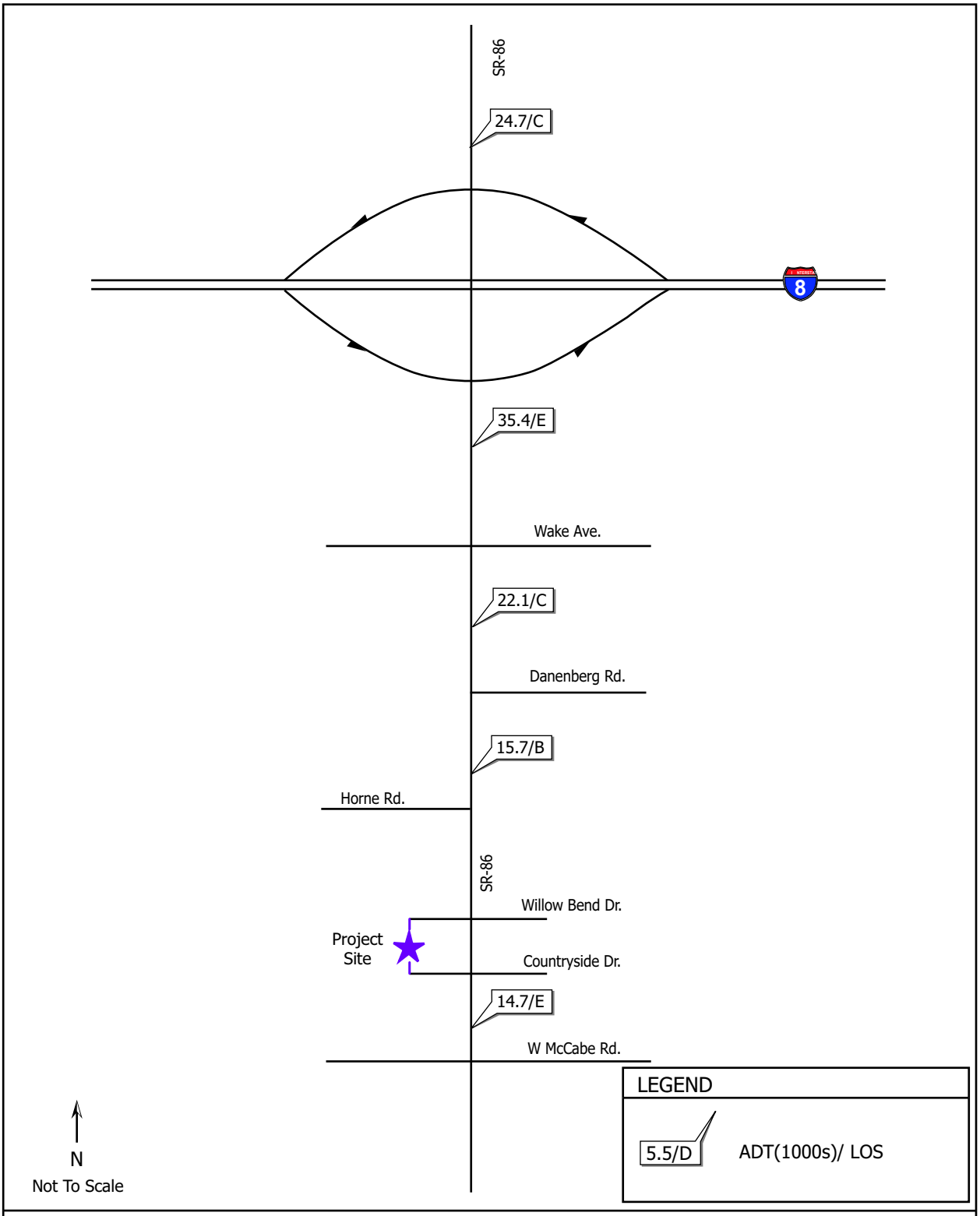
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Figure 5-2

Existing + Cumulative + Project PM Peak Hour Intersection Conditions

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Figure 5-3

Existing + Cumulative + Project Roadway Segment Conditions

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6.0 Horizon Year Conditions

Horizon Year conditions were obtained from the Imperial County Traffic Model (ICTM) provided by Caltrans District 11, which represents Year 2025. The proposed project traffic was assumed in the model and the effects of the long-term traffic including traffic associated with the proposed project on the study area circulation network was evaluated. The following table summarizes the results of this analysis. The long-term plus project daily traffic volumes including levels of service are shown in Figure 6-1.

Long-term Circulation Network

No other circulation network changes were assumed under the Near-term scenario.

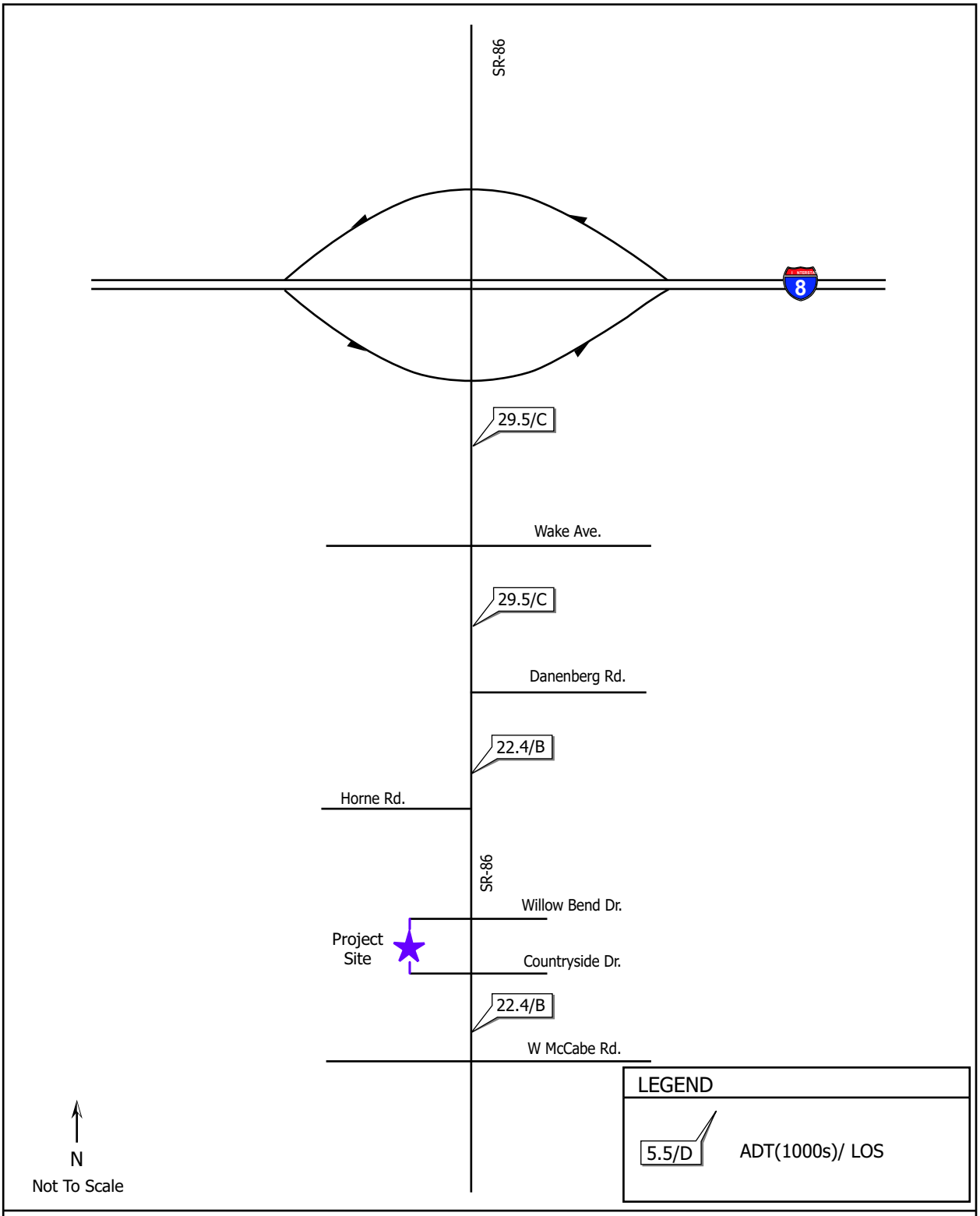
Table 6-1
Horizon Year (2025) Roadway Segment Conditions

Roadway Segment	Lanes/Class	LOS E Capacity	Existing No Project			Project traffic	Long-Term (Existing + Horizon Year Including the Proposed Project)			Comparison	
			ADT	V/C	LOS		ADT	V/C	LOS	Δ V/C	Significant?
State Route 86											
Between McCabe Rd & Project Access (South of Horne Rd)[1]	2/Arterial	17,500	7,631	0.436	C	200	22,400	1.280	F	0.844	**Long-Term**
Between Project Access & Danenberg Rd[2]	3/Arterial	27,750	7,631	0.275	A	1,133	22,400	0.807	D	0.532	No
Between Danenberg Rd & Wake Ave[2]	3/Arterial	27,750	13,575	0.489	B	933	29,500	1.063	F	0.574	**Long-Term**
Between Wake Ave and I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B	866	29,500	0.797	C	0.243	No

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004)

[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given three lane alignment with raised median

[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004)



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Figure 6-1

Horizon Year (2025) Plus Project Roadway Segment Conditions

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7.0 Summary of Analysis

This chapter summarizes the operations at the study intersections and roadway segments. Table 7-1 shows the summary of ADT and LOS along each study segment for existing, near-term, and horizon year conditions. Table 7-2 shows the summary of delay and LOS at each study intersection.

Table 7-1
Summary of Roadway Segment Conditions

Roadway Segment	Existing No Project		Existing Plus Project		Existing + Cumulative + Project		Year 2025 With Project	
	ADT	LOS	ADT	LOS	ADT	LOS	ADT	LOS
State Route 86								
Between McCabe Rd & Project Access (South of Horne Rd)[1]	7,631	C	7,831	D	14,731	E	22,400	F
Between Project Access & Danenberg Rd[2]	7,631	A	8,764	A	15,664	B	22,400	D
Between Danenberg Rd & Wake Ave[2]	13,575	B	14,508	B	22,108	C	29,500	F
Between Wake Ave and I-8 Eastbound Ramps[3]	20,500	B	21,366	B	35,426	E	29,500	C
Between I-8 Westbound Ramps and Aurora Dr.[3]	13,576	A	14,043	A	24,743	C	N/A	N/A

[1] Two Lane Arterial standards from the El Centro General Plan Circulation Element (2004)
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given the three lane alignment with a raised median
[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004)

Table 7-2
Summary of Intersection Conditions

	Existing No Project		Existing Plus Project		Existing + Cumulative + Project	
Intersection	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
AM Peak Hour						
SR-86 & I-8 WB Ramp	19.0	B	19.2	B	32.9	C
SR-86 & I-8 EB Ramp	19.9	B	19.9	B	31.6	C
SR-86 & Wake Ave	17.2	B	17.2	B	26.1	C
SR-86 & Danenberg Rd	13.5	B	12.8	B	13.5	B
SR-86 & Horne Rd*	11.3	B	11.8	B	29.2	D
SR-86 & Willow Bend Dr (Project Access)*	10.9	B	15.6	C	24.9	C
SR-86 & Countryside Dr (Project Access)*	10.7	B	14.9	B	23.4	C
SR-86 & W McCabe Rd*	19.7	C	20.5	C	OVR	F
PM Peak Hour						
SR-86 & I-8 WB Ramp	23.1	C	24.4	C	144.7	F
SR-86 & I-8 EB Ramp	25.7	C	26.5	C	142.3	F
SR-86 & Wake Ave	18.0	B	18.8	B	75.3	E
SR-86 & Danenberg Rd	14.8	B	14.4	B	27.9	C
SR-86 & Horne Rd*	13.7	B	15.0	C	360.1	F
SR-86 & Willow Bend Dr (Project Access)*	11.3	B	21.7	C	61.9	F
SR-86 & Countryside Dr (Project Access)*	11.1	B	19.5	C	52.7	F
SR-86 & W McCabe Rd*	19.7	C	20.4	C	OVR	F

Note: *Stop-controlled intersection

8.0 Impacts and Mitigation

This chapter identifies significant impacts, project mitigation, and outlines the applicant's fairshare contributions. These improvements are shown in Table 8-1 and illustrated in Figure 8-1.

Significant Impacts

The following intersections and roadway segments were found to be significantly impacted by the proposed project based on the significance criteria presented in Table 2-1:

Direct Impacts: There are no direct impacts due to the proposed project.

Cumulative Impacts:

1. SR-86 between Wake Avenue and I-8 Eastbound Ramps – Roadway Segment
2. SR-86 & I-8 WB Ramp - Intersection
3. SR-86 & I-8 EB Ramp - Intersection
4. SR-86 & Wake Ave - Intersection
5. SR-86 & Horne Rd – Intersection
6. SR-86 & Willow Bend Dr – Intersection
7. SR-86 & Countryside Dr – Intersection
8. SR-86 & W McCabe Rd – Intersection
9. SR-86 between McCabe Rd & Project Access – Roadway Segment

Long-Term Impacts:

10. SR-86 between McCabe Rd & Project Access – Roadway Segment (also a Cumulative impact)
11. SR-86 between Danenberg Rd & Wake Avenue – Roadway Segment

Table 8-1
Suggested Mitigation

Location	Type of Impact	Mitigation
1. SR-86 between Wake Avenue and I-8 Eastbound Ramps – Roadway Segment	Cumulative	Contribute a fair share towards the widening of SR-86 between I-8 and Wake Avenue to six lanes.
2. SR-86 & I-8 WB Ramp - Intersection	Cumulative	Contribute a fair share towards the construction of a westbound right-turn lane and a second northbound left-turn lane.
3. SR-86 & I-8 EB Ramp - Intersection	Cumulative	Contribute a fair share towards the construction of two eastbound right-turn lanes and a second southbound left-turn lane.
4. SR-86 & Wake Ave - Intersection	Cumulative	Contribute a fair share towards the construction of a second eastbound left-turn lane.
5. SR-86 & Horne Rd – Intersection	Cumulative	Contribute a fair share towards the signalization of the intersection.
6. SR-86 & Willow Bend Dr – Intersection	Cumulative	Contribute a fair share towards the construction of a right turn in/right turn out island. This mitigation measure is based on the existing Caltrans Memorandum of Understanding (MOU) affecting State Route 86 stipulating a goal of no less than 0.5 mile signalized intersection spacing along the corridor, with the exception of Horne Road. The signalization of the other project access driveway (Countryside Drive) would provide a signal 0.5 miles from both Dannenberg and McCabe Roads and would meet the criteria set forth in the MOU. Therefore, a right turn in/right turn out island has been proposed since a signal is prohibited.
7. SR-86 & Countryside Dr – Intersection	Cumulative	Contribute a fair share towards the signalization of the intersection.
8. SR-86 & W McCabe Rd – Intersection	Cumulative	Contribute a fair share towards the signalization of the SR-86 & W McCabe Road intersection including the provision of dedicated eastbound and westbound left-turn pockets.
9. SR-86 between McCabe Rd & Project Access – Roadway Segment	Cumulative & Long-Term	Contribute a fair share towards the widening of SR-86 between McCabe Rd & Project Access, including the widening of SR-86 to four lanes along the project frontage.
10. SR-86 between Danenberg Rd & Wake Ave	Long-Term	Contribute a fair share towards the widening of SR-86 between Danenberg & Wake Avenue to four lanes.

Fair Share Calculation

The project's fair share contribution for each of the significantly impacted locations identified in Table 8-1 is included below. Since the City of El Centro does not currently have an adopted fair share percentage calculation formula, the City of San Diego formula has been used. This is consistent with the fair share calculation methodology implemented for other approved projects within the City of El Centro. Where cumulative and long-term impacts exist, the fair share formula is presented for the cumulative scenario since this time period would occur prior to the horizon year. The City of San Diego fair share formula is as follows:

$$\frac{\textbf{Project Traffic}}{\textbf{(Existing + Project + Cumulative) - Existing}}$$

1. SR-86 between Wake Avenue and I-8 Eastbound Ramps – Roadway Segment

$$\frac{866}{35{,}426\text{-}20{,}500} = 5.8\%$$

2. SR-86 and I-8 WB ramp – Intersection

$$\frac{119}{6{,}070\text{-}3{,}724} = 5.1\%$$

3. SR - 86 and I-8 EB ramp – Intersection

$$\frac{155}{7{,}143\text{-}3{,}883} = 4.8\%$$

4. SR-86 and Wake Ave. – Intersection

$$\frac{166}{6{,}816\text{-}3{,}410} = 4.9\%$$

5. SR-86 and Horne Rd. - Intersection

$$\frac{202}{3{,}136\text{-}1{,}289} = 10.9\%$$

6. SR-86 and Willow Bend Dr. – Intersection

$$\frac{222}{3{,}357\text{-}1{,}812} = 14.4\%$$

7. SR-86 and Countryside Dr. - Intersection

$$\frac{138}{3{,}196\text{-}1{,}735} = 9.4\%$$

8. SR-86 and McCabe Rd. – Intersection

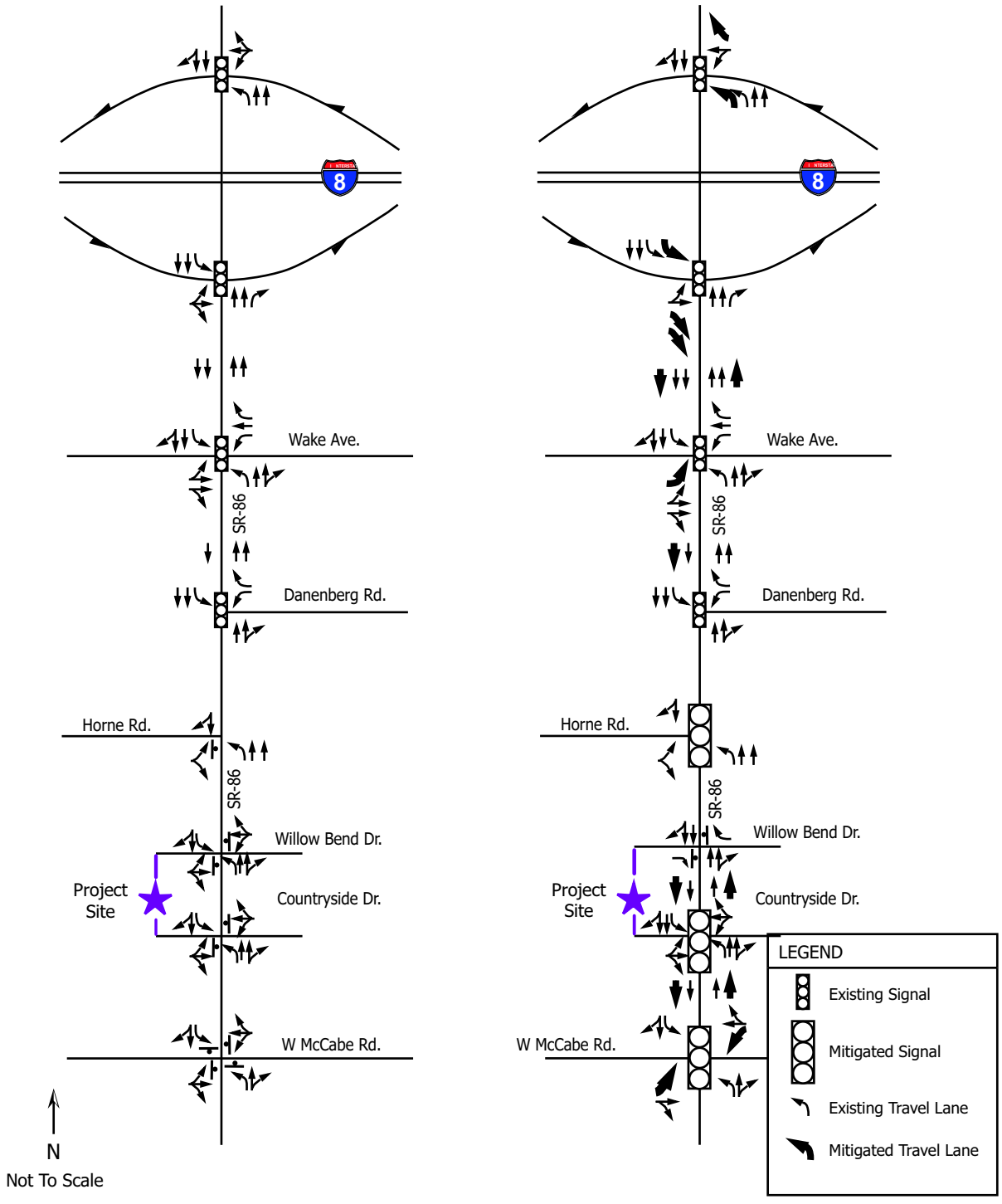
$$\frac{37}{3{,}681\text{-}1{,}502} = 1.7\%$$

9. SR-86 Between McCabe Rd. & Project Frontage

$$\frac{200}{14{,}731\text{-}7{,}631} = 2.8\%$$

10. SR-86 Between Danenberg Rd. & Wake Ave

$$\frac{933}{29{,}500\text{-}13{,}575} = 5.9\%$$



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Figure 8-1

Roadway Segment and Intersection Mitigation

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Traffic Analysis

9.0 Recommendations

Based on the preceding analysis of existing, near-term and long-term horizon year traffic conditions for the Willow Bend residential project, we conclude that the project has cumulative and long-term traffic impacts that require mitigation. The following roadway improvements are suggested to improve the operation of the impacted locations. The City Engineer shall make the determination of whether the payment of proportionate share or installation of the improvements is required. This shall be completed at the time of project approval. Also, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for all impacted locations under the near-term and long-term scenarios.

As these recommendations effect intersections and roadways under the Jurisdiction of the State of California Department of Transportation (Caltrans) along State Route 86, the following recommendations are in accordance with the Memorandum of Understanding (MOU) regarding State Route 86 between Caltrans and the City of El Centro. These improvements adhere to the guidelines as established within the MOU and mitigate all intersections and roadway segments to a level of service D or better.

1. **SR-86 between Wake Avenue and I-8 Eastbound Ramps – Roadway Segment:** The project should contribute a fair share towards the widening of SR-86 between I-8 and Wake Avenue to six lanes. Level of service before/after mitigation: **E/B.**
2. **SR-86 & I-8 WB Ramp – Intersection:** The project should contribute a fair share towards the construction of a westbound right-turn lane and a second northbound left-turn lane. Level of service before/after mitigation: **F/D.**
3. **SR-86 & I-8 EB Ramp – Intersection:** The project should contribute a fair share towards the construction of two eastbound right-turn lanes and a second southbound left-turn lane. Level of service before/after mitigation: **F/D.**
4. **SR-86 & Wake Ave – Intersection:** The project should contribute a fair share towards the construction of a second eastbound left-turn lane. Level of service before/after mitigation: **E/D.**
5. **SR-86 & Horne Rd – Intersection:** The project should contribute a fair share towards the signalization of the intersection. Level of service before/after mitigation: **F/B.**
6. **SR-86 & Willow Bend Dr – Intersection:** The project should contribute a fair share towards the construction of a right turn in/right turn out island from the project driveway. Level of service before/after mitigation: **F/C.**
7. **SR-86 & Countryside Dr – Intersection:** The project should contribute a fair share towards the signalization of the intersection. Level of service before/after mitigation: **F/A.**

8. **SR-86 & W McCabe Rd – Intersection:** The project should contribute a fair share towards the signalization of this intersection including the provision of dedicated eastbound and westbound left-turn pockets. Level of service before/after mitigation: **F/C.**
9. **SR-86 between McCabe Rd and Project Access – Roadway Segment:** The project should contribute a fair share towards the widening of SR-86 between McCabe Rd and Project Access to four lanes, including the widening of SR-86 to four lanes along the project frontage. Level of service before/after mitigation: **E/A.**
10. **SR-86 between Danenberg Rd and Wake Ave – Roadway Segment:** The project should contribute a fair share towards the widening of SR-86 between Danenberg Rd and Wake Ave to four lanes. Level of service before/after mitigation: **F/C.**

Sincerely,
Katz, Okitsu & Associates

J. Arnold Torma, P.E.
Principal Engineer

Appendix A

Level of Service Concepts, Analysis Methodologies, Standards of Significance

Table A-1
Roadway Segment Level of Service Definitions

Level of Service (LOS) Definitions

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. Levels of service for roadway segments can generally be categorized as follows:

LOS	***Congestion/Delay***	***Traffic Description***
"A"	None	Free flow.
"B"	None	Free to stable flow, light to moderate volumes.
"C"	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.

SOURCE: Caltrans, 1992.

Table A-2

City of El Centro
Circulation System Performance Criteria

		LEVEL OF SERVICE W/ADT and (V/C Range)				
ROADWAY CLASSIFICATION	# OF LANES	A	B	C	D	E
Freeway	4	30,000 (<0.43)	40,000 (0.44-0.57)	50,000 (0.58-0.71)	60,000 (0.72-0.86)	70,000 (0.87-1.00)
Four Lane Arterial	4	14,800 (<0.40)	24,700 (0.41-0.67)	29,600 (0.68-0.80)	33,400 (0.81-0.90)	37,000 (0.91-1.00)
Two Lane Arterial	2	2,000 (<0.11)	4,500 (0.12-0.26)	7,700 (0.27-0.44)	11,800 (0.45-0.67)	17,500 (0.68-1.00)
Collector	2	1,900 (<0.12)	4,100 (0.13-0.25)	7,100 (0.26-0.44)	10,900 (0.45-0.67)	16,200 (0.68-1.00)
Residential Street	2	*	*	1,500 (NA)	*	*
Residential or Cul-de-Sac Loop Street	2	*	*	200 (NA)	*	*

*Note: Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic, Levels of Service, normally apply to roads carrying through traffic between major trip generators and attractors.

Table A-3
Roadway Segment Level of Service Definitions

Level of Service (LOS) Definitions

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. Levels of service for arterial segments with a range of free-flow speeds can generally be categorized as follows:

LOS	***Class I (45 to 35 mph)***	***Class II (35-30 mph)***	***Class III (35 to 25)***	***LOS Characteristic***
"A"	≥35	≥30	≥25	Speeds 90% of free-flow speed. minimal stopped delay
"B"	≥28	≥24	≥19	Speeds 70% of free-flow speed, delay not bothersome
"C"	≥22	≥18	≥13	Speeds 50% of free-flow speed, longer queues, noticeable delay
"D"	≥17	≥14	≥9	Speeds 40% of free-flow, substantial delay.
"E"	≥13	≥10	≥7	Speeds 30% of free-flow, high delay.
"F"	<13	<10	<7	Speeds 25% of free-flow, high delay, extensive queuing

Table A-4
Signalized Intersection Level of Service
Highway Capacity Manual Operational Analysis Method

The operational analysis method for evaluation of signalized intersections presented in the 2000 Highway Capacity Manual (Transportation Research Board Special Report 209) defines level of service in terms of delay, or more specifically, control stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time.

Control Stopped Delay Per Vehicle (seconds)	***Level of Service (LOS) Characteristics***
<10	*LOS A* describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
10 – 20.0	*LOS B* describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
20.1 – 35.0	*LOS C* describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
35.1 – 55.0	*LOS D* describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
55.1 – 80.0	*LOS E* is considered to be the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80.0	*LOS F* describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: 2000 Highway Capacity Manual

Table A-5
Minor Street Stop and All-Way Stop Controlled Intersection Level of Service
Highway Capacity Manual Operational Analysis Method

The Highway Capacity Manual (HCM) analysis method for evaluating minor street stop intersections is based on the average total delay for each impeded movement. For all-way stop controlled intersections it is based on the average total delay for the entire intersection. As used here, total delay is defined as the total elapsed time from when a when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The resulting delay is used to determine the level of service as shown in the following table.

Average Total Delay	Level of Service (LOS) Characteristics
0-10	*LOS A* – Little or no delay
>10 – 15	*LOS B* – Short traffic delay
>15 – 25	*LOS C* – Average traffic delay
>25 – 35	*LOS D* – Long traffic delays
>35 – 50	*LOS E* – Very long traffic delays
>50	*LOS F* – When the demand exceeds the capacity of the lane, extreme delays will be encountered and queuing may cause severe congestion to the intersection.

Source: Highway Capacity Manual 2000, Exhibit 17-22

Appendix B

Count Data

Traffic Data Service Southwest
Event Counts

Northbound

EventCount-152 -- English (ENU)

Datasets:

Site:	**[34003N] Corfman Road Just North of I-8 WB Ramps**
Input A:	1 - North bound. - Added to totals. (1)
Input B:	0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration:	11:16 Tuesday, October 18, 2005 => 7:27 Monday, October 24, 2005
File:	F:\Traffic Data\MCData\KOA\2005\340\34003N24OCT2005.EC0 (Base)
Identifier:	A6443V2Z MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm:	Event Count
Data type:	Axle sensors - Separate (Count)

Profile:

Filter time:	**22:00 Tuesday, October 18, 2005 => 3:00 Friday, October 21, 2005**
Name:	Factory default profile
Scheme:	Count events divided by two.
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	24758 Events

*** Tuesday, October 18, 2005=430 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**282**	**148**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	47	25
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	42	18
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	38	25
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	21	16

*** Wednesday, October 19, 2005=11999, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
84	**63**	**55**	**51**	**102**	**213**	**336**	**627**	**652**	**683**	**727**	**817**	**893**	**818**	**894**	**925**	**806**	**862**	**704**	**550**	**444**	**295**	**251**	**147**	
25	19	20	6	17	41	52	112	185	154	176	188	**260**	210	206	**209**	201	262	196	120	113	67	71	45	39
18	14	16	13	21	44	73	150	137	201	172	**201**	169	211	224	**258**	204	219	165	156	122	90	65	52	14
25	15	10	19	22	67	101	175	157	151	164	**201**	213	191	232	**254**	226	186	168	137	103	71	76	25	32
16	15	9	13	42	61	110	190	173	177	215	**227**	251	206	**232**	204	175	195	175	137	106	67	39	25	16

AM Peak 1115 - 1215 (889), AM PHF=0.85 PM Peak 1445 - 1545 (953), PM PHF=0.92

*** Thursday, October 20, 2005=12075, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
101	**103**	**67**	**61**	**92**	**236**	**387**	**640**	**628**	**639**	**700**	**809**	**914**	**793**	**887**	**814**	**868**	**846**	**697**	**522**	**431**	**400**	**300**	**140**	
39	31	16	12	10	50	49	118	160	151	172	198	**269**	197	260	220	229	**288**	209	133	116	114	107	43	26
14	23	18	21	33	54	80	166	160	155	166	193	**237**	186	215	195	**217**	216	171	160	112	106	67	45	33
32	26	18	13	24	68	116	177	150	179	190	**206**	200	214	214	193	**214**	177	174	134	116	101	69	28	27
16	23	15	15	25	64	142	179	158	154	172	**212**	208	196	198	206	**208**	165	143	95	87	79	57	24	22

AM Peak 1130 - 1230 (924), AM PHF=0.86 PM Peak 1615 - 1715 (927), PM PHF=0.80

*** Friday, October 21, 2005=254 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
108	**77**	**69**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	24	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	22	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	14	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	17	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Data Service Southwest
Event Counts

Southbound

EventCount-152 -- English (ENU)

Datasets:

Site:	**[34003S] Corfman Road Just North of I-8 WB Ramps**
Input A:	3 - South bound. - Added to totals. (1)
Input B:	0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration:	11:17 Tuesday, October 18, 2005 => 7:29 Monday, October 24, 2005
File:	F:\Traffic Data\MCData\KOA\2005\340\34003S24OCT2005.EC0 (Plus)
Identifier:	M280P4JB MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Event Count
Data type:	Axle sensors - Separate (Count)

Profile:

Filter time:	**22:00 Tuesday, October 18, 2005 => 3:00 Friday, October 21, 2005**
Name:	Factory default profile
Scheme:	Count events divided by two.
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	27234 Events

*** Tuesday, October 18, 2005=355 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**197**	**158**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	42	21
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	41	22
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	39	20
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	36	16

*** Wednesday, October 19, 2005=13289, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
79	**61**	**60**	**84**	**136**	**287**	**441**	**788**	**719**	**703**	**763**	**726**	**978**	**931**	**851**	**1029**	**970**	**974**	**839**	**628**	**530**	**354**	**231**	**127**	
21	21	13	14	27	53	73	151	212	169	196	162	**256**	258	201	**259**	231	279	236	165	161	120	70	43	23
22	17	18	14	23	51	100	151	178	165	183	169	**237**	246	214	**253**	242	219	212	148	119	88	61	40	17
20	16	15	17	35	94	126	220	171	189	196	194	**233**	217	215	**251**	242	236	195	149	125	69	55	23	32
16	7	14	39	51	89	142	266	158	180	188	**201**	252	210	221	**266**	255	240	196	166	125	77	45	21	19

AM Peak 1145 - 1245 (927), AM PHF=0.91 PM Peak 1500 - 1600 (1029), PM PHF=0.97

*** Thursday, October 20, 2005=13306, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
91	**67**	**69**	**69**	**128**	**294**	**456**	**711**	**718**	**657**	**715**	**810**	**983**	**885**	**855**	**964**	**974**	**1026**	**839**	**690**	**476**	**422**	**243**	**164**	
23	17	16	16	20	72	81	140	202	159	171	196	**245**	223	210	243	241	**280**	225	188	132	121	79	55	24
17	26	10	13	23	68	94	142	161	138	175	228	**243**	222	196	257	251	**280**	216	164	122	123	57	37	21
32	14	27	15	31	82	119	172	182	179	188	181	**241**	219	231	231	240	**260**	213	187	121	81	46	42	30
19	10	16	25	54	72	162	257	173	181	181	**205**	254	221	218	233	**242**	206	185	151	101	97	61	30	18

AM Peak 1145 - 1245 (934), AM PHF=0.95 PM Peak 1645 - 1745 (1062), PM PHF=0.95

*** Friday, October 21, 2005=283 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
93	**98**	**92**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
24	31	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	13	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	26	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	28	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Data Service Southwest
Event Counts

Northbound

EventCount-152 -- English (ENU)

Datasets:

Site:	**[34002N] Corfman Road Btwn W.Dannenberg Rd & Wake Ave**
Input A:	1 - North bound. - Added to totals. (1)
Input B:	0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration:	10:08 Tuesday, October 18, 2005 => 7:25 Monday, October 24, 2005
File:	F:\Traffic Data\MCData\KOA\2005\340\34002N24OCT2005.EC0 (Base)
Identifier:	A567C54F MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm:	Event Count
Data type:	Axle sensors - Separate (Count)

Profile:

Filter time:	**22:00 Tuesday, October 18, 2005 => 3:00 Friday, October 21, 2005**
Name:	Factory default profile
Scheme:	Count events divided by two.
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	11122 Events

*** Tuesday, October 18, 2005=117 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**72**	**45**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	12	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	13	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	14	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	6	12

*** Wednesday, October 19, 2005=5491, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
22	**16**	**27**	**29**	**56**	**113**	**191**	**373**	**340**	**293**	**325**	**369**	**411**	**383**	**397**	**439**	**379**	**397**	**295**	**215**	**184**	**108**	**79**	**50**	
5	6	6	1	7	21	38	59	**94**	58	68	88	123	116	87	**106**	99	135	82	53	53	31	29	14	4
1	3	7	8	15	24	37	**89**	84	78	66	91	75	95	103	**115**	87	89	82	53	53	32	17	13	6
4	2	7	9	16	35	49	**104**	89	77	76	85	97	80	96	**113**	104	89	70	55	40	26	24	19	8
12	5	7	11	18	33	67	**121**	73	80	115	105	116	92	**111**	105	89	84	61	54	38	19	9	4	8

AM Peak 0715 - 0815 (408), AM PHF=0.84 PM Peak 1445 - 1545 (445), PM PHF=0.97

*** Thursday, October 20, 2005=5435, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
26	**31**	**25**	**43**	**47**	**122**	**202**	**379**	**304**	**306**	**328**	**364**	**413**	**360**	**370**	**383**	**402**	**375**	**318**	**210**	**176**	**148**	**71**	**32**	
4	11	5	10	9	22	25	61	93	72	74	92	**143**	93	105	99	113	**125**	93	72	49	45	12	11	11
6	7	9	13	13	28	34	84	87	72	79	87	**90**	91	88	98	**95**	93	76	53	53	45	17	6	7
8	9	5	8	14	38	57	111	56	75	85	**90**	81	91	91	95	**98**	78	90	54	38	34	21	5	8
8	4	6	12	11	34	86	123	68	87	90	**95**	99	85	86	91	**96**	79	59	31	36	24	21	10	5

AM Peak 1130 - 1230 (418), AM PHF=0.73 PM Peak 1615 - 1715 (414), PM PHF=0.83

*** Friday, October 21, 2005=78 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
31	**26**	**21**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
11	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Data Service Southwest
Event Counts

Southbound

EventCount-152 -- English (ENU)

Datasets:

Site:	**[34002S] Corfman Road Btwn W.Dannenberg Rd & Wake Ave**
Input A:	3 - South bound. - Added to totals. (1)
Input B:	0 - Unused or unknown. - Excluded from totals. (0)
Survey Duration:	10:09 Tuesday, October 18, 2005 => 7:25 Monday, October 24, 2005
File:	F:\Traffic Data\MCData\KOA\2005\340\34002S24OCT2005.EC0 (Plus)
Identifier:	M279P9K6 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Event Count
Data type:	Axle sensors - Separate (Count)

Profile:

Filter time:	**22:00 Tuesday, October 18, 2005 => 3:00 Friday, October 21, 2005**
Name:	Factory default profile
Scheme:	Count events divided by two.
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	16479 Events

*** Tuesday, October 18, 2005=181 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**103**	**78**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	17	14
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	10
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	18	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	15	5

*** Wednesday, October 19, 2005=8084, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
30	**28**	**31**	**42**	**37**	**129**	**299**	**466**	**526**	**412**	**473**	**484**	**671**	**592**	**565**	**690**	**592**	**588**	**475**	**316**	**266**	**178**	**128**	**66**	
14	15	6	9	7	21	48	81	**180**	94	97	113	165	148	115	**191**	165	156	127	83	86	61	39	22	6
10	8	10	7	6	24	59	89	**124**	86	139	128	169	164	140	**161**	137	148	130	82	64	35	37	15	11
1	2	6	8	10	37	72	99	**117**	117	115	122	154	149	149	**167**	134	147	122	72	54	45	27	16	8
5	3	9	18	14	47	120	**197**	105	115	122	121	183	131	161	**171**	156	137	96	79	62	37	25	13	9

AM Peak 0745 - 0845 (618), AM PHF=0.78 PM Peak 1500 - 1600 (690), PM PHF=0.90

*** Thursday, October 20, 2005=8084, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
34	**32**	**18**	**19**	**36**	**106**	**269**	**470**	**453**	**431**	**473**	**534**	**649**	**571**	**598**	**668**	**624**	**627**	**473**	**369**	**233**	**186**	**129**	**82**	
6	11	8	5	7	13	38	82	152	104	121	131	**160**	141	159	150	**153**	165	127	107	72	54	39	28	15
11	9	4	1	12	20	52	100	87	101	109	148	**140**	149	150	**186**	164	158	116	73	63	48	37	12	11
8	2	4	5	11	35	62	105	108	117	128	129	**152**	154	130	**169**	156	161	115	91	61	36	25	27	18
9	10	2	8	6	38	117	183	106	109	115	**126**	197	127	159	**163**	151	143	115	98	37	48	28	15	10

AM Peak 1145 - 1245 (578), AM PHF=0.90 PM Peak 1515 - 1615 (671), PM PHF=0.90

*** Friday, October 21, 2005=130 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
54	**35**	**41**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
15	14	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	6	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	7	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Data Service Southwest
Vehicle Counts

Northbound

VehicleCount-151 -- English (ENU)

Datasets:

Site:	**[34001] Corfman Road Just North of McCabe Rd**
Direction:	7 - North bound A>B, South bound B>A., **Lane:** 0
Survey Duration:	10:44 Tuesday, October 18, 2005 => 7:31 Monday, October 24, 2005
File:	F:\Traffic Data\MCData\KOA\2005\340\3400124OCT2005.EC0 (Plus)
Identifier:	M287G207 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class, Speed, Count)

Profile:

Filter time:	**11:00 Tuesday, October 18, 2005 => 11:00 Friday, October 21, 2005**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	9040 Vehicles

*** Tuesday, October 18, 2005 - Total=1787 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**208**	**158**	**195**	**221**	**233**	**185**	**185**	**98**	**96**	**74**	**57**	**45**	**32**	
-	-	-	-	-	-	-	-	-	-	-	50	45	54	55	**65**	50	49	26	28	16	19	16	7	4
-	-	-	-	-	-	-	-	-	-	-	49	37	47	50	**65**	53	51	20	30	24	16	13	9	1
-	-	-	-	-	-	-	-	-	-	-	60	34	52	46	**54**	34	45	25	18	16	8	9	12	0
-	-	-	-	-	-	-	-	-	-	-	49	42	42	**70**	49	48	40	27	20	18	14	7	4	8

PM Peak 1445 - 1545 (254), PM PHF=0.91

*** Wednesday, October 19, 2005 - Total=3054, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
13	**13**	**18**	**18**	**38**	**62**	**121**	**263**	**225**	**186**	**190**	**232**	**205**	**221**	**213**	**238**	**206**	**167**	**139**	**92**	**81**	**53**	**36**	**24**	
4	5	5	2	3	10	23	39	**79**	34	47	52	53	62	42	**73**	54	61	41	25	18	18	11	9	4
1	2	5	4	11	14	19	60	**61**	49	34	56	35	50	59	**50**	54	35	41	27	27	18	6	7	4
0	2	4	5	11	21	28	**68**	56	56	46	54	51	52	50	**64**	54	38	37	21	19	5	17	6	2
8	4	4	7	13	17	51	**96**	29	47	63	70	66	57	**62**	51	44	33	20	19	17	12	2	2	4

AM Peak 0730 - 0830 (304), AM PHF=0.79 PM Peak 1445 - 1545 (249), PM PHF=0.85

*** Thursday, October 20, 2005 - Total=3116, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
14	**21**	**13**	**29**	**26**	**64**	**139**	**249**	**239**	**196**	**194**	**205**	**234**	**209**	**203**	**238**	**231**	**169**	**146**	**96**	**76**	**76**	**28**	**21**	
4	7	4	6	1	15	17	35	**69**	45	38	57	69	55	48	**76**	64	55	48	33	20	16	7	6	8
4	3	3	8	8	21	24	59	**75**	49	55	51	60	56	49	**66**	55	50	38	23	15	23	5	4	5
2	7	2	5	8	16	43	**61**	41	51	52	52	53	43	**50**	46	61	32	40	24	26	20	7	2	5
4	4	4	10	9	12	55	**94**	54	51	49	45	52	55	**56**	50	51	32	20	16	15	17	9	9	5

AM Peak 0730 - 0830 (299), AM PHF=0.80 PM Peak 1430 - 1530 (248), PM PHF=0.82

*** Friday, October 21, 2005 - Total=1083 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
23	**16**	**11**	**15**	**23**	**57**	**121**	**243**	**262**	**216**	**96**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
8	4	1	4	2	8	23	48	80	47	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	6	3	3	4	20	26	42	67	55	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	4	4	5	7	16	29	52	63	60	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	2	3	3	10	13	43	101	52	54	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Data Service Southwest
Vehicle Counts

Southbound

VehicleCount-151 -- English (ENU)

Datasets:

Site: **[34001] Corfman Road Just North of McCabe Rd**
Direction: 7 - North bound A>B, South bound B>A., **Lane:** 0
Survey Duration: 10:44 Tuesday, October 18, 2005 => 7:31 Monday, October 24, 2005
File: F:\Traffic Data\MCData\KOA\2005\340\3400124OCT2005.EC0 (Plus)
Identifier: M287G207 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm: Factory default
Data type: Axle sensors - Paired (Class, Speed, Count)

Profile:

Filter time: **11:00 Tuesday, October 18, 2005 => 11:00 Friday, October 21, 2005**
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 100 mph.
Direction: South (bound)
Separation: All - (Headway)
Name: Factory default profile
Scheme: Vehicle classification (Scheme F99)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: 13078 Vehicles

*** Tuesday, October 18, 2005 - Total=2966 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**259**	**280**	**265**	**326**	**372**	**341**	**404**	**235**	**147**	**122**	**98**	**64**	**53**	
-	-	-	-	-	-	-	-	-	-	-	67	79	63	71	97	85	**117**	73	35	45	27	18	15	11
-	-	-	-	-	-	-	-	-	-	-	74	70	66	86	106	101	**102**	62	48	27	24	16	18	5
-	-	-	-	-	-	-	-	-	-	-	60	65	70	93	91	75	**87**	45	33	21	24	15	11	2
-	-	-	-	-	-	-	-	-	-	-	58	66	66	76	78	80	**98**	55	31	29	23	15	9	5

PM Peak 1700 - 1800 (404), PM PHF=0.86

*** Wednesday, October 19, 2005 - Total=4413, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
23	**24**	**24**	**27**	**30**	**86**	**148**	**229**	**262**	**212**	**225**	**254**	**332**	**294**	**302**	**387**	**370**	**358**	**286**	**156**	**161**	**105**	**71**	**47**	
11	9	4	5	5	8	31	38	93	51	49	52	**85**	66	66	104	**101**	107	76	41	46	38	20	14	1
5	10	7	6	6	22	33	41	64	49	59	63	**91**	72	62	89	**94**	90	79	33	35	25	24	13	9
2	2	7	6	10	26	43	62	55	60	59	77	**87**	75	78	**94**	84	82	69	39	37	22	13	13	3
5	3	6	10	9	30	41	88	50	52	58	**62**	69	81	96	**100**	91	79	62	43	43	20	14	7	9

AM Peak 1145 - 1245 (325), AM PHF=0.89 PM Peak 1530 - 1630 (389), PM PHF=0.96

*** Thursday, October 20, 2005 - Total=4515, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
22	**20**	**13**	**16**	**24**	**80**	**136**	**235**	**258**	**238**	**247**	**297**	**302**	**298**	**329**	**413**	**372**	**387**	**241**	**201**	**131**	**118**	**75**	**62**	
1	5	5	4	4	11	23	40	**92**	66	62	74	66	52	81	93	82	**117**	65	56	33	24	21	19	13
9	7	2	1	9	14	31	44	**58**	58	61	71	70	74	73	110	98	**85**	64	40	30	32	24	16	10
3	1	4	5	6	29	34	**60**	52	65	64	89	83	89	88	115	83	**107**	55	41	42	31	18	13	12
9	7	2	6	5	26	48	**91**	56	49	60	63	83	83	87	95	**109**	78	57	64	26	31	12	14	3

AM Peak 0730 - 0830 (301), AM PHF=0.82 PM Peak 1645 - 1745 (418), PM PHF=0.89

*** Friday, October 21, 2005 - Total=1184 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
38	**18**	**28**	**17**	**25**	**87**	**137**	**214**	**266**	**243**	**111**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
13	12	5	4	5	7	30	25	93	63	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	3	14	4	2	17	38	48	60	59	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1	5	5	4	28	33	59	62	60	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	2	4	4	14	35	36	82	51	61	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CALTRANS TRAFFIC VOLUMES - SR 86

DISTRICT	ROUTE	COUNTY	POSTMILE	DESCRIPTION	HR	MONTH	BACK AADT	PEAK HR	PEAK	AADT
11	86	IMP		IMPERIAL COUNTY						
11	86	IMP	0	JCT. RTE. 111				370	4250	4200
11	86	IMP	0.07	MILEPOST EQUATION =0.17						
11	86	IMP	2.08	DOGWOOD ROAD	460	5300	5200	530	6100	6000
11	86	IMP	3.05	WEST HEBER TURN	530	6100	6000	510	5800	5700
11	86	IMP	4.53	MC CABE ROAD	510	5800	5700	1850	21100	20500
11	86	IMP	6.01	EL CENTRO, JCT. RTE. 8	1850	21100	20500	2450	28000	27000
11	86	IMP	6.53	EL CENTRO, ROSS AVENUE	2400	27500	26500	2250	25500	25000
11	86	IMP	7.24	EL CENTRO, STATE STREET	2250	25500	25000	2100	24100	23400
11	86	IMP	7.31	EL CENTRO, MAIN STREET	2100	24100	23400	2200	25000	23300
11	86	IMP	8.03	EL CENTRO, EIGHTH STREET	2050	23600	21900	2000	22500	20900
11	86	IMP	8.53	STREET	2000	22600	21000	3400	39000	36000
11	86	IMP	7.43	EL CENTRO, EUCLID/HOGAR AVENUES	3400	39000	36000	3000	34500	32000
11	86	IMP	7.49	EL CENTRO, WOODWARD AVENUE	3000	34500	32000	3100	35500	33000
11	86	IMP	7.64	EL CENTRO, SCOTT AVENUE	3100	35500	33000	2800	32000	29500
11	86	IMP	7.93	EL CENTRO, PICO AVENUE	2800	32000	29500	2800	32000	29500
11	86	IMP	8.18	EL CENTRO, EL DORADO AVENUE	2800	32000	29500	2250	26000	24000

* Source: Caltrans ***Traffic Data Systems Unit***, 2004

Last Updated on 5/17/2005

By javis

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: C. Parish
Board No.: D1-1432
Loc: 4th Street (SR-86) & I-8 WB Ramp

File Name : 05340030
Site Code : 00340030
Start Date : 10/20/2005
Page No : 1

Groups Printed- Group 1

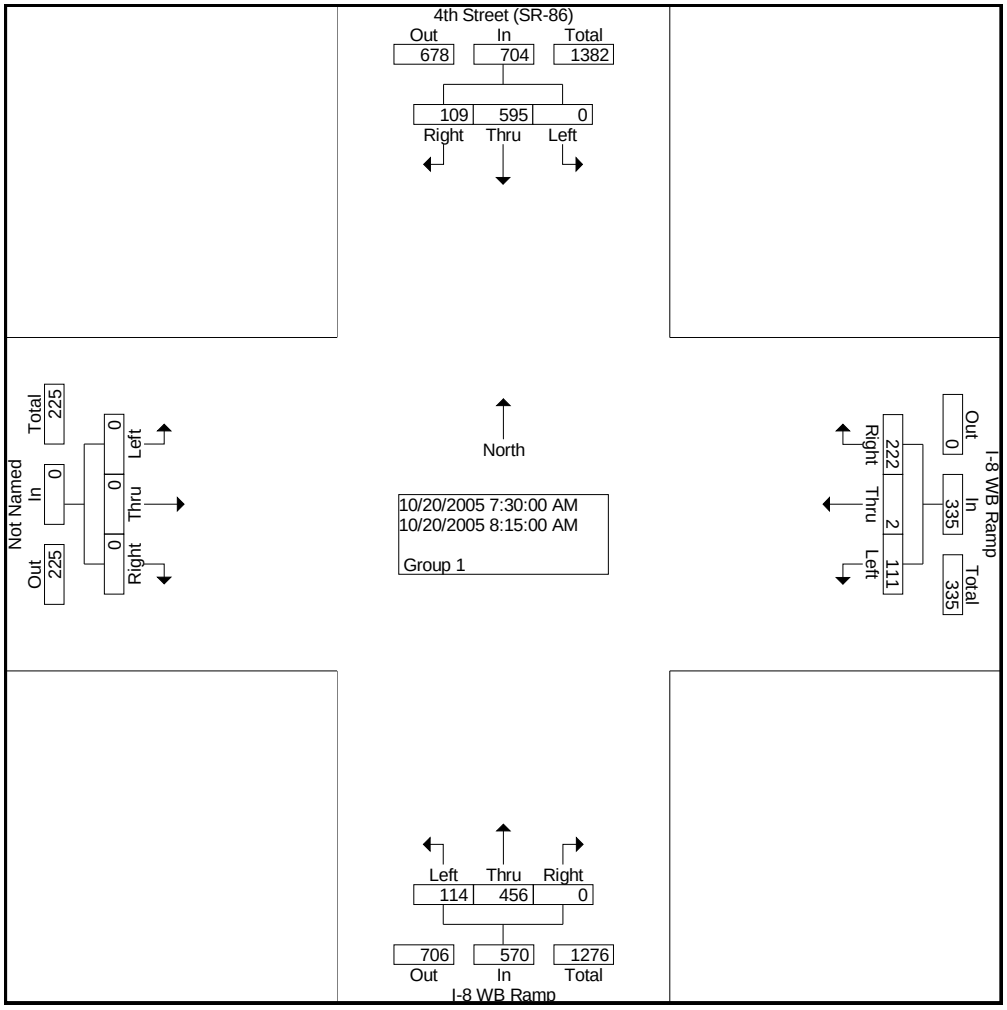
	4th Street (SR-86) Southbound					I-8 WB Ramp Westbound					I-8 WB Ramp Northbound					Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
07:00	0	99	25	0	124	13	0	43	1	56	24	71	0	0	95	0	0	0	0	0	1	275	276
07:15	0	94	25	0	119	25	1	62	1	88	20	106	0	0	126	0	0	0	0	0	1	333	334
07:30	0	110	36	0	146	25	0	59	0	84	40	116	0	0	156	0	0	0	1	0	1	386	387
07:45	0	202	40	0	242	22	0	75	1	97	34	109	0	0	143	0	0	0	2	0	3	482	485
Total	0	505	126	0	631	85	1	239	3	325	118	402	0	0	520	0	0	0	3	0	6	1476	1482
08:00	0	162	18	0	180	33	1	43	1	77	23	116	0	0	139	0	0	0	1	0	2	396	398
08:15	0	121	15	0	136	31	1	45	1	77	17	115	0	0	132	0	0	0	2	0	3	345	348
08:30	0	134	18	0	152	26	0	56	0	82	21	96	0	0	117	0	0	0	3	0	3	351	354
08:45	0	145	16	0	161	27	0	51	1	78	23	96	0	0	119	0	0	0	0	0	1	358	359
Total	0	562	67	0	629	117	2	195	3	314	84	423	0	0	507	0	0	0	6	0	9	1450	1459
Grand Total	0	1067	193	0	1260	202	3	434	6	639	202	825	0	0	1027	0	0	0	9	0	15	2926	2941
Apprch %	0.0	84.7	15.3			31.6	0.5	67.9			19.7	80.3	0.0			0.0	0.0	0.0					
Total %	0.0	36.5	6.6		43.1	6.9	0.1	14.8		21.8	6.9	28.2	0.0		35.1	0.0	0.0	0.0		0.0	0.5	99.5	

	4th Street (SR-86) Southbound				I-8 WB Ramp Westbound				I-8 WB Ramp Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection	07:30																
Volume	0	595	109	704	111	2	222	335	114	456	0	570	0	0	0	0	1609
Percent	0.0	84.5	15.5		33.1	0.6	66.3		20.0	80.0	0.0		0.0	0.0	0.0		
07:45 Volume	0	202	40	242	22	0	75	97	34	109	0	143	0	0	0	0	482
Peak Factor																	0.835
High Int.	07:45				07:45				07:30				6:45:00 AM				
Volume	0	202	40	242	22	0	75	97	40	116	0	156					
Peak Factor				0.727				0.863				0.913					

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: C. Parish
Board No.: D1-1432
Loc: 4th Street (SR-86) & I-8 WB Ramp

File Name : 05340030
Site Code : 00340030
Start Date : 10/20/2005



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: S. Tillman
Board No.: D1-2172
Loc: Corfman Rd. (SR-86) & I-8 EB Ramp

File Name : 05340020
Site Code : 00340020
Start Date : 10/20/2005
Page No : 1

Groups Printed- Group 1

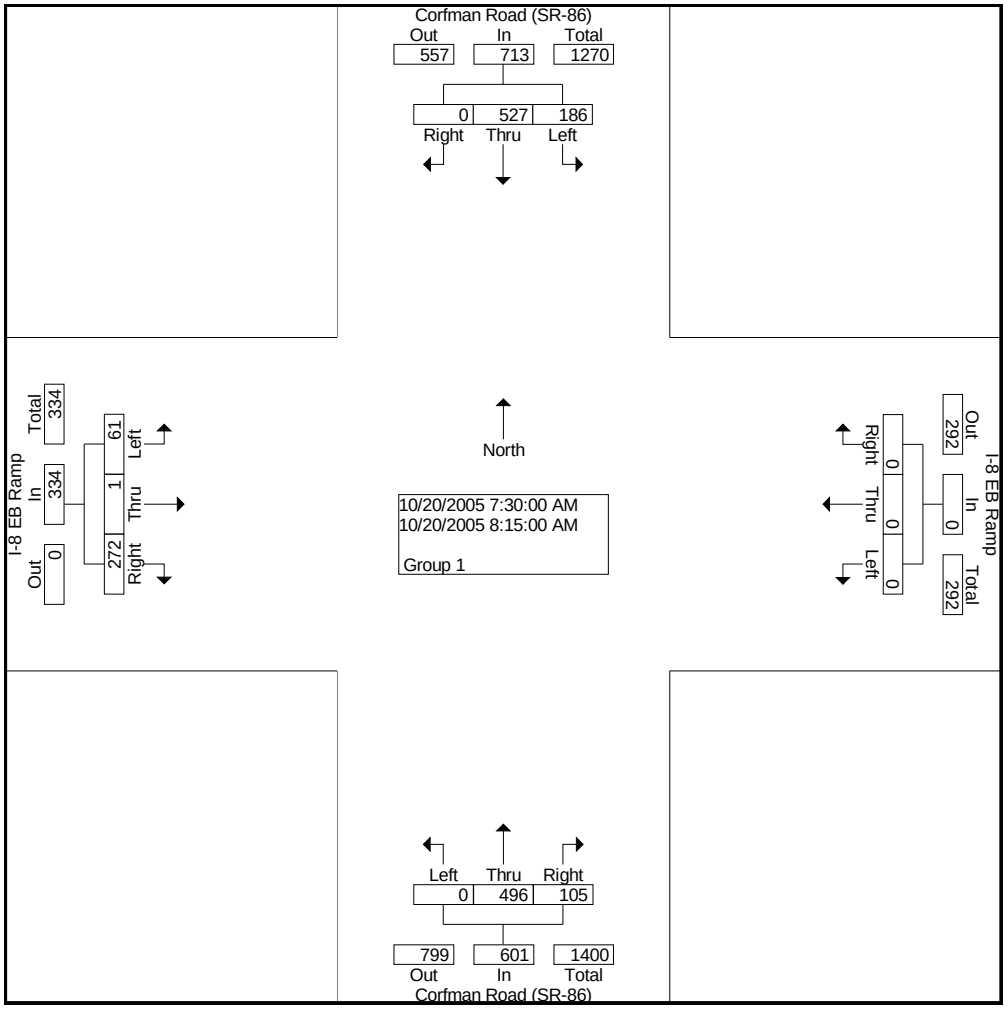
	Corfman Road (SR-86) Southbound					I-8 EB Ramp Westbound					Corfman Road (SR-86) Northbound					I-8 EB Ramp Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
07:00	36	80	0	0	116	0	0	0	1	0	0	75	10	0	85	11	0	42	0	53	1	254	255
07:15	36	84	0	0	120	0	0	0	1	0	0	112	23	0	135	15	0	55	2	70	3	325	328
07:30	54	81	0	0	135	0	0	0	0	0	0	142	32	0	174	12	1	54	1	67	1	376	377
07:45	62	164	0	0	226	0	0	0	0	0	0	119	27	0	146	21	0	96	1	117	1	489	490
Total	188	409	0	0	597	0	0	0	2	0	0	448	92	0	540	59	1	247	4	307	6	1444	1450
08:00	42	155	0	0	197	0	0	0	2	0	0	119	25	0	144	15	0	83	0	98	2	439	441
08:15	28	127	0	0	155	0	0	0	3	0	0	116	21	0	137	13	0	39	1	52	4	344	348
08:30	46	121	0	1	167	0	0	0	0	0	0	92	19	0	111	19	1	42	4	62	5	340	345
08:45	47	122	0	0	169	0	0	0	3	0	0	116	28	0	144	6	0	51	0	57	3	370	373
Total	163	525	0	1	688	0	0	0	8	0	0	443	93	0	536	53	1	215	5	269	14	1493	1507
Grand Total	351	934	0	1	1285	0	0	0	10	0	0	891	185	0	1076	112	2	462	9	576	20	2937	2957
Apprch %	27.3	72.7	0.0			0.0	0.0	0.0			0.0	82.8	17.2			19.4	0.3	80.2					
Total %	12.0	31.8	0.0		43.8	0.0	0.0	0.0		0.0	0.0	30.3	6.3		36.6	3.8	0.1	15.7		19.6	0.7	99.3	

	Corfman Road (SR-86) Southbound				I-8 EB Ramp Westbound				Corfman Road (SR-86) Northbound				I-8 EB Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection	07:30																
Volume	186	527	0	713	0	0	0	0	0	496	105	601	61	1	272	334	1648
Percent	26.1	73.9	0.0		0.0	0.0	0.0		0.0	82.5	17.5		18.3	0.3	81.4		
07:45 Volume	62	164	0	226	0	0	0	0	0	119	27	146	21	0	96	117	489
Peak Factor																	0.843
High Int.	07:45				6:45:00 AM				07:30				07:45				
Volume	62	164	0	226	0	0	0	0	0	142	32	174	21	0	96	117	
Peak Factor				0.789								0.864				0.714	

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: S. Tillman
Board No.: D1-2172
Loc: Corfman Rd. (SR-86) & I-8 EB Ramp

File Name : 05340020
Site Code : 00340020
Start Date : 10/20/2005



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Parish
Board No.: D1-1426
Loc: SR-86 & Wake Ave

File Name : 05346010
Site Code : 00346010
Start Date : 10/25/2005
Page No : 1

Groups Printed- Group 1

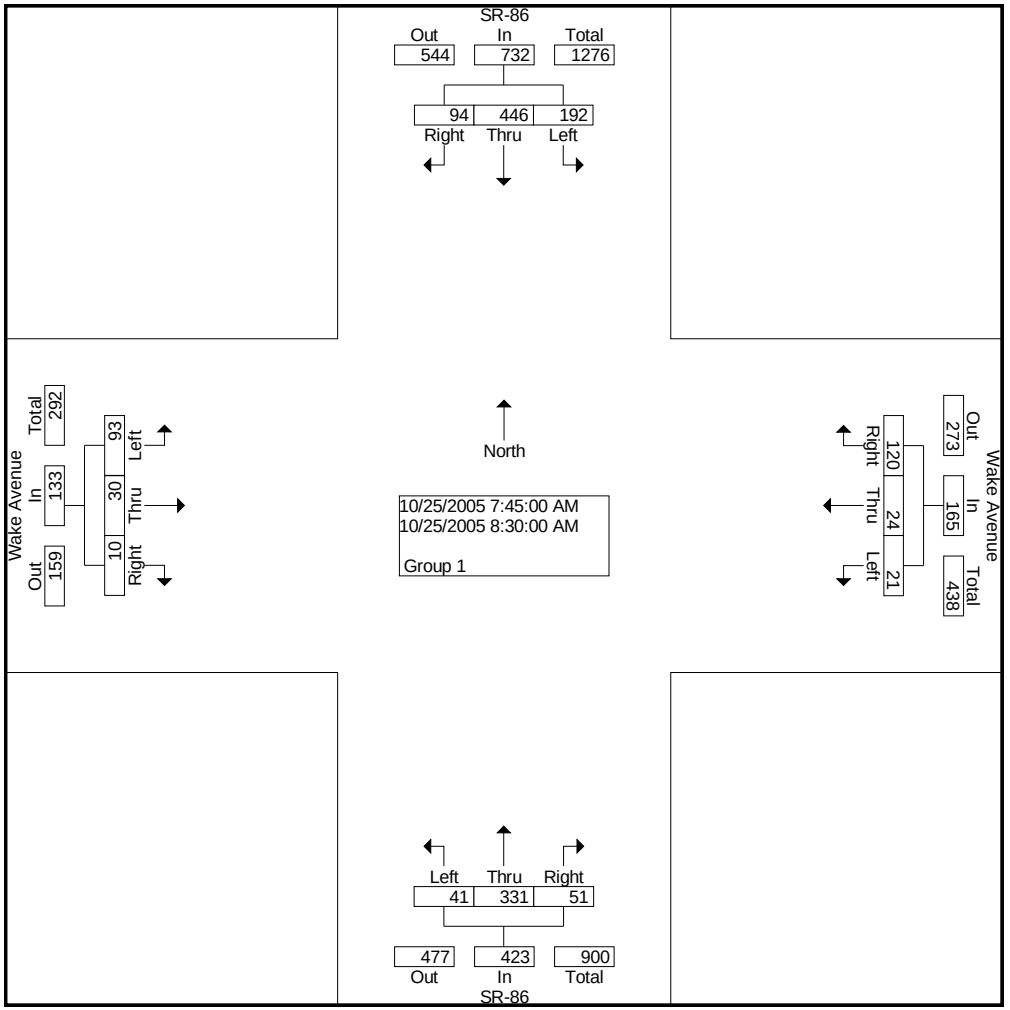
	SR-86 Southbound					Wake Avenue Westbound					SR-86 Northbound					Wake Avenue Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
07:00	20	76	15	1	111	1	2	16	3	19	4	38	6	0	48	18	4	3	0	25	4	203	207
07:15	28	85	16	0	129	4	2	23	0	29	4	62	5	0	71	23	7	1	0	31	0	260	260
07:30	32	84	8	0	124	6	2	16	0	24	9	82	9	1	100	34	9	2	1	45	2	293	295
07:45	54	149	30	0	233	1	6	29	0	36	9	98	13	0	120	23	12	1	0	36	0	425	425
Total	134	394	69	1	597	12	12	84	3	108	26	280	33	1	339	98	32	7	1	137	6	1181	1187
08:00	48	133	22	0	203	7	5	30	0	42	10	78	14	0	102	35	6	0	0	41	0	388	388
08:15	52	77	19	1	148	6	7	39	4	52	12	68	14	0	94	16	6	4	1	26	6	320	326
08:30	38	87	23	4	148	7	6	22	1	35	10	87	10	0	107	19	6	5	0	30	5	320	325
08:45	49	101	29	1	179	10	4	37	0	51	5	71	9	0	85	19	7	4	0	30	1	345	346
Total	187	398	93	6	678	30	22	128	5	180	37	304	47	0	388	89	25	13	1	127	12	1373	1385
Grand Total	321	792	162	7	1275	42	34	212	8	288	63	584	80	1	727	187	57	20	2	264	18	2554	2572
Apprch %	25.2	62.1	12.7			14.6	11.8	73.6			8.7	80.3	11.0			70.8	21.6	7.6					
Total %	12.6	31.0	6.3		49.9	1.6	1.3	8.3		11.3	2.5	22.9	3.1		28.5	7.3	2.2	0.8		10.3	0.7	99.3	

	SR-86 Southbound				Wake Avenue Westbound				SR-86 Northbound				Wake Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection	07:45																
Volume	192	446	94	732	21	24	120	165	41	331	51	423	93	30	10	133	1453
Percent	26.2	60.9	12.8		12.7	14.5	72.7		9.7	78.3	12.1		69.9	22.6	7.5		
07:45 Volume	54	149	30	233	1	6	29	36	9	98	13	120	23	12	1	36	425
Peak Factor																	0.855
High Int.	07:45				08:15				07:45				08:00				
Volume	54	149	30	233	6	7	39	52	9	98	13	120	35	6	0	41	
Peak Factor				0.785				0.793				0.881				0.811	

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Parish
Board No.: D1-1426
Loc: SR-86 & Wake Ave

File Name : 05346010
Site Code : 00346010
Start Date : 10/25/2005
Page No : 2



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: G. Copeland
Board No.: D1-1424
Loc: SR-86 & Danenberg Drive

File Name : 05346020
Site Code : 00346020
Start Date : 10/25/2005
Page No : 1

Groups Printed- Group 1

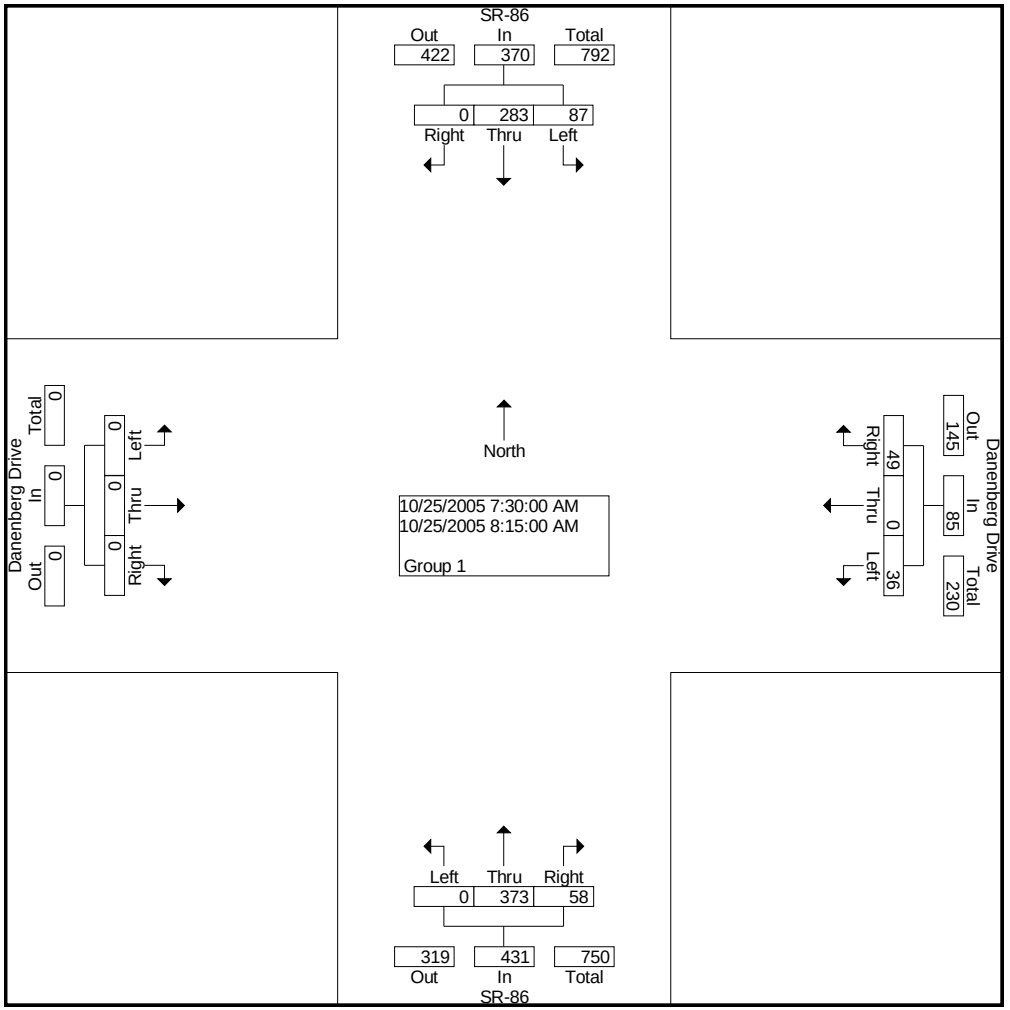
	SR-86 Southbound					Danenberg Drive Westbound					SR-86 Northbound					Danenberg Drive Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
07:00	9	54	0	1	63	2	0	5	1	7	0	53	6	0	59	0	0	0	0	0	2	129	131
07:15	14	56	0	0	70	7	0	4	0	11	0	81	11	0	92	0	0	0	0	0	0	173	173
07:30	17	70	0	0	87	9	0	12	0	21	0	100	12	1	112	0	0	0	0	0	1	220	221
07:45	27	79	0	0	106	6	0	13	0	19	0	116	26	0	142	0	0	0	0	0	0	267	267
Total	67	259	0	1	326	24	0	34	1	58	0	350	55	1	405	0	0	0	0	0	3	789	792
08:00	21	71	0	0	92	12	0	11	0	23	0	79	13	0	92	0	0	0	0	0	0	207	207
08:15	22	63	0	0	85	9	0	13	1	22	0	78	7	1	85	0	0	0	0	0	2	192	194
08:30	15	59	0	0	74	1	0	16	0	17	0	79	10	0	89	0	0	0	0	0	0	180	180
08:45	17	66	0	0	83	3	0	10	0	13	0	57	7	0	64	0	0	0	0	0	0	160	160
Total	75	259	0	0	334	25	0	50	1	75	0	293	37	1	330	0	0	0	0	0	2	739	741
Grand Total	142	518	0	1	660	49	0	84	2	133	0	643	92	2	735	0	0	0	0	0	5	1528	1533
Apprch %	21.5	78.5	0.0			36.8	0.0	63.2			0.0	87.5	12.5			0.0	0.0	0.0					
Total %	9.3	33.9	0.0		43.2	3.2	0.0	5.5		8.7	0.0	42.1	6.0		48.1	0.0	0.0	0.0		0.0	0.3	99.7	

	SR-86 Southbound				Danenberg Drive Westbound				SR-86 Northbound				Danenberg Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection	07:30																
Volume	87	283	0	370	36	0	49	85	0	373	58	431	0	0	0	0	886
Percent	23.5	76.5	0.0		42.4	0.0	57.6		0.0	86.5	13.5		0.0	0.0	0.0		
07:45 Volume	27	79	0	106	6	0	13	19	0	116	26	142	0	0	0	0	267
Peak Factor																	0.830
High Int.	07:45				08:00				07:45				6:45:00 AM				
Volume	27	79	0	106	12	0	11	23	0	116	26	142					
Peak Factor				0.873				0.924				0.759					

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: G. Copeland
Board No.: D1-1424
Loc: SR-86 & Danenberg Drive

File Name : 05346020
Site Code : 00346020
Start Date : 10/25/2005
Page No : 2



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Archibald
Board No.: D1-1306
Loc: Corfman Rd. (SR-86) & McCabe Road

File Name : 05340010
Site Code : 00340010
Start Date : 10/20/2005
Page No : 1

Groups Printed- Group 1

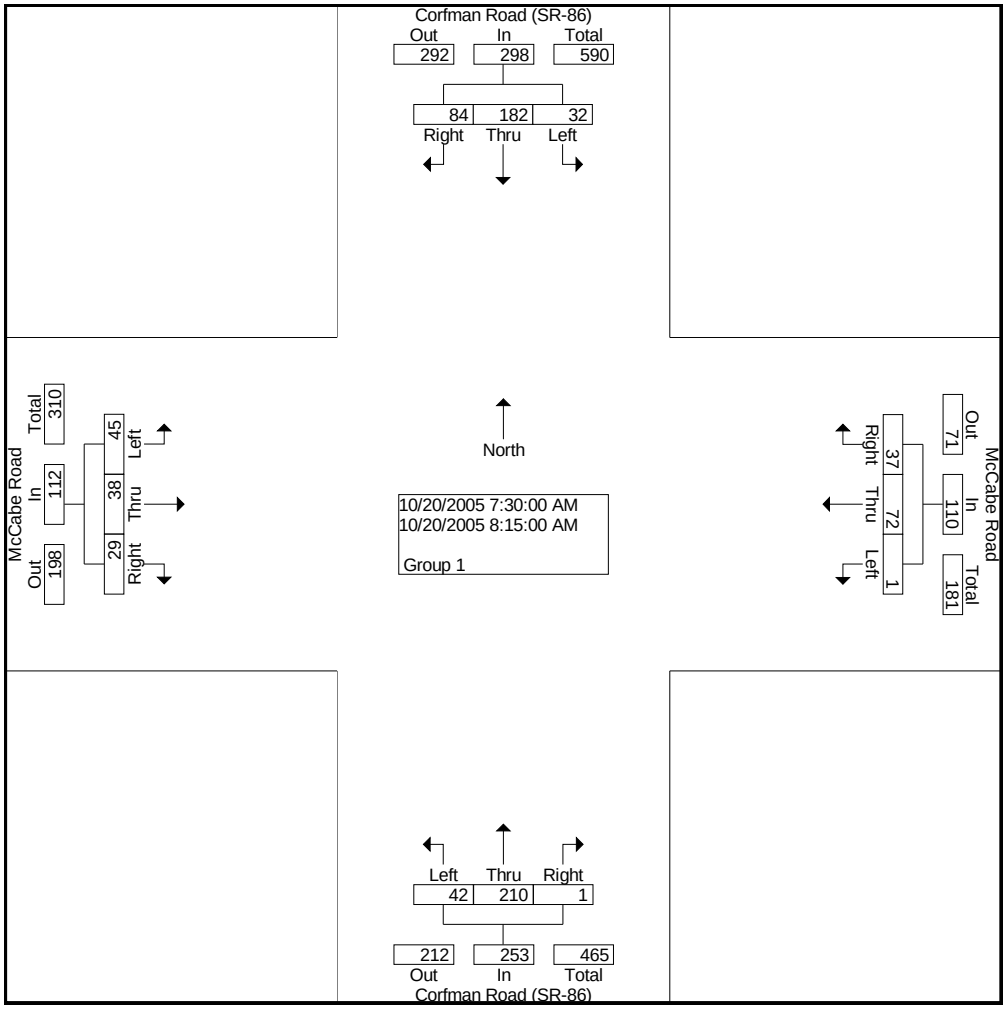
	Corfman Road (SR-86) Southbound					McCabe Road Westbound					Corfman Road (SR-86) Northbound					McCabe Road Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
07:00	9	24	7	0	40	0	12	5	0	17	7	24	0	0	31	3	3	1	0	7	0	95	95
07:15	5	30	10	0	45	1	16	8	0	25	6	50	0	0	56	6	5	2	0	13	0	139	139
07:30	3	39	14	0	56	0	17	12	0	29	10	51	0	0	61	3	10	3	0	16	0	162	162
07:45	11	61	24	0	96	0	17	9	0	26	15	70	1	0	86	14	4	10	0	28	0	236	236
Total	28	154	55	0	237	1	62	34	0	97	38	195	1	0	234	26	22	16	0	64	0	632	632
08:00	11	52	29	0	92	1	25	7	0	33	10	41	0	0	51	17	10	6	0	33	0	209	209
08:15	7	30	17	0	54	0	13	9	0	22	7	48	0	0	55	11	14	10	0	35	0	166	166
08:30	3	39	15	0	57	0	8	5	0	13	7	30	0	0	37	9	10	5	0	24	0	131	131
08:45	9	35	12	0	56	0	11	6	0	17	6	43	0	0	49	6	9	0	1	15	1	137	138
Total	30	156	73	0	259	1	57	27	0	85	30	162	0	0	192	43	43	21	1	107	1	643	644
Grand Total	58	310	128	0	496	2	119	61	0	182	68	357	1	0	426	69	65	37	1	171	1	1275	1276
Apprch %	11.7	62.5	25.8			1.1	65.4	33.5			16.0	83.8	0.2			40.4	38.0	21.6					
Total %	4.5	24.3	10.0		38.9	0.2	9.3	4.8		14.3	5.3	28.0	0.1		33.4	5.4	5.1	2.9		13.4	0.1	99.9	

	Corfman Road (SR-86) Southbound				McCabe Road Westbound				Corfman Road (SR-86) Northbound				McCabe Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection	07:30																
Volume	32	182	84	298	1	72	37	110	42	210	1	253	45	38	29	112	773
Percent	10.7	61.1	28.2		0.9	65.5	33.6		16.6	83.0	0.4		40.2	33.9	25.9		
07:45 Volume	11	61	24	96	0	17	9	26	15	70	1	86	14	4	10	28	236
Peak Factor																	0.819
High Int.	07:45				08:00				07:45				08:15				
Volume	11	61	24	96	1	25	7	33	15	70	1	86	11	14	10	35	
Peak Factor				0.776				0.833				0.735				0.800	

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Archibald
Board No.: D1-1306
Loc: Corfman Rd. (SR-86) & McCabe Road

File Name : 05340010
Site Code : 00340010
Start Date : 10/20/2005



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: C. Parish
Board No.: D1-1432
Loc: 4th Street (SR-86) & I-8 WB Ramp

File Name : 05340031
Site Code : 00340031
Start Date : 10/20/2005
Page No : 1

Groups Printed- Group 1

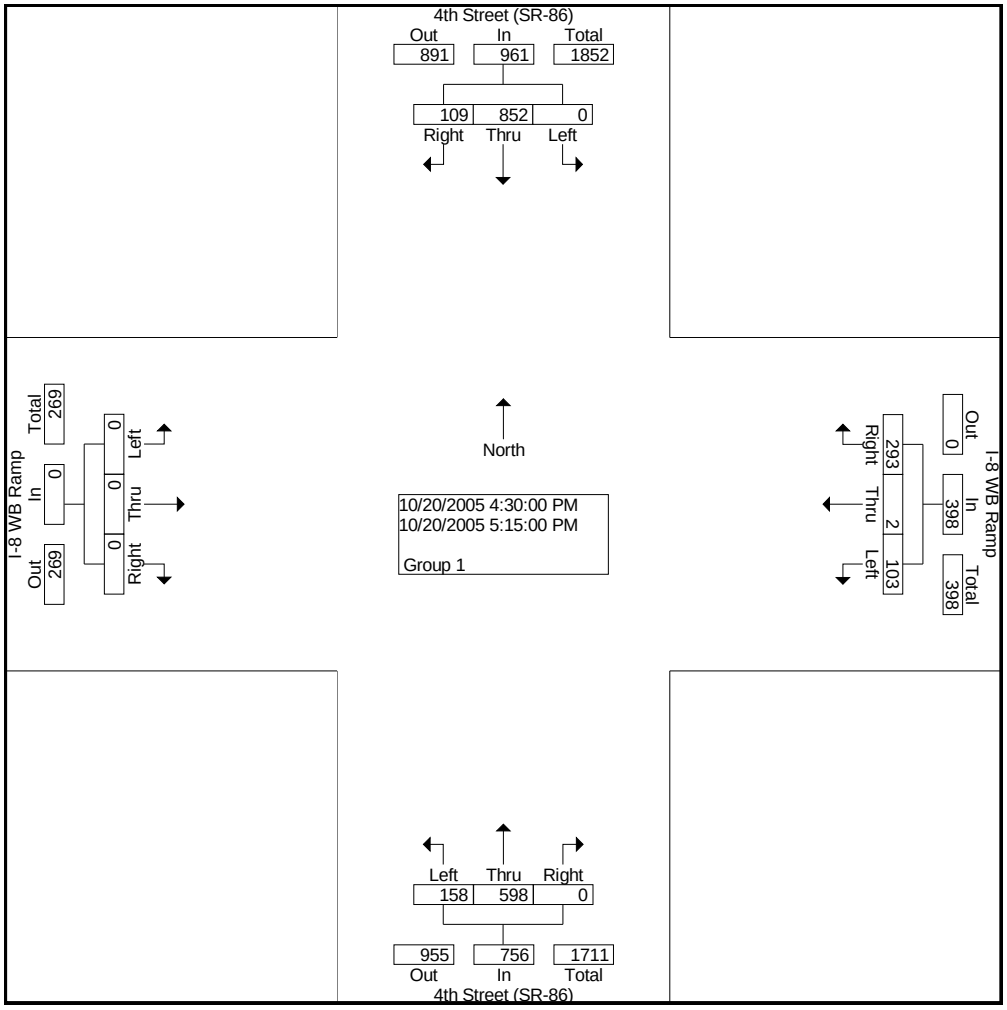
	4th Street (SR-86) Southbound					I-8 WB Ramp Westbound					4th Street (SR-86) Northbound					I-8 WB Ramp Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
16:00	0	199	23	0	222	34	0	77	2	111	36	143	0	0	179	0	0	0	0	0	2	512	514
16:15	0	191	32	0	223	33	0	69	1	102	35	143	0	0	178	0	0	0	0	0	1	503	504
16:30	0	201	25	0	226	25	0	73	0	98	27	132	0	0	159	0	0	0	2	0	2	483	485
16:45	0	196	26	0	222	25	0	77	0	102	35	126	0	0	161	0	0	0	1	0	1	485	486
Total	0	787	106	0	893	117	0	296	3	413	133	544	0	0	677	0	0	0	3	0	6	1983	1989
17:00	0	225	24	0	249	30	1	79	0	110	57	189	0	0	246	0	0	0	0	0	0	605	605
17:15	0	230	34	0	264	23	1	64	0	88	39	151	0	0	190	0	0	0	0	0	0	542	542
17:30	0	210	23	0	233	21	0	58	1	79	37	124	0	0	161	0	0	0	1	0	2	473	475
17:45	0	183	20	0	203	15	0	56	0	71	27	107	0	0	134	0	0	0	0	0	0	408	408
Total	0	848	101	0	949	89	2	257	1	348	160	571	0	0	731	0	0	0	1	0	2	2028	2030
Grand Total	0	1635	207	0	1842	206	2	553	4	761	293	1115	0	0	1408	0	0	0	4	0	8	4011	4019
Apprch %	0.0	88.8	11.2			27.1	0.3	72.7			20.8	79.2	0.0			0.0	0.0	0.0					
Total %	0.0	40.8	5.2		45.9	5.1	0.0	13.8		19.0	7.3	27.8	0.0		35.1	0.0	0.0	0.0		0.0	0.2	99.8	

	4th Street (SR-86) Southbound				I-8 WB Ramp Westbound				4th Street (SR-86) Northbound				I-8 WB Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	16:30																
Volume	0	852	109	961	103	2	293	398	158	598	0	756	0	0	0	0	2115
Percent	0.0	88.7	11.3		25.9	0.5	73.6		20.9	79.1	0.0		0.0	0.0	0.0		
17:00 Volume	0	225	24	249	30	1	79	110	57	189	0	246	0	0	0	0	605
Peak Factor																	0.874
High Int.	17:15				17:00				17:00				3:45:00 PM				
Volume	0	230	34	264	30	1	79	110	57	189	0	246					
Peak Factor				0.910				0.905				0.768					

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: C. Parish
Board No.: D1-1432
Loc: 4th Street (SR-86) & I-8 WB Ramp

File Name : 05340031
Site Code : 00340031
Start Date : 10/20/2005



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: S. Tillman
Board No.: D1-2172
Loc: Corfman Rd. (SR-86) & I-8 EB Ramp

File Name : 05340021
Site Code : 00340021
Start Date : 10/20/2005
Page No : 1

Groups Printed- Group 1

	Corfman Road (SR-86) Southbound					I-8 EB Ramp Westbound					Corfman Road (SR-86) Northbound					I-8 EB Ramp Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
16:00	69	166	0	0	235	0	0	0	2	0	0	167	39	0	206	13	0	55	1	68	3	509	512
16:15	73	158	0	0	231	0	0	0	0	0	0	151	29	0	180	24	0	64	0	88	0	499	499
16:30	62	153	0	0	215	0	0	0	1	0	0	151	39	0	190	15	0	54	1	69	2	474	476
16:45	82	148	0	0	230	0	0	0	1	0	0	141	27	0	168	18	0	82	0	100	1	498	499
Total	286	625	0	0	911	0	0	0	4	0	0	610	134	0	744	70	0	255	2	325	6	1980	1986
17:00	86	176	0	0	262	0	0	0	1	0	0	246	44	0	290	15	0	64	0	79	1	631	632
17:15	92	162	0	0	254	0	0	0	0	0	0	175	34	0	209	22	1	89	0	112	0	575	575
17:30	89	161	0	0	250	0	0	0	1	0	0	145	42	0	187	15	1	78	1	94	2	531	533
17:45	63	133	0	0	196	0	0	0	3	0	0	117	33	0	150	16	0	56	0	72	3	418	421
Total	330	632	0	0	962	0	0	0	5	0	0	683	153	0	836	68	2	287	1	357	6	2155	2161
Grand Total	616	1257	0	0	1873	0	0	0	9	0	0	1293	287	0	1580	138	2	542	3	682	12	4135	4147
Apprch %	32.9	67.1	0.0			0.0	0.0	0.0			0.0	81.8	18.2			20.2	0.3	79.5					
Total %	14.9	30.4	0.0		45.3	0.0	0.0	0.0		0.0	0.0	31.3	6.9		38.2	3.3	0.0	13.1		16.5	0.3	99.7	

	Corfman Road (SR-86) Southbound				I-8 EB Ramp Westbound				Corfman Road (SR-86) Northbound				I-8 EB Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	16:45																
Volume	349	647	0	996	0	0	0	0	0	707	147	854	70	2	313	385	2235
Percent	35.0	65.0	0.0		0.0	0.0	0.0		0.0	82.8	17.2		18.2	0.5	81.3		
17:00 Volume	86	176	0	262	0	0	0	0	0	246	44	290	15	0	64	79	631
Peak Factor																	0.885
High Int.	17:00				3:45:00 PM				17:00				17:15				
Volume	86	176	0	262	0	0	0	0	0	246	44	290	22	1	89	112	
Peak Factor				0.950								0.736				0.859	

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Parish
Board No.: D1-1426
Loc: SR-86 & Wake Ave

File Name : 05346011
Site Code : 00346011
Start Date : 10/25/2005
Page No : 1

Groups Printed- Group 1

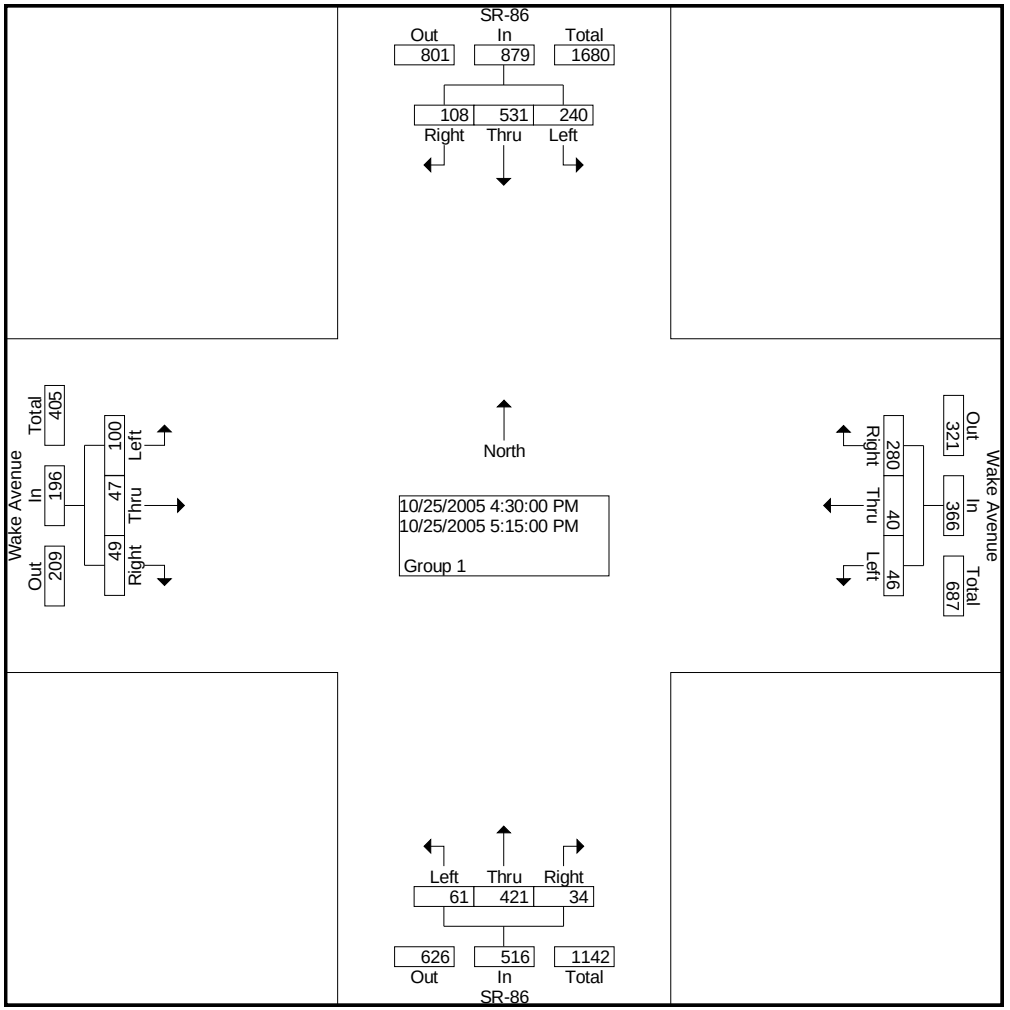
	SR-86 Southbound					Wake Avenue Westbound					SR-86 Northbound					Wake Avenue Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
16:00	55	138	37	0	230	5	13	68	1	86	14	103	15	0	132	26	11	7	0	44	1	492	493
16:15	63	145	24	0	232	11	9	66	0	86	6	92	10	1	108	20	10	11	0	41	1	467	468
16:30	54	132	31	0	217	19	9	56	0	84	11	93	10	0	114	17	15	14	0	46	0	461	461
16:45	73	107	27	1	207	15	9	68	0	92	7	81	8	0	96	28	4	15	0	47	1	442	443
Total	245	522	119	1	886	50	40	258	1	348	38	369	43	1	450	91	40	47	0	178	3	1862	1865
17:00	58	151	26	1	235	5	11	86	1	102	26	160	6	0	192	22	13	10	1	45	3	574	577
17:15	55	141	24	0	220	7	11	70	0	88	17	87	10	2	114	33	15	10	0	58	2	480	482
17:30	59	130	30	0	219	15	6	60	0	81	11	83	6	1	100	39	10	11	1	60	2	460	462
17:45	50	115	29	0	194	6	11	48	0	65	11	90	4	0	105	25	8	13	0	46	0	410	410
Total	222	537	109	1	868	33	39	264	1	336	65	420	26	3	511	119	46	44	2	209	7	1924	1931
Grand Total	467	1059	228	2	1754	83	79	522	2	684	103	789	69	4	961	210	86	91	2	387	10	3786	3796
Apprch %	26.6	60.4	13.0			12.1	11.5	76.3			10.7	82.1	7.2			54.3	22.2	23.5					
Total %	12.3	28.0	6.0		46.3	2.2	2.1	13.8		18.1	2.7	20.8	1.8		25.4	5.5	2.3	2.4		10.2	0.3	99.7	

	SR-86 Southbound				Wake Avenue Westbound				SR-86 Northbound				Wake Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	16:30																
Volume	240	531	108	879	46	40	280	366	61	421	34	516	100	47	49	196	1957
Percent	27.3	60.4	12.3		12.6	10.9	76.5		11.8	81.6	6.6		51.0	24.0	25.0		
17:00 Volume	58	151	26	235	5	11	86	102	26	160	6	192	22	13	10	45	574
Peak Factor																	0.852
High Int.	17:00				17:00				17:00				17:15				
Volume	58	151	26	235	5	11	86	102	26	160	6	192	33	15	10	58	
Peak Factor				0.935				0.897				0.672				0.845	

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Parish
Board No.: D1-1426
Loc: SR-86 & Wake Ave

File Name : 05346011
Site Code : 00346011
Start Date : 10/25/2005
Page No : 2



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: G. Copeland
Board No.: D1-1424
Loc: SR-86 & Danenberg Drive

File Name : 05346021
Site Code : 00346021
Start Date : 10/25/2005
Page No : 1

Groups Printed- Group 1

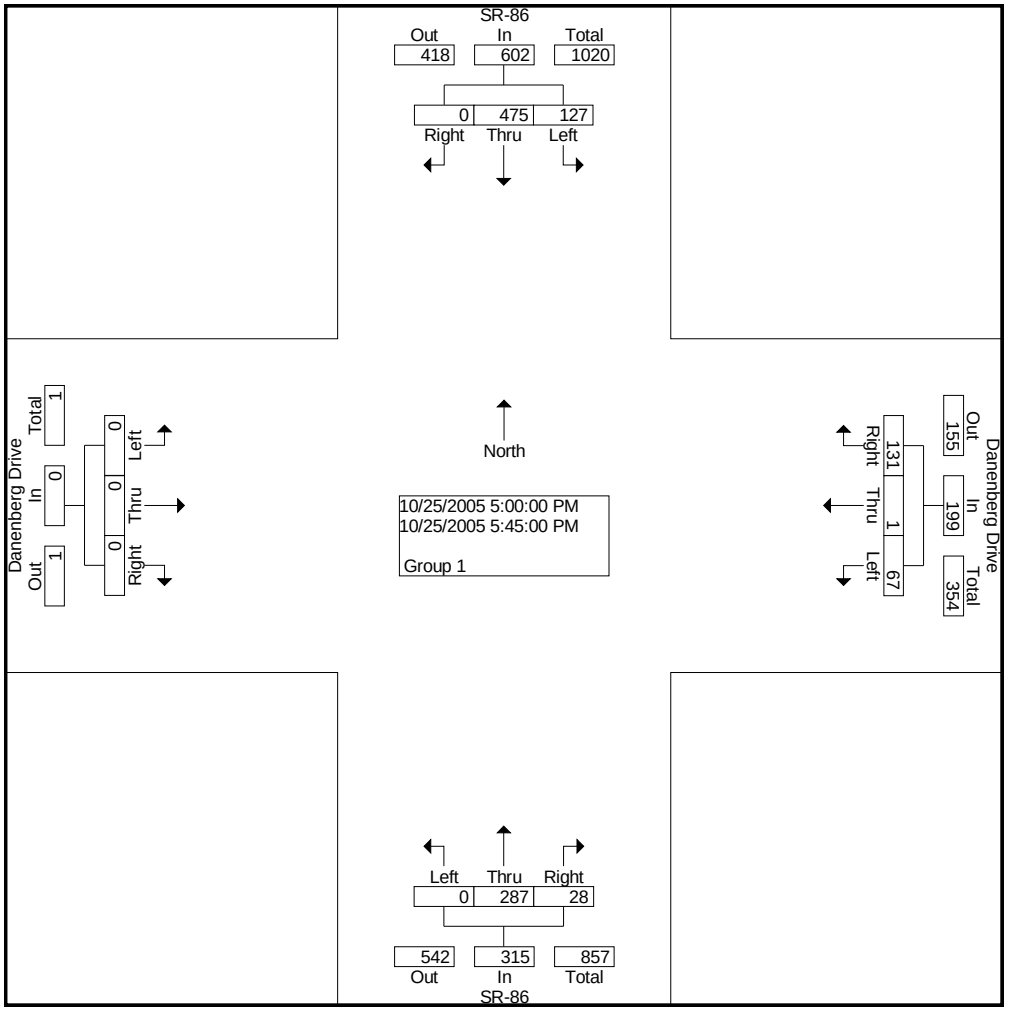
	SR-86 Southbound					Danenberg Drive Westbound					SR-86 Northbound					Danenberg Drive Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
16:00	27	130	0	0	157	16	0	27	0	43	0	77	9	0	86	0	0	0	0	0	0	286	286
16:15	30	111	0	0	141	5	0	31	0	36	0	60	8	0	68	0	0	0	0	0	0	245	245
16:30	27	117	0	0	144	9	0	28	0	37	0	63	6	0	69	0	0	0	0	0	0	250	250
16:45	31	85	0	0	116	16	0	31	0	47	0	67	5	1	72	0	0	0	0	0	1	235	236
Total	115	443	0	0	558	46	0	117	0	163	0	267	28	1	295	0	0	0	0	0	1	1016	1017
17:00	28	125	0	0	153	36	1	48	1	85	0	77	12	0	89	0	0	0	0	0	1	327	328
17:15	34	126	0	0	160	14	0	32	1	46	0	66	6	0	72	0	0	0	0	0	1	278	279
17:30	34	125	0	0	159	10	0	29	0	39	0	59	6	0	65	0	0	0	0	0	0	263	263
17:45	31	99	0	0	130	7	0	22	1	29	0	85	4	1	89	0	0	0	0	0	2	248	250
Total	127	475	0	0	602	67	1	131	3	199	0	287	28	1	315	0	0	0	0	0	4	1116	1120
Grand Total	242	918	0	0	1160	113	1	248	3	362	0	554	56	2	610	0	0	0	0	0	5	2132	2137
Apprch %	20.9	79.1	0.0			31.2	0.3	68.5			0.0	90.8	9.2			0.0	0.0	0.0					
Total %	11.4	43.1	0.0		54.4	5.3	0.0	11.6		17.0	0.0	26.0	2.6		28.6	0.0	0.0	0.0		0.0	0.2	99.8	

	SR-86 Southbound				Danenberg Drive Westbound				SR-86 Northbound				Danenberg Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	17:00																
Volume	127	475	0	602	67	1	131	199	0	287	28	315	0	0	0	0	1116
Percent	21.1	78.9	0.0		33.7	0.5	65.8		0.0	91.1	8.9		0.0	0.0	0.0		
17:00 Volume	28	125	0	153	36	1	48	85	0	77	12	89	0	0	0	0	327
Peak Factor																	0.853
High Int.	17:15				17:00				17:00				3:45:00 PM				
Volume	34	126	0	160	36	1	48	85	0	77	12	89					
Peak Factor				0.941				0.585				0.885					

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: G. Copeland
Board No.: D1-1424
Loc: SR-86 & Danenberg Drive

File Name : 05346021
Site Code : 00346021
Start Date : 10/25/2005
Page No : 2



Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
(619) 390-8495 Fax (619) 390-8427

Weather: Clear & Dry
Counted By: M. Archibald
Board No.: D1-1306
Loc: Corfman Rd. (SR-86) & McCabe Road

File Name : 05340011
Site Code : 00340011
Start Date : 10/20/2005
Page No : 1

Groups Printed- Group 1

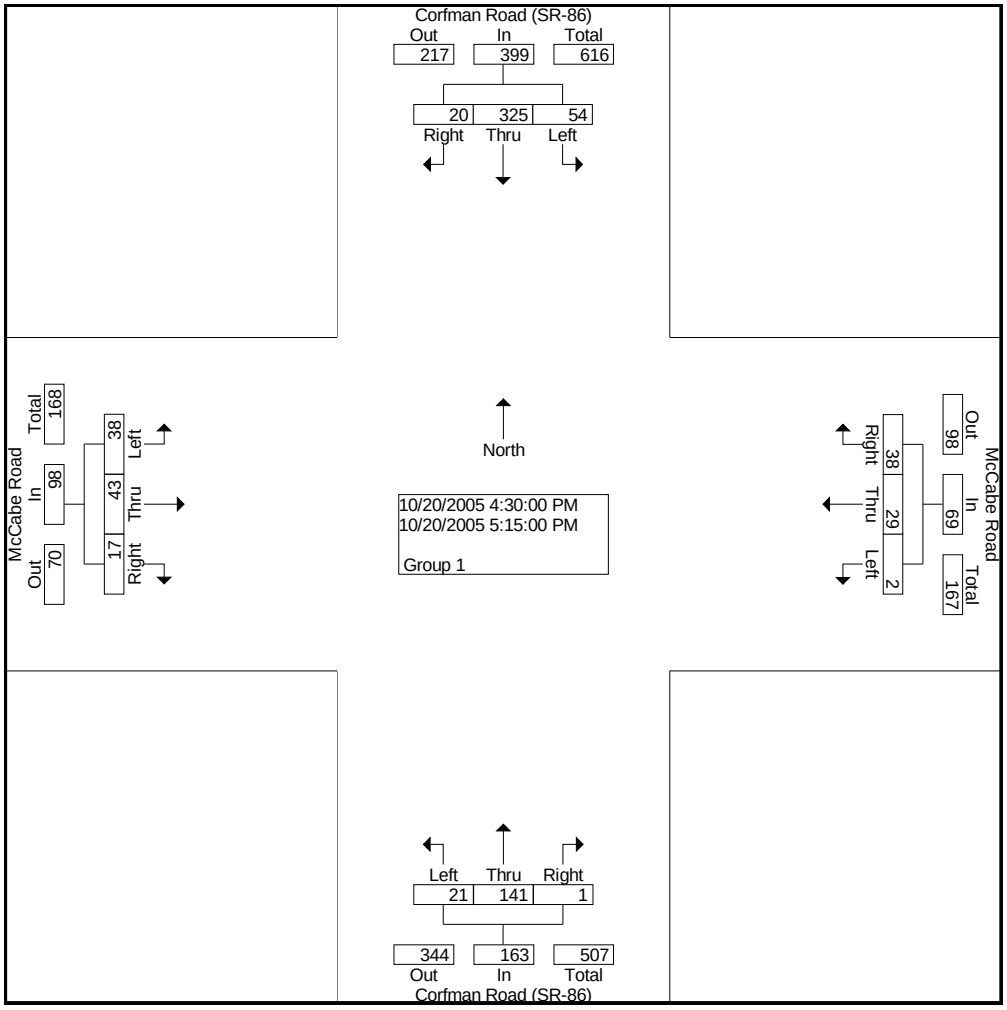
	Corfman Road (SR-86) Southbound					McCabe Road Westbound					Corfman Road (SR-86) Northbound					McCabe Road Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
16:00	12	62	5	0	79	1	6	11	0	18	2	51	0	0	53	9	12	4	0	25	0	175	175
16:15	12	73	9	0	94	0	6	2	0	8	3	37	0	0	40	9	7	2	0	18	0	160	160
16:30	11	72	2	0	85	1	8	9	0	18	7	46	0	0	53	8	4	5	0	17	0	173	173
16:45	14	88	4	0	106	0	6	8	0	14	3	39	0	0	42	6	8	1	0	15	0	177	177
Total	49	295	20	0	364	2	26	30	0	58	15	173	0	0	188	32	31	12	0	75	0	685	685
17:00	22	86	9	0	117	0	7	8	0	15	4	25	1	0	30	18	17	3	0	38	0	200	200
17:15	7	79	5	0	91	1	8	13	0	22	7	31	0	0	38	6	14	8	0	28	0	179	179
17:30	15	80	7	0	102	0	4	6	0	10	4	21	1	0	26	5	8	5	0	18	0	156	156
17:45	12	57	6	0	75	0	3	10	0	13	2	20	0	0	22	6	10	4	0	20	0	130	130
Total	56	302	27	0	385	1	22	37	0	60	17	97	2	0	116	35	49	20	0	104	0	665	665
Grand Total	105	597	47	0	749	3	48	67	0	118	32	270	2	0	304	67	80	32	0	179	0	1350	1350
Apprch %	14.0	79.7	6.3			2.5	40.7	56.8			10.5	88.8	0.7			37.4	44.7	17.9					
Total %	7.8	44.2	3.5		55.5	0.2	3.6	5.0		8.7	2.4	20.0	0.1		22.5	5.0	5.9	2.4		13.3	0.0	100.0	

	Corfman Road (SR-86) Southbound				McCabe Road Westbound				Corfman Road (SR-86) Northbound				McCabe Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	16:30																
Volume	54	325	20	399	2	29	38	69	21	141	1	163	38	43	17	98	729
Percent	13.5	81.5	5.0		2.9	42.0	55.1		12.9	86.5	0.6		38.8	43.9	17.3		
17:00 Volume	22	86	9	117	0	7	8	15	4	25	1	30	18	17	3	38	200
Peak Factor																	0.911
High Int.	17:00				17:15				16:30				17:00				
Volume	22	86	9	117	1	8	13	22	7	46	0	53	18	17	3	38	
Peak Factor				0.853				0.784				0.769				0.645	

Traffic Data Service Southwest
9773 Maine Avenue
Lakeside, CA 92040
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Weather: Clear & Dry
Counted By: M. Archibald
Board No.: D1-1306
Loc: Corfman Rd. (SR-86) & McCabe Road

File Name : 05340011
Site Code : 00340011
Start Date : 10/20/2005



Appendix C

Trip Generation Excerpts

Single-Family Detached Housing
(210)

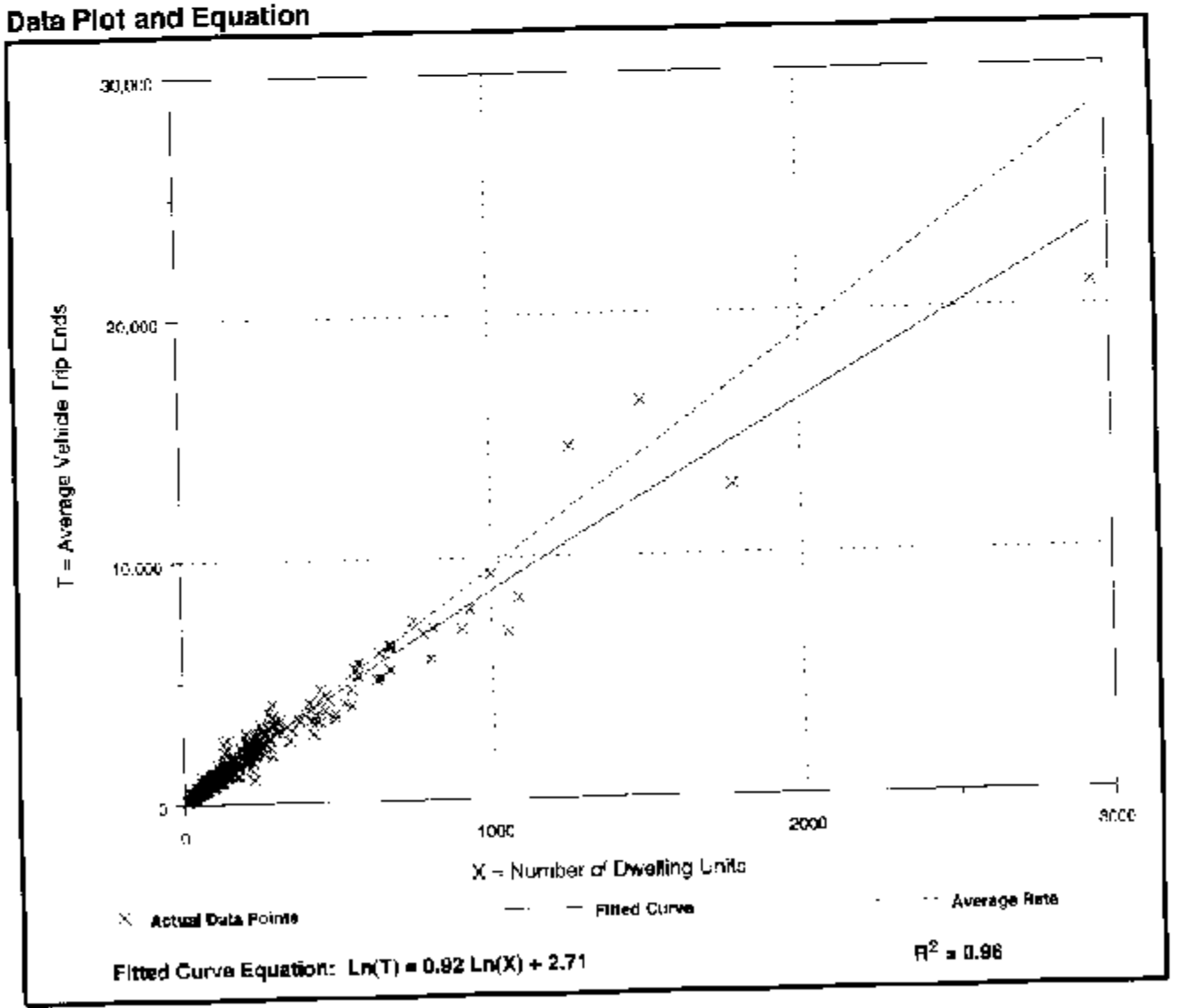
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 350
Avg. Number of Dwelling Units: 197
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.57	4.31 - 21.85	3.69

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.71

$R^2 = 0.96$

Single-Family Detached Housing
(210)

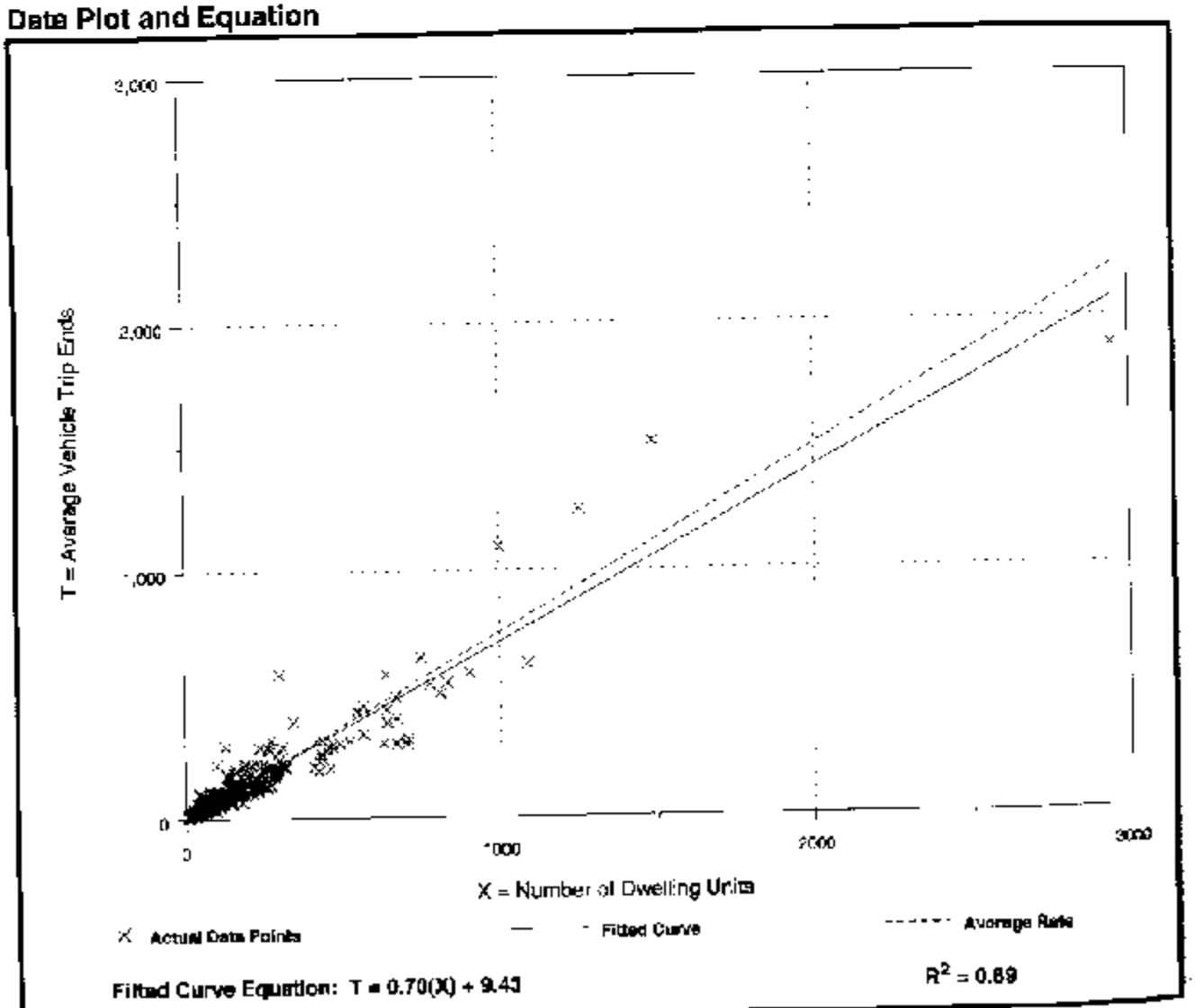
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 274
Avg. Number of Dwelling Units: 201
Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.33 - 2.27	0.90

Data Plot and Equation



Fitted Curve Equation: $T = 0.70(X) + 9.43$

$R^2 = 0.89$

Single-Family Detached Housing
(210)

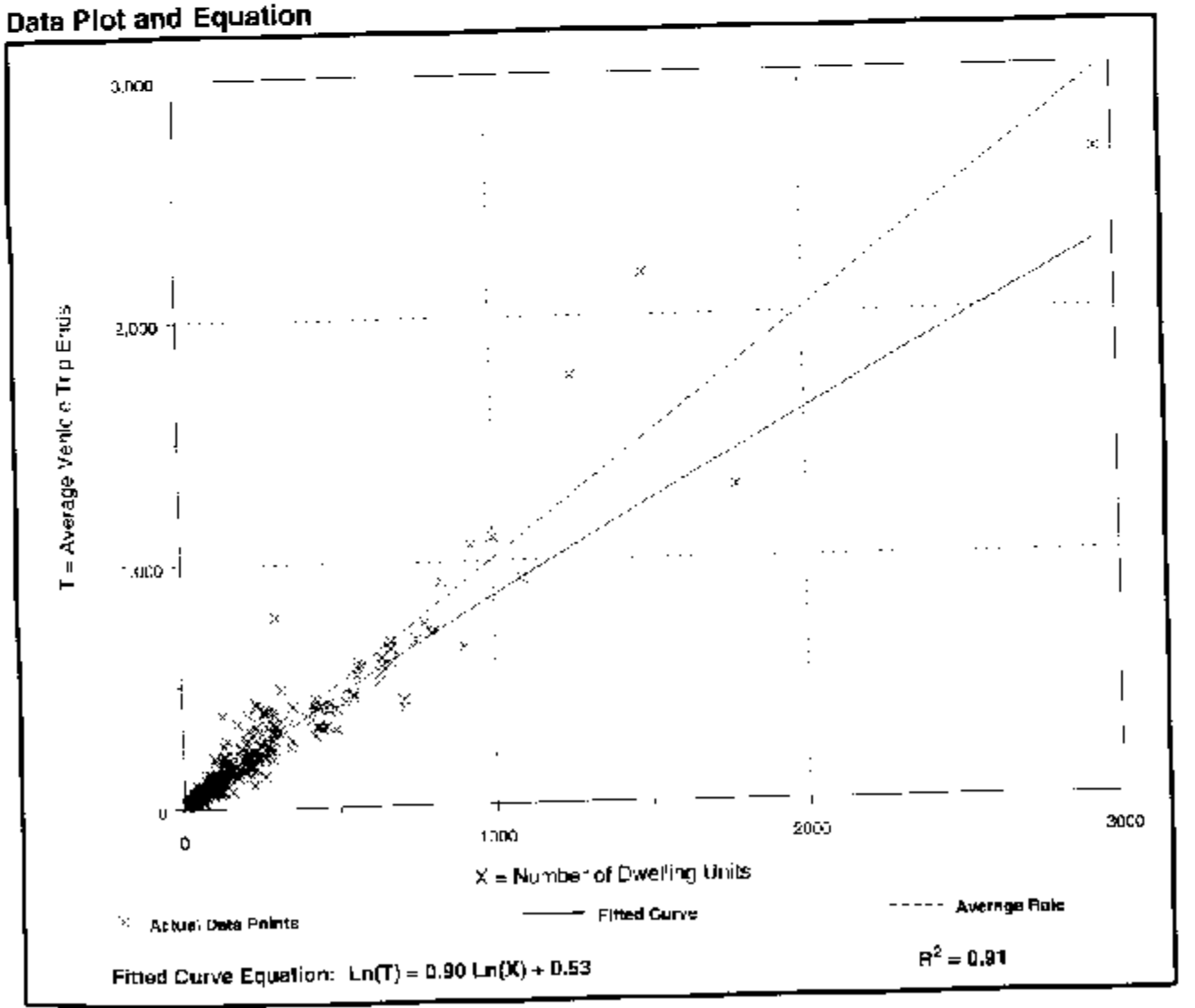
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 302
Avg. Number of Dwelling Units: 214
Directional Distribution: 63% entering, 37% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.01	0.42 - 2.98	1.05

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.90 Ln(X) + 0.53

R^2 = 0.91

Appendix D

Peak Hour Intersection Analysis Worksheets Existing Conditions

Willow Bend
Existing AM

Scenario Report

Scenario:	Ex AM
Command:	Ex AM
Volume:	Ex AM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	none
Trip Distribution:	Project
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

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Willow Bend
Existing AM

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 21 State Route 86 & I-8 WB	B	19.0	0.625	B	19.0	0.625	+ 0.000 D/V
# 22 State Route 86 & I-8 EB	B	19.9	0.595	B	19.9	0.595	+ 0.000 D/V
# 23 State Route 86 & Wake Ave	B	17.2	0.356	B	17.2	0.356	+ 0.000 D/V
# 24 State Route 86 & Danenberg Rd	B	13.5	0.255	B	13.5	0.255	+ 0.000 D/V
# 25 SR-86 & Horne Rd	B	11.3	0.000	B	11.3	0.000	+ 0.000 D/V
# 26 State Route 86 & Willow Bend D	B	10.9	0.000	B	10.9	0.000	+ 0.000 D/V
# 27 State Route 86 & Countryside D	B	10.7	0.000	B	10.7	0.000	+ 0.000 D/V
# 28 State Route 86 & W McCabe Rd	C	19.7	0.000	C	19.7	0.000	+ 0.000 D/V

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Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #21 State Route 86 & I-8 WB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.625
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 19.0
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0 2	0	0	0	0 1	1	0	0	0 0	0	0	0	0 1!	0	0
Volume Module:																
Base Vol:	114	456	0	0	595	109	0	0	0	111	2	222				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	114	456	0	0	595	109	0	0	0	111	2	222				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	114	456	0	0	595	109	0	0	0	111	2	222				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
PHF Volume:	120	480	0	0	626	115	0	0	0	117	2	234				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	120	480	0	0	626	115	0	0	0	117	2	234				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Vol.:	120	480	0	0	626	115	0	0	0	117	2	234				
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Adjustment:	0.93	0.93	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.85	0.85	0.85				
Lanes:	1.00	2.00	0.00	0.00	1.69	0.31	0.00	0.00	0.00	0.33	0.01	0.66				
Final Sat.:	1769	3538	0	0	2921	535	0	0	0	536	10	1072				
Capacity Analysis Module:																
Vol/Sat:	0.07	0.14	0.00	0.00	0.21	0.21	0.00	0.00	0.00	0.22	0.22	0.22				
Crit Moves:	****				****							****				
Green/Cycle:	0.11	0.28	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.35	0.35	0.35				
Volume/Cap:	0.63	0.49	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.63	0.63	0.63				
Delay/Veh:	31.9	18.4	0.0	0.0	17.5	17.5	0.0	0.0	0.0	18.5	18.5	18.5				
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
AdjDel/Veh:	31.9	18.4	0.0	0.0	17.5	17.5	0.0	0.0	0.0	18.5	18.5	18.5				
LOS by Move:	C	B	A	A	B	B	A	A	A	B	B	B				
HCM2kAvgQ:	2	4	0	0	7	7	0	0	0	6	6	6				

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #22 State Route 86 & I-8 EB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.595
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 19.9
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0 2	0	1	1	0 2	0	0	0	0 1!	0	0	0	0 0	0	0
Volume Module:																
Base Vol:	0	496	105	186	527	0	61	1	272	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	496	105	186	527	0	61	1	272	0	0	0				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	496	105	186	527	0	61	1	272	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
PHF Volume:	0	522	111	196	555	0	64	1	286	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	0	522	111	196	555	0	64	1	286	0	0	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Vol.:	0	522	111	196	555	0	64	1	286	0	0	0				
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Adjustment:	1.00	0.93	0.83	0.93	0.93	1.00	0.85	0.85	0.85	1.00	1.00	1.00				
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.18	0.01	0.81	0.00	0.00	0.00				
Final Sat.:	0	3538	1583	1769	3538	0	295	5	1316	0	0	0				
Capacity Analysis Module:																
Vol/Sat:	0.00	0.15	0.07	0.11	0.16	0.00	0.22	0.22	0.22	0.00	0.00	0.00				
Crit Moves:		****		****			****									
Green/Cycle:	0.00	0.25	0.25	0.19	0.28	0.00	0.37	0.37	0.37	0.00	0.00	0.00				
Volume/Cap:	0.00	0.59	0.28	0.59	0.55	0.00	0.59	0.59	0.59	0.00	0.00	0.00				
Delay/Veh:	0.0	21.0	18.6	25.3	18.9	0.0	17.1	17.1	17.1	0.0	0.0	0.0				
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
AdjDel/Veh:	0.0	21.0	18.6	25.3	18.9	0.0	17.1	17.1	17.1	0.0	0.0	0.0				
LOS by Move:	A	C	B	C	B	A	B	B	B	A	A	A				
HCM2kAvgQ:	0	4	2	3	4	0	6	6	6	0	0	0				

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #23 State Route 86 & Wake Ave

Cycle (sec): 60 Critical Vol./Cap.(X): 0.356
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 17.2
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Ovl			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0 1	1	0	1	0 1	1	0	0	1 0	1	0	1	0 1	0	1
Volume Module:																
Base Vol:	41	331	51		192	446	94		93	30	10		21	24	120	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	41	331	51		192	446	94		93	30	10		21	24	120	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	41	331	51		192	446	94		93	30	10		21	24	120	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	43	348	54		202	469	99		98	32	11		22	25	126	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	43	348	54		202	469	99		98	32	11		22	25	126	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	43	348	54		202	469	99		98	32	11		22	25	126	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.91	0.91		0.93	0.91	0.91		0.89	0.89	0.89		0.93	0.98	0.83	
Lanes:	1.00	1.73	0.27		1.00	1.65	0.35		1.00	0.75	0.25		1.00	1.00	1.00	
Final Sat.:	1769	3004	463		1769	2846	600		1690	1267	422		1769	1862	1583	
Capacity Analysis Module:																
Vol/Sat:	0.02	0.12	0.12		0.11	0.16	0.16		0.06	0.02	0.02		0.01	0.01	0.08	
Crit Moves:	****					****			****					****		
Green/Cycle:	0.08	0.25	0.25		0.25	0.42	0.42		0.15	0.15	0.15		0.08	0.08	0.33	
Volume/Cap:	0.29	0.46	0.46		0.46	0.39	0.39		0.39	0.17	0.17		0.15	0.16	0.24	
Delay/Veh:	26.9	19.3	19.3		19.8	12.3	12.3		23.9	22.5	22.5		26.0	26.1	14.7	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	26.9	19.3	19.3		19.8	12.3	12.3		23.9	22.5	22.5		26.0	26.1	14.7	
LOS by Move:	C	B	B		B	B	B		C	C	C		C	C	B	
HCM2kAvgQ:	1	3	3		3	4	4		2	1	1		1	1	2	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #24 State Route 86 & Danenberg Rd

Cycle (sec): 60 Critical Vol./Cap.(X): 0.255
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 13.5
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0 1	1	0	1	0 2	0	0	0	0 0	0	0	1	0 0	0	1
Volume Module:																
Base Vol:	0	373	58		87	283	0		0	0	0		36	0	49	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	373	58		87	283	0		0	0	0		36	0	49	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	0	373	58		87	283	0		0	0	0		36	0	49	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	393	61		92	298	0		0	0	0		38	0	52	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	393	61		92	298	0		0	0	0		38	0	52	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	393	61		92	298	0		0	0	0		38	0	52	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.91	0.91		0.93	0.93	1.00		1.00	1.00	1.00		0.93	1.00	0.83	
Lanes:	0.00	1.73	0.27		1.00	2.00	0.00		0.00	0.00	0.00		1.00	0.00	1.00	
Final Sat.:	0	3000	467		1769	3538	0		0	0	0		1769	0	1583	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.13	0.13		0.05	0.08	0.00		0.00	0.00	0.00		0.02	0.00	0.03	
Crit Moves:		****				****								****		
Green/Cycle:	0.00	0.49	0.49		0.19	0.34	0.00		0.00	0.00	0.00		0.12	0.00	0.12	
Volume/Cap:	0.00	0.27	0.27		0.27	0.25	0.00		0.00	0.00	0.00		0.18	0.00	0.27	
Delay/Veh:	0.0	9.2	9.2		21.1	14.3	0.0		0.0	0.0	0.0		24.1	0.0	24.7	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	9.2	9.2		21.1	14.3	0.0		0.0	0.0	0.0		24.1	0.0	24.7	
LOS by Move:	A	A	A		C	B	A		A	A	A		C	A	C	
HCM2kAvgQ:	0	3	3		1	2	0		0	0	0		1	0	1	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #25 SR-86 & Horne Rd

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[11.3]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 0	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module:												
Base Vol:	23	279	0	0	143	20	57	0	14	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	23	279	0	0	143	20	57	0	14	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	23	279	0	0	143	20	57	0	14	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	24	294	0	0	151	21	60	0	15	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	24	294	0	0	151	21	60	0	15	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	182	xxxx	xxxxx	xxxx	xxxx	xxxxx	376	xxxx	181	xxxx	xxxx	xxxxx
Potent Cap.:	1394	xxxx	xxxxx	xxxx	xxxx	xxxxx	625	xxxx	862	xxxx	xxxx	xxxxx
Move Cap.:	1382	xxxx	xxxxx	xxxx	xxxx	xxxxx	607	xxxx	847	xxxx	xxxx	xxxxx
Volume/Cap:	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	xxxx	0.02	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	643	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.3	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.3			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #26 State Route 86 & Willow Bend Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[10.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1	0	1 0 0	1	0	0 1 0	0	1	0 1 0	0	1
Volume Module:												
Base Vol:	0	461	2	10	329	0	0	0	0	5	0	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	461	2	10	329	0	0	0	0	5	0	30
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	461	2	10	329	0	0	0	0	5	0	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	485	2	11	346	0	0	0	0	5	0	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	485	2	11	346	0	0	0	0	5	0	32
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	497	xxxx	xxxxx	xxxx	xxxx	xxxxx	874	xxxx	264
Potent Cap.:	xxxx	xxxx	xxxxx	1067	xxxx	xxxxx	xxxx	xxxx	xxxxx	320	xxxx	775
Move Cap.:	xxxx	xxxx	xxxxx	1058	xxxx	xxxxx	xxxx	xxxx	xxxxx	313	xxxx	762
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	xxxx	0.04
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1
Control Del:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.9
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	A
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		0	xxxx	xxxxx	313	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.7	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.9		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #27 State Route 86 & Countryside Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[10.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1 0		1 0 0	1 0		0 1 0	0 1		0 1 0	0 1	
Volume Module:												
Base Vol:	0	433	2	10	324	0	0	0	0	5	0	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	433	2	10	324	0	0	0	0	5	0	30
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	433	2	10	324	0	0	0	0	5	0	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	456	2	11	341	0	0	0	0	5	0	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	456	2	11	341	0	0	0	0	5	0	32
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	468	xxxx	xxxxx	xxxx	xxxx	xxxxx	839	xxxx	249
Potent Cap.:	xxxx	xxxx	xxxxx	1094	xxxx	xxxxx	xxxx	xxxx	xxxxx	336	xxxx	790
Move Cap.:	xxxx	xxxx	xxxxx	1085	xxxx	xxxxx	xxxx	xxxx	xxxxx	328	xxxx	777
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	xxxx	0.04
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1
Control Del:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.8
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	A
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	328	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.2	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.7		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Willow Bend
Existing AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #28 State Route 86 & W McCabe Rd

Average Delay (sec/veh): 6.0 Worst Case Level Of Service: C[19.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0	1 0		1 0 0	1 0		0 0 1! 0	0		0 0 1! 0	0	
Volume Module:												
Base Vol:	42	210	1	32	182	84	45	38	29	1	72	37
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	42	210	1	32	182	84	45	38	29	1	72	37
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	42	210	1	32	182	84	45	38	29	1	72	37
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	44	221	1	34	192	88	47	40	31	1	76	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	44	221	1	34	192	88	47	40	31	1	76	39
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	290	xxxx	xxxxx	232	xxxx	xxxxx	691	634	256	668	677	242
Potent Cap.:	1272	xxxx	xxxxx	1336	xxxx	xxxxx	359	397	783	372	374	797
Move Cap.:	1261	xxxx	xxxxx	1324	xxxx	xxxxx	267	367	770	307	346	784
Volume/Cap:	0.04	xxxx	xxxx	0.03	xxxx	xxxx	0.18	0.11	0.04	0.00	0.22	0.05
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.0	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	361	xxxxx	xxxx	426	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.4	xxxxx	xxxxx	1.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	19.7	xxxxx	xxxxx	16.6	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			19.7			16.6		
ApproachLOS:	*			*			C			C		

Note: Queue reported is the number of cars per lane.

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Willow Bend
Existing PM

Scenario Report

Scenario:	Ex PM
Command:	Ex PM
Volume:	Ex PM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	none
Trip Distribution:	Project
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Willow Bend
Existing PM

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in V/C
# 21 State Route 86 & I-8 WB	C	23.1	0.805	C	23.1	0.805	+ 0.000
# 22 State Route 86 & I-8 EB	C	25.7	0.836	C	25.7	0.836	+ 0.000
# 23 State Route 86 & Wake Ave	B	18.0	0.505	B	18.0	0.505	+ 0.000
# 24 State Route 86 & Danenberg Rd	B	14.8	0.286	B	14.8	0.286	+ 0.000
# 25 SR-86 & Horne Rd	B	13.7	0.000	B	13.7	0.000	+ 0.000
# 26 State Route 86 & Willow Bend D	B	11.3	0.000	B	11.3	0.000	+ 0.000
# 27 State Route 86 & Countryside D	B	11.1	0.000	B	11.1	0.000	+ 0.000
# 28 State Route 86 & W McCabe Rd	C	19.7	0.000	C	19.7	0.000	+ 0.000

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #21 State Route 86 & I-8 WB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.805
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 23.1
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0	2	0 0	0	0	1	1 0	0	0	0	0 0	0	0	1!	0 0
Volume Module:																
Base Vol:	158	598	0		0	852	109		0	0	0		103	2	293	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	158	598	0		0	852	109		0	0	0		103	2	293	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	158	598	0		0	852	109		0	0	0		103	2	293	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	166	629	0		0	897	115		0	0	0		108	2	308	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	166	629	0		0	897	115		0	0	0		108	2	308	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	166	629	0		0	897	115		0	0	0		108	2	308	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.93	1.00		1.00	0.92	0.92		1.00	1.00	1.00		0.85	0.85	0.85	
Lanes:	1.00	2.00	0.00		0.00	1.77	0.23		0.00	0.00	0.00		0.26	0.01	0.73	
Final Sat.:	1769	3538	0		0	3083	394		0	0	0		419	8	1192	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.18	0.00		0.00	0.29	0.29		0.00	0.00	0.00		0.26	0.26	0.26	
Crit Moves:	****					****									****	
Green/Cycle:	0.12	0.33	0.00		0.00	0.36	0.36		0.00	0.00	0.00		0.32	0.32	0.32	
Volume/Cap:	0.80	0.55	0.00		0.00	0.80	0.80		0.00	0.00	0.00		0.80	0.80	0.80	
Delay/Veh:	45.9	17.1	0.0		0.0	21.1	21.1		0.0	0.0	0.0		27.5	27.5	27.5	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	45.9	17.1	0.0		0.0	21.1	21.1		0.0	0.0	0.0		27.5	27.5	27.5	
LOS by Move:	D	B	A		A	C	C		A	A	A		C	C	C	
HCM2kAvgQ:	3	5	0		0	11	11		0	0	0		10	10	10	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #22 State Route 86 & I-8 EB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.836
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 25.7
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0	2	0 1	1	0	2	0 0	0	0	1!	0 0	0	0	0	0 0
Volume Module:																
Base Vol:	0	707	147		349	647	0		70	2	313		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	707	147		349	647	0		70	2	313		0	0	0	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	0	707	147		349	647	0		70	2	313		0	0	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	744	155		367	681	0		74	2	329		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	744	155		367	681	0		74	2	329		0	0	0	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	744	155		367	681	0		74	2	329		0	0	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.93	0.83		0.93	0.93	1.00		0.85	0.85	0.85		1.00	1.00	1.00	
Lanes:	0.00	2.00	1.00		1.00	2.00	0.00		0.18	0.01	0.81		0.00	0.00	0.00	
Final Sat.:	0	3538	1583		1769	3538	0		294	8	1314		0	0	0	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.21	0.10		0.21	0.19	0.00		0.25	0.25	0.25		0.00	0.00	0.00	
Crit Moves:		****			****				****							
Green/Cycle:	0.00	0.25	0.25		0.25	0.35	0.00		0.30	0.30	0.30		0.00	0.00	0.00	
Volume/Cap:	0.00	0.84	0.39		0.84	0.55	0.00		0.84	0.84	0.84		0.00	0.00	0.00	
Delay/Veh:	0.0	28.2	19.3		34.5	16.3	0.0		31.6	31.6	31.6		0.0	0.0	0.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	28.2	19.3		34.5	16.3	0.0		31.6	31.6	31.6		0.0	0.0	0.0	
LOS by Move:	A	C	B		C	B	A		C	C	C		A	A	A	
HCM2kAvgQ:	0	8	2		7	5	0		10	10	10		0	0	0	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #23 State Route 86 & Wake Ave

Cycle (sec): 60 Critical Vol./Cap.(X): 0.505
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 18.0
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Ovl			
Min. Green:	5		5	5	5		5	5	5		5	5	5		5	5
Lanes:	1	0	1	1 0	1	0	1	1 0	0	1	0	1 0	1	0	1	0 1
Volume Module:																
Base Vol:	61		421	34	240		531	108	100		47	49	46		40	280
Growth Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	61		421	34	240		531	108	100		47	49	46		40	280
Added Vol:	0		0	0	0		0	0	0		0	0	0		0	0
PasserByVol:	0		0	0	0		0	0	0		0	0	0		0	0
Initial Fut:	61		421	34	240		531	108	100		47	49	46		40	280
User Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	64		443	36	253		559	114	105		49	52	48		42	295
Reduct Vol:	0		0	0	0		0	0	0		0	0	0		0	0
Reduced Vol:	64		443	36	253		559	114	105		49	52	48		42	295
PCE Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
MLF Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Final Vol.:	64		443	36	253		559	114	105		49	52	48		42	295
Saturation Flow Module:																
Sat/Lane:	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900
Adjustment:	0.93		0.92	0.92	0.93		0.91	0.91	0.87		0.87	0.87	0.93		0.98	0.83
Lanes:	1.00		1.85	0.15	1.00		1.66	0.34	1.00		0.49	0.51	1.00		1.00	1.00
Final Sat.:	1769		3237	261	1769		2866	583	1661		813	848	1769		1862	1583
Capacity Analysis Module:																
Vol/Sat:	0.04		0.14	0.14	0.14		0.20	0.20	0.06		0.06	0.06	0.03		0.02	0.19
Crit Moves:			****				****				****				****	
Green/Cycle:	0.17		0.27	0.27	0.28		0.39	0.39	0.13		0.13	0.13	0.09		0.09	0.37
Volume/Cap:	0.22		0.51	0.51	0.51		0.50	0.50	0.51		0.48	0.48	0.32		0.26	0.51
Delay/Veh:	22.0		18.9	18.9	18.8		14.3	14.3	25.5		25.3	25.3	27.0		26.5	15.4
User DelAdj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
AdjDel/Veh:	22.0		18.9	18.9	18.8		14.3	14.3	25.5		25.3	25.3	27.0		26.5	15.4
LOS by Move:	C		B	B	B		B	B	C		C	C	C		C	B
HCM2kAvgQ:	1		4	4	4		5	5	3		3	3	1		1	5

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #24 State Route 86 & Danenberg Rd

Cycle (sec): 60 Critical Vol./Cap.(X): 0.286
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 14.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5		5	5	5		5	5	5		5	5	5		5	5
Lanes:	0	0	1	1 0	1	0	2	0 0	0	0	0	0 0	1	0	0	0 1
Volume Module:																
Base Vol:	0		287	28	127		475	0	0		0	0	67		0	131
Growth Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	0		287	28	127		475	0	0		0	0	67		0	131
Added Vol:	0		0	0	0		0	0	0		0	0	0		0	0
PasserByVol:	0		0	0	0		0	0	0		0	0	0		0	0
Initial Fut:	0		287	28	127		475	0	0		0	0	67		0	131
User Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	0		302	29	134		500	0	0		0	0	71		0	138
Reduct Vol:	0		0	0	0		0	0	0		0	0	0		0	0
Reduced Vol:	0		302	29	134		500	0	0		0	0	71		0	138
PCE Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
MLF Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Final Vol.:	0		302	29	134		500	0	0		0	0	71		0	138
Saturation Flow Module:																
Sat/Lane:	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900
Adjustment:	1.00		0.92	0.92	0.93		0.93	1.00	1.00		1.00	1.00	0.93		1.00	0.83
Lanes:	0.00		1.82	0.18	1.00		2.00	0.00	0.00		0.00	0.00	1.00		0.00	1.00
Final Sat.:	0		3181	310	1769		3538	0	0		0	0	1769		0	1583
Capacity Analysis Module:																
Vol/Sat:	0.00		0.09	0.09	0.08		0.14	0.00	0.00		0.00	0.00	0.04		0.00	0.09
Crit Moves:	****						****									****
Green/Cycle:	0.00		0.28	0.28	0.25		0.44	0.00	0.00		0.00	0.00	0.27		0.00	0.27
Volume/Cap:	0.00		0.34	0.34	0.31		0.32	0.00	0.00		0.00	0.00	0.15		0.00	0.32
Delay/Veh:	0.0		17.4	17.4	18.8		10.9	0.0	0.0		0.0	0.0	16.6		0.0	17.8
User DelAdj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
AdjDel/Veh:	0.0		17.4	17.4	18.8		10.9	0.0	0.0		0.0	0.0	16.6		0.0	17.8
LOS by Move:	A		B	B	B		B	A	A		A	A	B		A	B
HCM2kAvgQ:	0		3	3	2		3	0	0		0	0	1		0	2

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #25 SR-86 & Horne Rd

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[13.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 0	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module:												
Base Vol:	12	217	0	0	406	63	39	0	16	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	217	0	0	406	63	39	0	16	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	217	0	0	406	63	39	0	16	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	13	228	0	0	427	66	41	0	17	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	13	228	0	0	427	66	41	0	17	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	504	xxxx	xxxxx	xxxx	xxxx	xxxxx	620	xxxx	481	xxxx	xxxx	xxxxx
Potent Cap.:	1061	xxxx	xxxxx	xxxx	xxxx	xxxxx	452	xxxx	585	xxxx	xxxx	xxxxx
Move Cap.:	1052	xxxx	xxxxx	xxxx	xxxx	xxxxx	440	xxxx	576	xxxx	xxxx	xxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	0.09	xxxx	0.03	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	472	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.7	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			13.7			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #26 State Route 86 & Willow Bend Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[11.3]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1	0	1 0 0	1	0	0 1 0	0	1	0 1 0	0	1
Volume Module:												
Base Vol:	0	335	6	34	576	0	0	0	0	4	0	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	335	6	34	576	0	0	0	0	4	0	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	335	6	34	576	0	0	0	0	4	0	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	353	6	36	606	0	0	0	0	4	0	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	353	6	36	606	0	0	0	0	4	0	21
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	369	xxxx	xxxxx	xxxx	xxxx	xxxxx	1054	xxxx	199
Potent Cap.:	xxxx	xxxx	xxxxx	1190	xxxx	xxxxx	xxxx	xxxx	xxxxx	250	xxxx	842
Move Cap.:	xxxx	xxxx	xxxxx	1180	xxxx	xxxxx	xxxx	xxxx	xxxxx	240	xxxx	828
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	xxxx	0.03
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1
Control Del:	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.5
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	A
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		0	xxxx xxxxx	240	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	20.2	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.3		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #27 State Route 86 & Countryside Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[11.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1 0		1 0 0	1 0		0 1 0	0 1		0 1 0	0 1	
Volume Module:												
Base Vol:	0	321	6	34	546	0	0	0	0	4	0	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	321	6	34	546	0	0	0	0	4	0	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	321	6	34	546	0	0	0	0	4	0	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	338	6	36	575	0	0	0	0	4	0	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	338	6	36	575	0	0	0	0	4	0	21
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	354	xxxx	xxxxx	xxxx	xxxx	xxxxx	1007	xxxx	192
Potent Cap.:	xxxx	xxxx	xxxxx	1205	xxxx	xxxxx	xxxx	xxxx	xxxxx	267	xxxx	849
Move Cap.:	xxxx	xxxx	xxxxx	1194	xxxx	xxxxx	xxxx	xxxx	xxxxx	256	xxxx	835
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	xxxx	0.03
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.1
Control Del:	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.4
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	A
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	256	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	19.3	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #28 State Route 86 & W McCabe Rd

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: C[19.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0	1 0		1 0 0	1 0		0 0 1! 0	0		0 0 1! 0	0	
Volume Module:												
Base Vol:	21	141	1	54	325	20	38	43	17	2	29	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	141	1	54	325	20	38	43	17	2	29	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	141	1	54	325	20	38	43	17	2	29	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	22	148	1	57	342	21	40	45	18	2	31	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	22	148	1	57	342	21	40	45	18	2	31	40
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	373	xxxx	xxxxx	159	xxxx	xxxxx	715	680	373	711	690	169
Potent Cap.:	1185	xxxx	xxxxx	1420	xxxx	xxxxx	346	373	673	348	368	875
Move Cap.:	1175	xxxx	xxxxx	1408	xxxx	xxxxx	289	346	662	286	341	861
Volume/Cap:	0.02	xxxx	xxxx	0.04	xxxx	xxxx	0.14	0.13	0.03	0.01	0.09	0.05
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.1	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	348	xxxxx	xxxx	507	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.2	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	19.7	xxxxx	xxxxx	13.3	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			19.7			13.3		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Scenario Report

Scenario:	Ex plus AM
Command:	Ex plus AM
Volume:	Ex AM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	AM Proj
Trip Distribution:	Project
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Willow Bend
Existing plus AM

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 21 State Route 86 & I-8 WB	B	19.0	0.625	B	19.2	0.638	+ 0.227 D/V
# 22 State Route 86 & I-8 EB	B	19.9	0.595	B	19.9	0.610	+ 0.020 D/V
# 23 State Route 86 & Wake Ave	B	17.2	0.356	B	17.2	0.362	+ 0.038 D/V
# 24 State Route 86 & Danenberg Rd	B	13.5	0.255	B	12.8	0.283	-0.614 D/V
# 25 SR-86 & Horne Rd	B	11.3	0.000	B	11.8	0.000	+ 0.510 D/V
# 26 State Route 86 & Willow Bend D	B	10.9	0.000	C	15.6	0.000	+ 4.665 D/V
# 27 State Route 86 & Countryside D	B	10.7	0.000	B	14.9	0.000	+ 4.141 D/V
# 28 State Route 86 & W McCabe Rd	C	19.7	0.000	C	20.5	0.000	+ 0.765 D/V

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Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #21 State Route 86 & I-8 WB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.638
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 19.2
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0	2	0 0	0	0	1	1 0	0	0	0	0 0	0	0	1!	0 0
Volume Module:																
Base Vol:	114	456	0		0	595	109		0	0	0		111	2	222	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	114	456	0		0	595	109		0	0	0		111	2	222	
Added Vol:	8	27	0		0	9	0		0	0	0		5	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	122	483	0		0	604	109		0	0	0		116	2	222	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	128	508	0		0	636	115		0	0	0		122	2	234	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	128	508	0		0	636	115		0	0	0		122	2	234	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	128	508	0		0	636	115		0	0	0		122	2	234	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.93	1.00		1.00	0.91	0.91		1.00	1.00	1.00		0.85	0.85	0.85	
Lanes:	1.00	2.00	0.00		0.00	1.69	0.31		0.00	0.00	0.00		0.34	0.01	0.65	
Final Sat.:	1769	3538	0		0	2928	528		0	0	0		553	10	1058	
Capacity Analysis Module:																
Vol/Sat:	0.07	0.14	0.00		0.00	0.22	0.22		0.00	0.00	0.00		0.22	0.22	0.22	
Crit Moves:	****					****								****		
Green/Cycle:	0.11	0.29	0.00		0.00	0.34	0.34		0.00	0.00	0.00		0.35	0.35	0.35	
Volume/Cap:	0.64	0.50	0.00		0.00	0.64	0.64		0.00	0.00	0.00		0.64	0.64	0.64	
Delay/Veh:	32.1	18.2	0.0		0.0	17.9	17.9		0.0	0.0	0.0		18.9	18.9	18.9	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	32.1	18.2	0.0		0.0	17.9	17.9		0.0	0.0	0.0		18.9	18.9	18.9	
LOS by Move:	C	B	A		A	B	B		A	A	A		B	B	B	
HCM2kAvgQ:	2	4	0		0	7	7		0	0	0		7	7	7	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #22 State Route 86 & I-8 EB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.610
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 19.9
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0	2	0 1	1	0	2	0 0	0	0	1!	0 0	0	0	0	0 0
Volume Module:																
Base Vol:	0	496	105		186	527	0		61	1	272		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	496	105		186	527	0		61	1	272		0	0	0	
Added Vol:	0	34	15		0	14	0		0	0	3		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	0	530	120		186	541	0		61	1	275		0	0	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	558	126		196	569	0		64	1	289		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	558	126		196	569	0		64	1	289		0	0	0	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	558	126		196	569	0		64	1	289		0	0	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.93	0.83		0.93	0.93	1.00		0.85	0.85	0.85		1.00	1.00	1.00	
Lanes:	0.00	2.00	1.00		1.00	2.00	0.00		0.18	0.01	0.81		0.00	0.00	0.00	
Final Sat.:	0	3538	1583		1769	3538	0		293	5	1320		0	0	0	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.16	0.08		0.11	0.16	0.00		0.22	0.22	0.22		0.00	0.00	0.00	
Crit Moves:		****				****					****					
Green/Cycle:	0.00	0.26	0.26		0.18	0.29	0.00		0.36	0.36	0.36		0.00	0.00	0.00	
Volume/Cap:	0.00	0.61	0.31		0.61	0.55	0.00		0.61	0.61	0.61		0.00	0.00	0.00	
Delay/Veh:	0.0	20.8	18.3		26.0	18.7	0.0		17.6	17.6	17.6		0.0	0.0	0.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	20.8	18.3		26.0	18.7	0.0		17.6	17.6	17.6		0.0	0.0	0.0	
LOS by Move:	A	C	B		C	B	A		B	B	B		A	A	A	
HCM2kAvgQ:	0	5	2		3	5	0		6	6	6		0	0	0	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #23 State Route 86 & Wake Ave

Cycle (sec): 60 Critical Vol./Cap.(X): 0.362
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 17.2
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Ovl			
Min. Green:	5		5	5	5		5	5	5		5	5	5		5	5
Lanes:	1	0	1	1 0	1	0	1	1 0	0	1	0	1 0	1	0	1	0 1
Volume Module:																
Base Vol:	41		331	51	192		446	94	93		30	10	21		24	120
Growth Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	41		331	51	192		446	94	93		30	10	21		24	120
Added Vol:	0		49	4	0		16	0	0		0	0	1		0	0
PasserByVol:	0		0	0	0		0	0	0		0	0	0		0	0
Initial Fut:	41		380	55	192		462	94	93		30	10	22		24	120
User Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	43		400	58	202		486	99	98		32	11	23		25	126
Reduct Vol:	0		0	0	0		0	0	0		0	0	0		0	0
Reduced Vol:	43		400	58	202		486	99	98		32	11	23		25	126
PCE Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
MLF Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Final Vol.:	43		400	58	202		486	99	98		32	11	23		25	126
Saturation Flow Module:																
Sat/Lane:	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900
Adjustment:	0.93		0.91	0.91	0.93		0.91	0.91	0.89		0.89	0.89	0.93		0.98	0.83
Lanes:	1.00		1.75	0.25	1.00		1.66	0.34	1.00		0.75	0.25	1.00		1.00	1.00
Final Sat.:	1769		3032	439	1769		2866	583	1690		1267	422	1769		1862	1583
Capacity Analysis Module:																
Vol/Sat:	0.02		0.13	0.13	0.11		0.17	0.17	0.06		0.02	0.02	0.01		0.01	0.08
Crit Moves:	****						****		****						****	
Green/Cycle:	0.08		0.27	0.27	0.23		0.42	0.42	0.14		0.14	0.14	0.08		0.08	0.32
Volume/Cap:	0.29		0.49	0.49	0.49		0.40	0.40	0.40		0.17	0.17	0.16		0.16	0.25
Delay/Veh:	26.9		18.8	18.8	20.7		12.2	12.2	24.1		22.6	22.6	26.0		26.1	15.4
User DelAdj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
AdjDel/Veh:	26.9		18.8	18.8	20.7		12.2	12.2	24.1		22.6	22.6	26.0		26.1	15.4
LOS by Move:	C		B	B	C		B	B	C		C	C	C		C	B
HCM2kAvgQ:	1		4	4	3		4	4	2		1	1	1		1	2

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #24 State Route 86 & Danenberg Rd

Cycle (sec): 60 Critical Vol./Cap.(X): 0.283
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 12.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5		5	5	5		5	5	5		5	5	5		5	5
Lanes:	0	0	1	1 0	1	0	2	0 0	0	0	0	0 0	1	0	0	0 1
Volume Module:																
Base Vol:	0		373	58	87		283	0	0		0	0	36		0	49
Growth Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	0		373	58	87		283	0	0		0	0	36		0	49
Added Vol:	0		53	11	0		18	0	0		0	0	4		0	0
PasserByVol:	0		0	0	0		0	0	0		0	0	0		0	0
Initial Fut:	0		426	69	87		301	0	0		0	0	40		0	49
User Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	0		448	73	92		317	0	0		0	0	42		0	52
Reduct Vol:	0		0	0	0		0	0	0		0	0	0		0	0
Reduced Vol:	0		448	73	92		317	0	0		0	0	42		0	52
PCE Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
MLF Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Final Vol.:	0		448	73	92		317	0	0		0	0	42		0	52
Saturation Flow Module:																
Sat/Lane:	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900
Adjustment:	1.00		0.91	0.91	0.93		0.93	1.00	1.00		1.00	1.00	0.93		1.00	0.83
Lanes:	0.00		1.72	0.28	1.00		2.00	0.00	0.00		0.00	0.00	1.00		0.00	1.00
Final Sat.:	0		2981	483	1769		3538	0	0		0	0	1769		0	1583
Capacity Analysis Module:																
Vol/Sat:	0.00		0.15	0.15	0.05		0.09	0.00	0.00		0.00	0.00	0.02		0.00	0.03
Crit Moves:			****		****										****	
Green/Cycle:	0.00		0.51	0.51	0.18		0.36	0.00	0.00		0.00	0.00	0.11		0.00	0.11
Volume/Cap:	0.00		0.29	0.29	0.29		0.25	0.00	0.00		0.00	0.00	0.21		0.00	0.29
Delay/Veh:	0.0		8.5	8.5	22.0		13.7	0.0	0.0		0.0	0.0	24.8		0.0	25.4
User DelAdj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
AdjDel/Veh:	0.0		8.5	8.5	22.0		13.7	0.0	0.0		0.0	0.0	24.8		0.0	25.4
LOS by Move:	A		A	A	C		B	A	A		A	A	C		A	C
HCM2kAvgQ:	0		3	3	1		2	0	0		0	0	1		0	1

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #25 SR-86 & Horne Rd

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[11.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 0	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module:												
Base Vol:	23	279	0	0	143	20	57	0	14	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	23	279	0	0	143	20	57	0	14	0	0	0
Added Vol:	0	65	0	0	21	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	23	344	0	0	164	20	57	0	14	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	24	362	0	0	173	21	60	0	15	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	24	362	0	0	173	21	60	0	15	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	204	xxxx	xxxxx	xxxx	xxxx	xxxxx	433	xxxx	203	xxxx	xxxx	xxxxx
Potent Cap.:	1368	xxxx	xxxxx	xxxx	xxxx	xxxxx	580	xxxx	838	xxxx	xxxx	xxxxx
Move Cap.:	1357	xxxx	xxxxx	xxxx	xxxx	xxxxx	563	xxxx	824	xxxx	xxxx	xxxxx
Volume/Cap:	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.11	xxxx	0.02	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	600	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.8	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.8			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #26 State Route 86 & Willow Bend Dr

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: C[15.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1	0	1 0 0	1	0	0 1 0	0	1	0 1 0	0	1
Volume Module:												
Base Vol:	0	461	2	10	329	0	0	0	0	5	0	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	461	2	10	329	0	0	0	0	5	0	30
Added Vol:	2	32	0	0	11	11	32	0	6	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	2	493	2	10	340	11	32	0	6	5	0	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	2	519	2	11	358	12	34	0	6	5	0	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	2	519	2	11	358	12	34	0	6	5	0	32
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	379	xxxx	xxxxx	531	xxxx	xxxxx	668	xxxx	384	932	xxxx	281
Potent Cap.:	1179	xxxx	xxxxx	1036	xxxx	xxxxx	372	xxxx	664	247	xxxx	758
Move Cap.:	1169	xxxx	xxxxx	1028	xxxx	xxxxx	347	xxxx	653	238	xxxx	746
Volume/Cap:	0.00	xxxx	xxxx	0.01	xxxx	xxxx	0.10	xxxx	0.01	0.02	xxxx	0.04
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	0.1
Control Del:	8.1	xxxx	xxxxx	8.5	xxxx	xxxxx	xxxxx	xxxx	10.6	xxxxx	xxxx	10.0
LOS by Move:	A	*	*	A	*	*	*	*	B	*	*	B
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	347	xxxx	xxxxx	238	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.5	xxxx	xxxxx	20.5	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	C	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			15.6			11.5		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #27 State Route 86 & Countryside Dr

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[14.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1	0	1 0 0	1	0	0 1 0	0	1	0 1 0	0	1
Volume Module:												
Base Vol:	0	433	2	10	324	0	0	0	0	5	0	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	433	2	10	324	0	0	0	0	5	0	30
Added Vol:	2	2	0	0	6	11	32	0	6	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	2	435	2	10	330	11	32	0	6	5	0	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	2	458	2	11	347	12	34	0	6	5	0	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	2	458	2	11	347	12	34	0	6	5	0	32
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	369	xxxx	xxxxx	470	xxxx	xxxxx	627	xxxx	373	861	xxxx	250
Potent Cap.:	1190	xxxx	xxxxx	1092	xxxx	xxxxx	396	xxxx	673	276	xxxx	789
Move Cap.:	1180	xxxx	xxxxx	1083	xxxx	xxxxx	370	xxxx	662	266	xxxx	776
Volume/Cap:	0.00	xxxx	xxxx	0.01	xxxx	xxxx	0.09	xxxx	0.01	0.02	xxxx	0.04
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	0.1
Control Del:	8.1	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	9.8
LOS by Move:	A	*	*	A	*	*	*	*	B	*	*	A
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	370	xxxx	xxxxx	266	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	15.7	xxxx	xxxxx	18.8	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	C	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			14.9			11.1		
ApproachLOS:	*			*			B			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #28 State Route 86 & W McCabe Rd

Average Delay (sec/veh): 6.1 Worst Case Level Of Service: C[20.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0	1	0	1 0 0	1	0	0 0 1!	0	0	0 0 1!	0	0
Volume Module:												
Base Vol:	42	210	1	32	182	84	45	38	29	1	72	37
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	42	210	1	32	182	84	45	38	29	1	72	37
Added Vol:	0	3	0	4	8	0	0	0	0	0	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	42	213	1	36	190	84	45	38	29	1	72	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	44	224	1	38	200	88	47	40	31	1	76	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	44	224	1	38	200	88	47	40	31	1	76	40
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	298	xxxx	xxxxx	235	xxxx	xxxxx	711	654	264	688	697	245
Potent Cap.:	1263	xxxx	xxxxx	1332	xxxx	xxxxx	348	386	774	360	365	794
Move Cap.:	1252	xxxx	xxxxx	1321	xxxx	xxxxx	256	356	762	296	336	781
Volume/Cap:	0.04	xxxx	xxxx	0.03	xxxx	xxxx	0.19	0.11	0.04	0.00	0.23	0.05
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.0	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	349	xxxxx	xxxx	417	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.5	xxxxx	xxxxx	1.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	20.5	xxxxx	xxxxx	17.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			20.5			17.0		
ApproachLOS:	*			*			C			C		

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Scenario Report

Scenario:	Ex plus PM
Command:	Ex plus PM
Volume:	Ex PM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	PM Proj
Trip Distribution:	Project
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

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Willow Bend
Existing plus PM

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 21 State Route 86 & I-8 WB	C	23.1	0.805	C	24.4	0.833	+ 1.397 D/V
# 22 State Route 86 & I-8 EB	C	25.7	0.836	C	26.5	0.852	+ 0.704 D/V
# 23 State Route 86 & Wake Ave	B	18.0	0.505	B	18.8	0.523	+ 0.804 D/V
# 24 State Route 86 & Danenberg Rd	B	14.8	0.286	B	14.4	0.308	-0.398 D/V
# 25 SR-86 & Horne Rd	B	13.7	0.000	C	15.0	0.000	+ 1.359 D/V
# 26 State Route 86 & Willow Bend D	B	11.3	0.000	C	21.7	0.000	+10.409 D/V
# 27 State Route 86 & Countryside D	B	11.1	0.000	C	19.5	0.000	+ 8.438 D/V
# 28 State Route 86 & W McCabe Rd	C	19.7	0.000	C	20.4	0.000	+ 0.760 D/V

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Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #21 State Route 86 & I-8 WB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.833
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 24.4
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0	2	0 0	0	0	1	1 0	0	0	0	0 0	0	0	1!	0 0
Volume Module:																
Base Vol:	158	598	0	0	852	109	0	0	0	103	2	293				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	158	598	0	0	852	109	0	0	0	103	2	293				
Added Vol:	5	18	0	0	30	0	0	0	0	17	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	163	616	0	0	882	109	0	0	0	120	2	293				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
PHF Volume:	172	648	0	0	928	115	0	0	0	126	2	308				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	172	648	0	0	928	115	0	0	0	126	2	308				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Vol.:	172	648	0	0	928	115	0	0	0	126	2	308				
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Adjustment:	0.93	0.93	1.00	1.00	0.92	0.92	1.00	1.00	1.00	0.85	0.85	0.85				
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.00	0.00	0.00	0.29	0.01	0.70				
Final Sat.:	1769	3538	0	0	3098	383	0	0	0	468	8	1143				
Capacity Analysis Module:																
Vol/Sat:	0.10	0.18	0.00	0.00	0.30	0.30	0.00	0.00	0.00	0.27	0.27	0.27				
Crit Moves:	****				****						****					
Green/Cycle:	0.12	0.33	0.00	0.00	0.36	0.36	0.00	0.00	0.00	0.32	0.32	0.32				
Volume/Cap:	0.83	0.56	0.00	0.00	0.83	0.83	0.00	0.00	0.00	0.83	0.83	0.83				
Delay/Veh:	50.1	17.2	0.0	0.0	22.5	22.5	0.0	0.0	0.0	29.7	29.7	29.7				
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
AdjDel/Veh:	50.1	17.2	0.0	0.0	22.5	22.5	0.0	0.0	0.0	29.7	29.7	29.7				
LOS by Move:	D	B	A	A	C	C	A	A	A	C	C	C				
HCM2kAvgQ:	3	5	0	0	12	12	0	0	0	10	10	10				

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #22 State Route 86 & I-8 EB

Cycle (sec): 60 Critical Vol./Cap.(X): 0.852
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 26.5
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0	2	0 1	1	0	2	0 0	0	0	1!	0 0	0	0	0	0 0
Volume Module:																
Base Vol:	0	707	147	349	647	0	70	2	313	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	707	147	349	647	0	70	2	313	0	0	0				
Added Vol:	0	23	10	0	47	0	0	0	9	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	730	157	349	694	0	70	2	322	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
PHF Volume:	0	768	165	367	731	0	74	2	339	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	0	768	165	367	731	0	74	2	339	0	0	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Vol.:	0	768	165	367	731	0	74	2	339	0	0	0				
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Adjustment:	1.00	0.93	0.83	0.93	0.93	1.00	0.85	0.85	0.85	1.00	1.00	1.00				
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	0.18	0.01	0.81	0.00	0.00	0.00				
Final Sat.:	0	3538	1583	1769	3538	0	287	8	1322	0	0	0				
Capacity Analysis Module:																
Vol/Sat:	0.00	0.22	0.10	0.21	0.21	0.00	0.26	0.26	0.26	0.00	0.00	0.00				
Crit Moves:		****		****			****									
Green/Cycle:	0.00	0.26	0.26	0.24	0.36	0.00	0.30	0.30	0.30	0.00	0.00	0.00				
Volume/Cap:	0.00	0.85	0.41	0.85	0.58	0.00	0.85	0.85	0.85	0.00	0.00	0.00				
Delay/Veh:	0.0	29.1	19.3	36.6	16.4	0.0	33.2	33.2	33.2	0.0	0.0	0.0				
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
AdjDel/Veh:	0.0	29.1	19.3	36.6	16.4	0.0	33.2	33.2	33.2	0.0	0.0	0.0				
LOS by Move:	A	C	B	D	B	A	C	C	C	A	A	A				
HCM2kAvgQ:	0	8	2	7	5	0	10	10	10	0	0	0				

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #23 State Route 86 & Wake Ave

Cycle (sec): 60 Critical Vol./Cap.(X): 0.523
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 18.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Ovl			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0	1	1 0	1	0	1	1 0	0	1	0	1 0	1	0	1	0 1
Volume Module:																
Base Vol:	61	421	34		240	531	108		100	47	49		46	40	280	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	61	421	34		240	531	108		100	47	49		46	40	280	
Added Vol:	0	33	3		0	56	0		0	0	0		4	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	61	454	37		240	587	108		100	47	49		50	40	280	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	64	478	39		253	618	114		105	49	52		53	42	295	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	64	478	39		253	618	114		105	49	52		53	42	295	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	64	478	39		253	618	114		105	49	52		53	42	295	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.92	0.92		0.93	0.91	0.91		0.87	0.87	0.87		0.93	0.98	0.83	
Lanes:	1.00	1.85	0.15		1.00	1.69	0.31		1.00	0.49	0.51		1.00	1.00	1.00	
Final Sat.:	1769	3235	264		1769	2919	537		1661	813	848		1769	1862	1583	
Capacity Analysis Module:																
Vol/Sat:	0.04	0.15	0.15		0.14	0.21	0.21		0.06	0.06	0.06		0.03	0.02	0.19	
Crit Moves:		****			****				****				****			
Green/Cycle:	0.15	0.27	0.27		0.26	0.38	0.38		0.12	0.12	0.12		0.08	0.08	0.35	
Volume/Cap:	0.24	0.54	0.54		0.54	0.55	0.55		0.54	0.52	0.52		0.36	0.27	0.54	
Delay/Veh:	22.9	19.3	19.3		20.4	15.0	15.0		26.6	26.2	26.2		27.5	26.7	16.9	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	22.9	19.3	19.3		20.4	15.0	15.0		26.6	26.2	26.2		27.5	26.7	16.9	
LOS by Move:	C	B	B		C	B	B		C	C	C		C	C	B	
HCM2kAvgQ:	1	4	4		4	5	5		3	3	3		1	1	5	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #24 State Route 86 & Danenberg Rd

Cycle (sec): 60 Critical Vol./Cap.(X): 0.308
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 14.4
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0	1	1 0	1	0	2	0 0	0	0	0	0 0	1	0	0	0 1
Volume Module:																
Base Vol:	0	287	28		127	475	0		0	0	0		67	0	131	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	287	28		127	475	0		0	0	0		67	0	131	
Added Vol:	0	36	8		0	60	0		0	0	0		13	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	0	323	36		127	535	0		0	0	0		80	0	131	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	340	38		134	563	0		0	0	0		84	0	138	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	340	38		134	563	0		0	0	0		84	0	138	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	340	38		134	563	0		0	0	0		84	0	138	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.92	0.92		0.93	0.93	1.00		1.00	1.00	1.00		0.93	1.00	0.83	
Lanes:	0.00	1.80	0.20		1.00	2.00	0.00		0.00	0.00	0.00		1.00	0.00	1.00	
Final Sat.:	0	3135	349		1769	3538	0		0	0	0		1769	0	1583	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.11	0.11		0.08	0.16	0.00		0.00	0.00	0.00		0.05	0.00	0.09	
Crit Moves:	****					****										****
Green/Cycle:	0.00	0.31	0.31		0.24	0.46	0.00		0.00	0.00	0.00		0.25	0.00	0.25	
Volume/Cap:	0.00	0.35	0.35		0.32	0.34	0.00		0.00	0.00	0.00		0.19	0.00	0.34	
Delay/Veh:	0.0	16.3	16.3		19.3	10.4	0.0		0.0	0.0	0.0		17.8	0.0	18.8	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	16.3	16.3		19.3	10.4	0.0		0.0	0.0	0.0		17.8	0.0	18.8	
LOS by Move:	A	B	B		B	B	A		A	A	A		B	A	B	
HCM2kAvgQ:	0	3	3		2	3	0		0	0	0		1	0	2	

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #25 SR-86 & Horne Rd

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[15.0]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	2	0 0	0	0	0	1 0	0	0	1!	0 0	0	0	0	0 0
Volume Module:																
Base Vol:	12	217		0 0	406		63		39		0	16	0		0	0
Growth Adj:	1.00	1.00		1.00 1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	12	217		0 0	406		63		39		0	16	0		0	0
Added Vol:	0	43		0 0	73		0		0		0	0	0		0	0
PasserByVol:	0	0		0 0	0		0		0		0	0	0		0	0
Initial Fut:	12	260		0 0	479		63		39		0	16	0		0	0
User Adj:	1.00	1.00		1.00 1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	0.95	0.95		0.95 0.95	0.95		0.95		0.95	0.95		0.95	0.95	0.95		0.95
PHF Volume:	13	274		0 0	504		66		41		0	17	0		0	0
Reduct Vol:	0	0		0 0	0		0		0		0	0	0		0	0
Final Vol.:	13	274		0 0	504		66		41		0	17	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx xxxx	xxxxx		6.4	xxxx	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx xxxx	xxxxx		3.5	xxxx	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	581	xxxx	xxxxx	xxxx xxxx	xxxxx		719	xxxx	557	xxxx	xxxx	xxxxx				
Potent Cap.:	993	xxxx	xxxxx	xxxx xxxx	xxxxx		395	xxxx	530	xxxx	xxxx	xxxxx				
Move Cap.:	985	xxxx	xxxxx	xxxx xxxx	xxxxx		385	xxxx	521	xxxx	xxxx	xxxxx				
Volume/Cap:	0.01	xxxx	xxxx	xxxx xxxx	xxxx		0.11	xxxx	0.03	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.0	xxxx	xxxxx	xxxx xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	8.7	xxxx	xxxxx	xxxxx xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	* *	*		*	*	*	*	*	*				
Movement:	LT	-	LTR	- RT	LT	-	LTR	- RT	LT	-	LTR	- RT	LT	-	LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx xxxx	xxxxx		xxxx	416	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx xxxx	xxxxx		xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx xxxx	xxxxx		xxxxx	15.0	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	* *	*		*	C	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx				15.0			xxxxxx					
ApproachLOS:	*			*				C			*					

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #26 State Route 86 & Willow Bend Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[21.7]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	1	1 0	1	0	0	1 0	0	1	0	0 1	0	1	0	0 1
Volume Module:																
Base Vol:	0	335		6	34	576		0	0		0	0	4		0	20
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	0	335		6	34	576		0	0		0	0	4		0	20
Added Vol:	6	22		0	0	37		37	22		0	4	0		0	0
PasserByVol:	0	0		0	0	0		0	0		0	0	0		0	0
Initial Fut:	6	357		6	34	613		37	22		0	4	4		0	20
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95	0.95		0.95	0.95	0.95		0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	6	376		6	36	645		39	23		0	4	4		0	21
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
Final Vol.:	6	376		6	36	645		39	23		0	4	4		0	21
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx		4.1	xxxx	xxxxx		7.1	xxxx		6.2	7.1	xxxx		6.2
FollowUpTim:	2.2	xxxx	xxxxx		2.2	xxxx	xxxxx		3.5	xxxx		3.3	3.5	xxxx		3.3
Capacity Module:																
Cnflict Vol:	694	xxxx	xxxxx		392	xxxx	xxxxx		957	xxxx		685	1150	xxxx		211
Potent Cap.:	901	xxxx	xxxxx		1166	xxxx	xxxxx		237	xxxx		448	175	xxxx		829
Move Cap.:	894	xxxx	xxxxx		1157	xxxx	xxxxx		221	xxxx		441	166	xxxx		815
Volume/Cap:	0.01	xxxx	xxxx		0.03	xxxx	xxxx		0.10	xxxx		0.01	0.03	xxxx		0.03
Level Of Service Module:																
2Way95thQ:	0.0	xxxx	xxxxx		0.1	xxxx	xxxxx		xxxx	xxxx		0.0	xxxx	xxxx		0.1
Control Del:	9.1	xxxx	xxxxx		8.2	xxxx	xxxxx		xxxxx	xxxx		13.2	xxxxx	xxxx		9.5
LOS by Move:	A	*	*		A	*	*		*	*		B	*	*		A
Movement:	LT	-	LTR	- RT	LT	-	LTR	- RT	LT	-	LTR	- RT	LT	-	LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		221	xxxx	xxxxx		166	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		0.3	xxxx	xxxxx		0.1	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		23.2	xxxx	xxxxx		27.3	xxxx	xxxxx	
Shared LOS:	*	*	*		*	*	*		C	*	*		D	*	*	
ApproachDel:	xxxxxx				xxxxxx				21.7				12.5			
ApproachLOS:	*				*				C				B			

Note: Queue reported is the number of cars per lane.

Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #27 State Route 86 & Countryside Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[19.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1 0		1 0 0	1 0		0 1 0	0 1		0 1 0	0 1	
Volume Module:												
Base Vol:	0	321	6	34	546	0	0	0	0	4	0	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	321	6	34	546	0	0	0	0	4	0	20
Added Vol:	6	6	0	0	4	37	22	0	4	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	327	6	34	550	37	22	0	4	4	0	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	344	6	36	579	39	23	0	4	4	0	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	6	344	6	36	579	39	23	0	4	4	0	21
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	628	xxxx	xxxxx	361	xxxx	xxxxx	875	xxxx	618	1052	xxxx	195
Potent Cap.:	954	xxxx	xxxxx	1198	xxxx	xxxxx	270	xxxx	489	204	xxxx	846
Move Cap.:	946	xxxx	xxxxx	1188	xxxx	xxxxx	251	xxxx	481	194	xxxx	832
Volume/Cap:	0.01	xxxx	xxxx	0.03	xxxx	xxxx	0.09	xxxx	0.01	0.02	xxxx	0.03
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	0.1
Control Del:	8.8	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	12.6	xxxxx	xxxx	9.4
LOS by Move:	A	*	*	A	*	*	*	*	B	*	*	A
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	251	xxxx	xxxxx	194	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	20.8	xxxx	xxxxx	24.0	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	C	*	*	C	*	*
ApproachDel:	xxxxxx			xxxxxx			19.5			11.9		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

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Willow Bend
Existing plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #28 State Route 86 & W McCabe Rd

Average Delay (sec/veh): 4.8 Worst Case Level Of Service: C[20.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0	1 0		1 0 0	1 0		0 0 1! 0	0		0 0 1! 0	0	
Volume Module:												
Base Vol:	21	141	1	54	325	20	38	43	17	2	29	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	141	1	54	325	20	38	43	17	2	29	38
Added Vol:	0	9	0	3	5	0	0	0	0	0	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	150	1	57	330	20	38	43	17	2	29	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	22	158	1	60	347	21	40	45	18	2	31	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	22	158	1	60	347	21	40	45	18	2	31	44
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	378	xxxx	xxxxx	169	xxxx	xxxxx	738	701	378	732	711	178
Potent Cap.:	1180	xxxx	xxxxx	1409	xxxx	xxxxx	334	363	669	337	358	864
Move Cap.:	1170	xxxx	xxxxx	1397	xxxx	xxxxx	276	335	658	276	331	850
Volume/Cap:	0.02	xxxx	xxxx	0.04	xxxx	xxxx	0.14	0.14	0.03	0.01	0.09	0.05
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.1	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	336	xxxxx	xxxx	506	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.3	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	20.4	xxxxx	xxxxx	13.4	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			20.4			13.4		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

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Appendix E

Peak Hour Intersection Analysis Worksheets Near-Term Conditions

Willow Bend
Near Term plus AM

Scenario Report

Scenario:	NT plus AM
Command:	NT plus AM
Volume:	NT AM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	AM Proj
Trip Distribution:	Project
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Willow Bend
Near Term plus AM

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 21 State Route 86 & I-8 WB	C	21.6	0.595	C	32.9	0.892	+11.303 D/V
# 22 State Route 86 & I-8 EB	C	21.8	0.574	C	31.6	0.904	+ 9.715 D/V
# 23 State Route 86 & Wake Ave	B	17.9	0.346	C	26.1	0.701	+ 8.159 D/V
# 24 State Route 86 & Danenberg Rd	B	13.5	0.255	B	13.5	0.477	+ 0.081 D/V
# 25 SR-86 & Horne Rd	B	11.3	0.000	D	29.2	0.000	+17.865 D/V
# 26 State Route 86 & Willow Bend D	B	10.9	0.000	C	24.9	0.000	+14.011 D/V
# 27 State Route 86 & Countryside D	B	10.7	0.000	C	23.4	0.000	+12.712 D/V
# 28 State Route 86 & W McCabe Rd	C	19.7	0.000	F	OVRFL	0.000	+ 1.8E+0308

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Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #21 State Route 86 & I-8 WB

Cycle (sec): 75 Critical Vol./Cap.(X): 0.892
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 32.9
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0	2	0 0	0	0	1	1 0	0	0	0	0 0	0	0	1!	0 0
Volume Module:																
Base Vol:	114	456	0		0	595	109		0	0	0		111	2	222	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	114	456	0		0	595	109		0	0	0		111	2	222	
Added Vol:	8	27	0		0	9	0		0	0	0		5	0	0	
PasserByVol:	199	238	0		0	194	3		0	0	0		92	0	3	
Initial Fut:	321	721	0		0	798	112		0	0	0		208	2	225	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	338	759	0		0	840	118		0	0	0		219	2	237	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	338	759	0		0	840	118		0	0	0		219	2	237	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	338	759	0		0	840	118		0	0	0		219	2	237	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.93	1.00		1.00	0.91	0.91		1.00	1.00	1.00		0.85	0.85	0.85	
Lanes:	1.00	2.00	0.00		0.00	1.75	0.25		0.00	0.00	0.00		0.48	0.01	0.51	
Final Sat.:	1769	3538	0		0	3047	428		0	0	0		774	7	837	
Capacity Analysis Module:																
Vol/Sat:	0.19	0.21	0.00		0.00	0.28	0.28		0.00	0.00	0.00		0.28	0.28	0.28	
Crit Moves:	****					****										****
Green/Cycle:	0.21	0.40	0.00		0.00	0.31	0.31		0.00	0.00	0.00		0.32	0.32	0.32	
Volume/Cap:	0.89	0.54	0.00		0.00	0.89	0.89		0.00	0.00	0.00		0.89	0.89	0.89	
Delay/Veh:	51.0	17.7	0.0		0.0	34.3	34.3		0.0	0.0	0.0		42.0	42.0	42.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	51.0	17.7	0.0		0.0	34.3	34.3		0.0	0.0	0.0		42.0	42.0	42.0	
LOS by Move:	D	B	A		A	C	C		A	A	A		D	D	D	
HCM2kAvgQ:	8	7	0		0	15	15		0	0	0		14	14	14	

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #22 State Route 86 & I-8 EB

Cycle (sec): 70 Critical Vol./Cap.(X): 0.904
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 31.6
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0	2	0 1	1	0	2	0 0	0	0	1!	0 0	0	0	0	0 0
Volume Module:																
Base Vol:	0	496	105		186	527	0		61	1	272		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	496	105		186	527	0		61	1	272		0	0	0	
Added Vol:	0	34	15		0	14	0		0	0	3		0	0	0	
PasserByVol:	0	436	136		41	245	0		1	0	163		0	0	0	
Initial Fut:	0	966	256		227	786	0		62	1	438		0	0	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	1017	269		239	827	0		65	1	461		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	1017	269		239	827	0		65	1	461		0	0	0	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	1017	269		239	827	0		65	1	461		0	0	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.93	0.83		0.93	0.93	1.00		0.85	0.85	0.85		1.00	1.00	1.00	
Lanes:	0.00	2.00	1.00		1.00	2.00	0.00		0.12	0.01	0.87		0.00	0.00	0.00	
Final Sat.:	0	3538	1583		1769	3538	0		200	3	1411		0	0	0	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.29	0.17		0.14	0.23	0.00		0.33	0.33	0.33		0.00	0.00	0.00	
Crit Moves:		****				****					****					
Green/Cycle:	0.00	0.32	0.32		0.15	0.36	0.00		0.36	0.36	0.36		0.00	0.00	0.00	
Volume/Cap:	0.00	0.90	0.54		0.90	0.65	0.00		0.90	0.90	0.90		0.00	0.00	0.00	
Delay/Veh:	0.0	33.2	20.8		60.7	20.1	0.0		38.7	38.7	38.7		0.0	0.0	0.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	33.2	20.8		60.7	20.1	0.0		38.7	38.7	38.7		0.0	0.0	0.0	
LOS by Move:	A	C	C		E	C	A		D	D	D		A	A	A	
HCM2kAvgQ:	0	12	5		5	7	0		15	15	15		0	0	0	

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #23 State Route 86 & Wake Ave

Cycle (sec): 65 Critical Vol./Cap.(X): 0.701
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 26.1
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Ovl			
Min. Green:	5		5	5	5		5	5	5		5	5	5		5	5
Lanes:	1	0	1	1 0	1	0	1	1 0	0	1	0	1 0	1	0	1	0 1
Volume Module:																
Base Vol:	41		331	51	192		446	94	93		30	10	21		24	120
Growth Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	41		331	51	192		446	94	93		30	10	21		24	120
Added Vol:	0		49	4	0		16	0	0		0	0	1		0	0
PasserByVol:	43		280	0	50		231	151	183		0	45	0		0	40
Initial Fut:	84		660	55	242		693	245	276		30	55	22		24	160
User Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	88		695	58	255		729	258	291		32	58	23		25	168
Reduct Vol:	0		0	0	0		0	0	0		0	0	0		0	0
Reduced Vol:	88		695	58	255		729	258	291		32	58	23		25	168
PCE Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
MLF Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Final Vol.:	88		695	58	255		729	258	291		32	58	23		25	168
Saturation Flow Module:																
Sat/Lane:	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900
Adjustment:	0.93		0.92	0.92	0.93		0.89	0.89	0.88		0.88	0.88	0.93		0.98	0.83
Lanes:	1.00		1.85	0.15	1.00		1.48	0.52	1.00		0.35	0.65	1.00		1.00	1.00
Final Sat.:	1769		3226	269	1769		2512	888	1664		587	1077	1769		1862	1583
Capacity Analysis Module:																
Vol/Sat:	0.05		0.22	0.22	0.14		0.29	0.29	0.17		0.05	0.05	0.01		0.01	0.11
Crit Moves:	****						****		****						****	
Green/Cycle:	0.08		0.27	0.27	0.18		0.37	0.37	0.23		0.23	0.23	0.08		0.08	0.26
Volume/Cap:	0.65		0.80	0.80	0.80		0.77	0.77	0.77		0.24	0.24	0.17		0.18	0.41
Delay/Veh:	39.7		26.8	26.8	38.4		21.0	21.0	31.2		20.7	20.7	28.7		28.7	20.7
User DelAdj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
AdjDel/Veh:	39.7		26.8	26.8	38.4		21.0	21.0	31.2		20.7	20.7	28.7		28.7	20.7
LOS by Move:	D		C	C	D		C	C	C		C	C	C		C	C
HCM2kAvgQ:	2		8	8	5		9	9	8		2	2	1		1	3

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #24 State Route 86 & Danenberg Rd

Cycle (sec): 60 Critical Vol./Cap.(X): 0.477
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 13.5
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5		5	5	5		5	5	5		5	5	5		5	5
Lanes:	0	0	1	1 0	1	0	2	0 0	0	0	0	0 0	1	0	0	0 1
Volume Module:																
Base Vol:	0		373	58	87		283	0	0		0	0	36		0	49
Growth Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	0		373	58	87		283	0	0		0	0	36		0	49
Added Vol:	0		53	11	0		18	0	0		0	0	4		0	0
PasserByVol:	0		277	41	66		210	0	0		0	0	33		0	46
Initial Fut:	0		703	110	153		511	0	0		0	0	73		0	95
User Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95
PHF Volume:	0		740	116	161		538	0	0		0	0	77		0	100
Reduct Vol:	0		0	0	0		0	0	0		0	0	0		0	0
Reduced Vol:	0		740	116	161		538	0	0		0	0	77		0	100
PCE Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
MLF Adj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Final Vol.:	0		740	116	161		538	0	0		0	0	77		0	100
Saturation Flow Module:																
Sat/Lane:	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900
Adjustment:	1.00		0.91	0.91	0.93		0.93	1.00	1.00		1.00	1.00	0.93		1.00	0.83
Lanes:	0.00		1.73	0.27	1.00		2.00	0.00	0.00		0.00	0.00	1.00		0.00	1.00
Final Sat.:	0		2998	469	1769		3538	0	0		0	0	1769		0	1583
Capacity Analysis Module:																
Vol/Sat:	0.00		0.25	0.25	0.09		0.15	0.00	0.00		0.00	0.00	0.04		0.00	0.06
Crit Moves:			****		****								****			
Green/Cycle:	0.00		0.49	0.49	0.18		0.44	0.00	0.00		0.00	0.00	0.13		0.00	0.13
Volume/Cap:	0.00		0.50	0.50	0.50		0.35	0.00	0.00		0.00	0.00	0.34		0.00	0.50
Delay/Veh:	0.0		10.5	10.5	23.3		11.4	0.0	0.0		0.0	0.0	24.9		0.0	26.5
User DelAdj:	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
AdjDel/Veh:	0.0		10.5	10.5	23.3		11.4	0.0	0.0		0.0	0.0	24.9		0.0	26.5
LOS by Move:	A		B	B	C		B	A	A		A	A	C		A	C
HCM2kAvgQ:	0		6	6	3		3	0	0		0	0	2		0	2

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #25 SR-86 & Horne Rd

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: D[29.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 0	1	0	0 0 1!	0	0	0 0 0	0	0
Volume Module:												
Base Vol:	23	279	0	0	143	20	57	0	14	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	23	279	0	0	143	20	57	0	14	0	0	0
Added Vol:	0	65	0	0	21	0	0	0	0	0	0	0
PasserByVol:	56	225	0	0	136	62	93	0	52	0	0	0
Initial Fut:	79	569	0	0	300	82	150	0	66	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	83	599	0	0	316	86	158	0	69	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	83	599	0	0	316	86	158	0	69	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	412	xxxx	xxxxx	xxxx	xxxx	xxxxx	845	xxxx	379	xxxx	xxxx	xxxxx
Potent Cap.:	1147	xxxx	xxxxx	xxxx	xxxx	xxxxx	333	xxxx	668	xxxx	xxxx	xxxxx
Move Cap.:	1137	xxxx	xxxxx	xxxx	xxxx	xxxxx	309	xxxx	657	xxxx	xxxx	xxxxx
Volume/Cap:	0.07	xxxx	xxxx	xxxx	xxxx	xxxx	0.51	xxxx	0.11	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	369	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	3.9	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	29.2	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			29.2			xxxxxx		
ApproachLOS:	*			*			D			*		

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #26 State Route 86 & Willow Bend Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[24.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1	0	1 0 0	1	0	0 1 0	0	1	0 1 0	0	1
Volume Module:												
Base Vol:	0	461	2	10	329	0	0	0	0	5	0	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	461	2	10	329	0	0	0	0	5	0	30
Added Vol:	2	32	0	0	11	11	32	0	6	0	0	0
PasserByVol:	0	305	0	0	191	0	0	0	0	0	0	0
Initial Fut:	2	798	2	10	531	11	32	0	6	5	0	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	2	840	2	11	559	12	34	0	6	5	0	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	2	840	2	11	559	12	34	0	6	5	0	32
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	581	xxxx	xxxxx	852	xxxx	xxxxx	1030	xxxx	585	1454	xxxx	441
Potent Cap.:	993	xxxx	xxxxx	787	xxxx	xxxxx	212	xxxx	511	108	xxxx	616
Move Cap.:	985	xxxx	xxxxx	780	xxxx	xxxxx	195	xxxx	503	104	xxxx	606
Volume/Cap:	0.00	xxxx	xxxx	0.01	xxxx	xxxx	0.17	xxxx	0.01	0.05	xxxx	0.05
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	0.2
Control Del:	8.7	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	12.3	xxxxx	xxxx	11.3
LOS by Move:	A	*	*	A	*	*	*	*	B	*	*	B
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	195	xxxx	xxxxx	104	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	0.2	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	27.3	xxxx	xxxxx	41.6	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	D	*	*	E	*	*
ApproachDel:	xxxxxx			xxxxxx			24.9			15.6		
ApproachLOS:	*			*			C			C		

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #27 State Route 86 & Countryside Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[23.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1	0	1 0	0	1 0	0 1	0	0 1	0	1 0	1
Volume Module:												
Base Vol:	0	433	2	10	324	0	0	0	0	5	0	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	433	2	10	324	0	0	0	0	5	0	30
Added Vol:	2	2	0	0	6	11	32	0	6	0	0	0
PasserByVol:	0	305	0	0	191	0	0	0	0	0	0	0
Initial Fut:	2	740	2	10	521	11	32	0	6	5	0	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	2	779	2	11	548	12	34	0	6	5	0	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	2	779	2	11	548	12	34	0	6	5	0	32
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	570	xxxx	xxxxx	791	xxxx	xxxxx	989	xxxx	574	1383	xxxx	411
Potent Cap.:	1002	xxxx	xxxxx	829	xxxx	xxxxx	226	xxxx	518	121	xxxx	641
Move Cap.:	994	xxxx	xxxxx	822	xxxx	xxxxx	208	xxxx	510	116	xxxx	631
Volume/Cap:	0.00	xxxx	xxxx	0.01	xxxx	xxxx	0.16	xxxx	0.01	0.05	xxxx	0.05
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	0.2
Control Del:	8.6	xxxx	xxxxx	9.4	xxxx	xxxxx	xxxxx	xxxx	12.2	xxxxx	xxxx	11.0
LOS by Move:	A	*	*	A	*	*	*	*	B	*	*	B
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	208	xxxx	xxxxx	116	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.6	xxxx	xxxxx	37.4	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	D	*	*	E	*	*
ApproachDel:	xxxxxx			xxxxxx			23.4			14.8		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus AM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #28 State Route 86 & W McCabe Rd

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0	1	0	1 0	0	1 0	0 0	1!	0 0	0	0 1!	0 0
Volume Module:												
Base Vol:	42	210	1	32	182	84	45	38	29	1	72	37
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	42	210	1	32	182	84	45	38	29	1	72	37
Added Vol:	0	3	0	4	8	0	0	0	0	0	0	1
PasserByVol:	58	217	0	58	109	24	16	105	74	0	78	72
Initial Fut:	100	430	1	94	299	108	61	143	103	1	150	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	105	453	1	99	315	114	64	151	108	1	158	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	105	453	1	99	315	114	64	151	108	1	158	116
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	438	xxxx	xxxxx	464	xxxx	xxxxx	1390	1254	392	1383	1310	473
Potent Cap.:	1121	xxxx	xxxxx	1098	xxxx	xxxxx	120	172	657	121	159	591
Move Cap.:	1112	xxxx	xxxxx	1088	xxxx	xxxxx	0	139	646	0	129	581
Volume/Cap:	0.09	xxxx	xxxx	0.09	xxxx	xxxx	xxxx	1.08	0.17	xxxx	1.23	0.20
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.6	xxxx	xxxxx	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Scenario Report

Scenario:	NT plus PM
Command:	NT plus PM
Volume:	NT PM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	PM Proj
Trip Distribution:	Project
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Willow Bend
Near Term plus PM

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 21 State Route 86 & I-8 WB	D	37.2	0.702	F	144.7	1.290	+107.497 D/V
# 22 State Route 86 & I-8 EB	D	39.2	0.734	F	142.3	1.341	+103.120 D/V
# 23 State Route 86 & Wake Ave	C	32.7	0.438	E	75.3	1.082	+42.567 D/V
# 24 State Route 86 & Danenberg Rd	B	15.5	0.280	C	27.9	0.770	+12.387 D/V
# 25 SR-86 & Horne Rd	B	13.7	0.000	F	360.1	0.000	+346.375 D/V
# 26 State Route 86 & Willow Bend D	B	11.3	0.000	F	61.9	0.000	+50.617 D/V
# 27 State Route 86 & Countryside D	B	11.1	0.000	F	52.7	0.000	+41.632 D/V
# 28 State Route 86 & W McCabe Rd	C	19.7	0.000	F	OVRFL	0.000	+ 1.8E+0308

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Willow Bend
Near Term plus PM

Intersection	Movement	LOS	Delay	V/C

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #21 State Route 86 & I-8 WB

Cycle (sec): 145 Critical Vol./Cap.(X): 1.290
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 144.7
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0	2	0 0	0	0	1	1 0	0	0	0	0 0	0	0	1!	0 0
Volume Module:																
Base Vol:	158	598	0		0	852	109		0	0	0		103	2	293	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	158	598	0		0	852	109		0	0	0		103	2	293	
Added Vol:	5	18	0		0	30	0		0	0	0		17	0	0	
PasserByVol:	304	376	0		0	555	2		0	0	0		249	0	12	
Initial Fut:	467	992	0		0	1437	111		0	0	0		369	2	305	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	492	1044	0		0	1513	117		0	0	0		388	2	321	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	492	1044	0		0	1513	117		0	0	0		388	2	321	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	492	1044	0		0	1513	117		0	0	0		388	2	321	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.93	1.00		1.00	0.92	0.92		1.00	1.00	1.00		0.85	0.85	0.85	
Lanes:	1.00	2.00	0.00		0.00	1.86	0.14		0.00	0.00	0.00		0.54	0.01	0.45	
Final Sat.:	1769	3538	0		0	3248	251		0	0	0		884	5	730	
Capacity Analysis Module:																
Vol/Sat:	0.28	0.30	0.00		0.00	0.47	0.47		0.00	0.00	0.00		0.44	0.44	0.44	
Crit Moves:	****					****										****
Green/Cycle:	0.22	0.52	0.00		0.00	0.36	0.36		0.00	0.00	0.00		0.34	0.34	0.34	
Volume/Cap:	1.29	0.57	0.00		0.00	1.29	1.29		0.00	0.00	0.00		1.29	1.29	1.29	
Delay/Veh:	205.7	24.5	0.0		0.0	183	182.8		0.0	0.0	0.0		191.4	191	191.4	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	205.7	24.5	0.0		0.0	183	182.8		0.0	0.0	0.0		191.4	191	191.4	
LOS by Move:	F	C	A		A	F	F		A	A	A		F	F	F	
HCM2kAvgQ:	34	15	0		0	62	62		0	0	0		52	52	52	

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #22 State Route 86 & I-8 EB

Cycle (sec): 135 Critical Vol./Cap.(X): 1.341
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 142.3
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0 2	0	1	1	0 2	0	0	0	0 1!	0	0	0	0	0	0
Volume Module:																
Base Vol:	0	707	147		349	647	0		70	2	313		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	707	147		349	647	0		70	2	313		0	0	0	
Added Vol:	0	23	10		0	47	0		0	0	9		0	0	0	
PasserByVol:	0	677	186		114	690	0		3	0	413		0	0	0	
Initial Fut:	0	1407	343		463	1384	0		73	2	735		0	0	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	1481	361		487	1457	0		77	2	774		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	1481	361		487	1457	0		77	2	774		0	0	0	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	1481	361		487	1457	0		77	2	774		0	0	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.93	0.83		0.93	0.93	1.00		0.85	0.85	0.85		1.00	1.00	1.00	
Lanes:	0.00	2.00	1.00		1.00	2.00	0.00		0.09	0.01	0.90		0.00	0.00	0.00	
Final Sat.:	0	3538	1583		1769	3538	0		146	4	1466		0	0	0	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.42	0.23		0.28	0.41	0.00		0.53	0.53	0.53		0.00	0.00	0.00	
Crit Moves:		****			****						****					
Green/Cycle:	0.00	0.31	0.31		0.21	0.47	0.00		0.39	0.39	0.39		0.00	0.00	0.00	
Volume/Cap:	0.00	1.34	0.73		1.34	0.87	0.00		1.34	1.34	1.34		0.00	0.00	0.00	
Delay/Veh:	0.0	206	46.9		224.7	36.7	0.0		204.9	205	204.9		0.0	0.0	0.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	206	46.9		224.7	36.7	0.0		204.9	205	204.9		0.0	0.0	0.0	
LOS by Move:	A	F	D		F	D	A		F	F	F		A	A	A	
HCM2kAvgQ:	0	55	13		34	26	0		63	63	63		0	0	0	

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #23 State Route 86 & Wake Ave

Cycle (sec): 135 Critical Vol./Cap.(X): 1.082
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 75.3
Optimal Cycle: OPTIMIZED Level Of Service: E

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Ovl			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	1	0 1	1	0	1	0 1	1	0	0	1 0	1	0	1	0	1	
Volume Module:																
Base Vol:	61	421	34		240	531	108		100	47	49		46	40	280	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	61	421	34		240	531	108		100	47	49		46	40	280	
Added Vol:	0	33	3		0	56	0		0	0	0		4	0	0	
PasserByVol:	101	581	0		50	609	399		350	0	87		0	0	40	
Initial Fut:	162	1035	37		290	1196	507		450	47	136		50	40	320	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	171	1089	39		305	1259	534		474	49	143		53	42	337	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	171	1089	39		305	1259	534		474	49	143		53	42	337	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	171	1089	39		305	1259	534		474	49	143		53	42	337	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.93	0.93	0.93		0.93	0.89	0.89		0.87	0.87	0.87		0.93	0.98	0.83	
Lanes:	1.00	1.93	0.07		1.00	1.40	0.60		1.00	0.26	0.74		1.00	1.00	1.00	
Final Sat.:	1769	3399	121		1769	2373	1006		1654	425	1229		1769	1862	1583	
Capacity Analysis Module:																
Vol/Sat:	0.10	0.32	0.32		0.17	0.53	0.53		0.29	0.12	0.12		0.03	0.02	0.21	
Crit Moves:	****					****			****							****
Green/Cycle:	0.09	0.38	0.38		0.20	0.49	0.49		0.26	0.26	0.26		0.04	0.04	0.24	
Volume/Cap:	1.08	0.85	0.85		0.85	1.08	1.08		1.08	0.44	0.44		0.80	0.61	0.89	
Delay/Veh:	156.7	44.0	44.0		69.2	82.3	82.3		110.0	41.5	41.5		112.8	78.6	70.9	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	156.7	44.0	44.0		69.2	82.3	82.3		110.0	41.5	41.5		112.8	78.6	70.9	
LOS by Move:	F	D	D		E	F	F		F	D	D		F	E	E	
HCM2kAvgQ:	9	22	22		12	47	47		29	7	7		4	3	17	

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #24 State Route 86 & Danenberg Rd

Cycle (sec): 65 Critical Vol./Cap.(X): 0.770
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 27.9
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				Include				Include			
Min. Green:	5	5	5		5	5	5		5	5	5		5	5	5	
Lanes:	0	0 1	1	0	1	0 2	0	0	0	0 0	0	0	1	0 0	0	1
Volume Module:																
Base Vol:	0	287	28		127	475	0		0	0	0		67	0	131	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	287	28		127	475	0		0	0	0		67	0	131	
Added Vol:	0	36	8		0	60	0		0	0	0		13	0	0	
PasserByVol:	0	354	35		146	550	0		0	0	0		169	0	328	
Initial Fut:	0	677	71		273	1085	0		0	0	0		249	0	459	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	0	713	75		287	1142	0		0	0	0		262	0	483	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	713	75		287	1142	0		0	0	0		262	0	483	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	0	713	75		287	1142	0		0	0	0		262	0	483	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.92	0.92		0.93	0.93	1.00		1.00	1.00	1.00		0.93	1.00	0.83	
Lanes:	0.00	1.81	0.19		1.00	2.00	0.00		0.00	0.00	0.00		1.00	0.00	1.00	
Final Sat.:	0	3157	331		1769	3538	0		0	0	0		1769	0	1583	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.23	0.23		0.16	0.32	0.00		0.00	0.00	0.00		0.15	0.00	0.31	
Crit Moves:	****					****										****
Green/Cycle:	0.00	0.27	0.27		0.19	0.38	0.00		0.00	0.00	0.00		0.36	0.00	0.36	
Volume/Cap:	0.00	0.85	0.85		0.85	0.85	0.00		0.00	0.00	0.00		0.41	0.00	0.85	
Delay/Veh:	0.0	30.2	30.2		43.5	23.9	0.0		0.0	0.0	0.0		16.1	0.0	30.9	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	30.2	30.2		43.5	23.9	0.0		0.0	0.0	0.0		16.1	0.0	30.9	
LOS by Move:	A	C	C		D	C	A		A	A	A		B	A	C	
HCM2kAvgQ:	0	11	11		5	10	0		0	0	0		4	0	12	

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #25 SR-86 & Horne Rd

Average Delay (sec/veh): 48.0 Worst Case Level Of Service: F[360.1]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0 2	0	0	0	0 0	1	0	0	0 1!	0	0	0	0 0	0	0
Volume Module:																
Base Vol:	12	217	0		0	406	63		39	0	16		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	12	217	0		0	406	63		39	0	16		0	0	0	
Added Vol:	0	43	0		0	73	0		0	0	0		0	0	0	
PasserByVol:	81	274	0		0	320	152		115	0	79		0	0	0	
Initial Fut:	93	534	0		0	799	215		154	0	95		0	0	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	98	562	0		0	841	226		162	0	100		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Final Vol.:	98	562	0		0	841	226		162	0	100		0	0	0	
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2		xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3		xxxxx	xxxx	xxxxx	
Capacity Module:																
Cnflict Vol:	1077	xxxx	xxxxx		xxxx	xxxx	xxxxx		1451	xxxx	974		xxxx	xxxx	xxxxx	
Potent Cap.:	647	xxxx	xxxxx		xxxx	xxxx	xxxxx		144	xxxx	305		xxxx	xxxx	xxxxx	
Move Cap.:	642	xxxx	xxxxx		xxxx	xxxx	xxxxx		125	xxxx	300		xxxx	xxxx	xxxxx	
Volume/Cap:	0.15	xxxx	xxxx		xxxx	xxxx	xxxx		1.30	xxxx	0.33		xxxx	xxxx	xxxx	
Level Of Service Module:																
2Way95thQ:	0.5	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	
Control Del:	11.6	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
LOS by Move:	B	*	*		*	*	*		*	*	*		*	*	*	
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	161	xxxxx		xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	18.1	xxxxx		xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	360	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*		*	*	*		*	F	*		*	*	*	
ApproachDel:	xxxxxx				xxxxxx				360.1				xxxxxx			
ApproachLOS:	*				*				F				*			

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #26 State Route 86 & Willow Bend Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: F[61.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1 0		1 0 0	1 0		0 1 0	0 1		0 1 0	0 1	
Volume Module:												
Base Vol:	0	335	6	34	576	0	0	0	0	4	0	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	335	6	34	576	0	0	0	0	4	0	20
Added Vol:	6	22	0	0	37	37	22	0	4	0	0	0
PasserByVol:	0	436	0	0	391	0	0	0	0	0	0	0
Initial Fut:	6	793	6	34	1004	37	22	0	4	4	0	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	835	6	36	1057	39	23	0	4	4	0	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	6	835	6	36	1057	39	23	0	4	4	0	21
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	1106	xxxx	xxxxx	851	xxxx	xxxxx	1598	xxxx	1096	2021	xxxx	441
Potent Cap.:	631	xxxx	xxxxx	787	xxxx	xxxxx	86	xxxx	259	43	xxxx	617
Move Cap.:	626	xxxx	xxxxx	781	xxxx	xxxxx	78	xxxx	255	40	xxxx	606
Volume/Cap:	0.01	xxxx	xxxx	0.05	xxxx	xxxx	0.30	xxxx	0.02	0.11	xxxx	0.03
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	0.1	xxxx	xxxx	0.1
Control Del:	10.8	xxxx	xxxxx	9.8	xxxx	xxxxx	xxxxx	xxxx	19.4	xxxxx	xxxx	11.1
LOS by Move:	B	*	*	A	*	*	*	*	C	*	*	B
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	78	xxxx	xxxxx	40	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	0.3	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	69.6	xxxx	xxxxx	105.5	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	F	*	*	F	*	*
ApproachDel:	xxxxxx			xxxxxx			61.9			26.9		
ApproachLOS:	*			*			F			D		

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #27 State Route 86 & Countryside Dr

Average Delay (sec/veh): 1.3 Worst Case Level Of Service: F[52.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1	1 0		1 0 0	1 0		0 1 0	0 1		0 1 0	0 1	
Volume Module:												
Base Vol:	0	321	6	34	546	0	0	0	0	4	0	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	321	6	34	546	0	0	0	0	4	0	20
Added Vol:	6	6	0	0	4	37	22	0	4	0	0	0
PasserByVol:	0	436	0	0	391	0	0	0	0	0	0	0
Initial Fut:	6	763	6	34	941	37	22	0	4	4	0	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	803	6	36	991	39	23	0	4	4	0	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	6	803	6	36	991	39	23	0	4	4	0	21
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	xxxx	6.2	7.1	xxxx	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	xxxx	3.3	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	1039	xxxx	xxxxx	819	xxxx	xxxxx	1516	xxxx	1030	1923	xxxx	425
Potent Cap.:	669	xxxx	xxxxx	809	xxxx	xxxxx	98	xxxx	283	51	xxxx	629
Move Cap.:	663	xxxx	xxxxx	802	xxxx	xxxxx	89	xxxx	279	47	xxxx	619
Volume/Cap:	0.01	xxxx	xxxx	0.04	xxxx	xxxx	0.26	xxxx	0.02	0.09	xxxx	0.03
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	0.1
Control Del:	10.5	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	18.1	xxxxx	xxxx	11.0
LOS by Move:	B	*	*	A	*	*	*	*	C	*	*	B
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	89	xxxx	xxxxx	47	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.9	xxxx	xxxxx	0.3	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	59.0	xxxx	xxxxx	88.9	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	F	*	*	F	*	*
ApproachDel:	xxxxxx			xxxxxx			52.7			24.0		
ApproachLOS:	*			*			F			C		

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #28 State Route 86 & W McCabe Rd

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	0	1 0	0	0	1!	0 0	0	0	1!	0 0
Volume Module:																
Base Vol:	21	141		1	54	325		20	38	43		17	2	29		38
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	21	141		1	54	325		20	38	43		17	2	29		38
Added Vol:	0	9		0	3	5		0	0	0		0	0	0		4
PasserByVol:	122	245		0	143	238		10	14	130		96	0	156		177
Initial Fut:	143	395		1	200	568		30	52	173		113	2	185		219
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95
PHF Volume:	151	416		1	211	598		32	55	182		119	2	195		231
Reduct Vol:	0	0		0	0	0		0	0	0		0	0	0		0
Final Vol.:	151	416		1	211	598		32	55	182		119	2	195		231
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx		4.1	xxxx	xxxxx		7.1	6.5		6.2	7.1	6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx		2.2	xxxx	xxxxx		3.5	4.0		3.3	3.5	4.0		3.3
Capacity Module:																
Cnflict Vol:	639	xxxx	xxxxx		427	xxxx	xxxxx		1985	1773		634	1923	1788		436
Potent Cap.:	945	xxxx	xxxxx		1133	xxxx	xxxxx		46	83		479	51	81		620
Move Cap.:	937	xxxx	xxxxx		1123	xxxx	xxxxx		0	56		471	0	54		610
Volume/Cap:	0.16	xxxx	xxxx		0.19	xxxx	xxxx		xxxx	3.27		0.25	xxxx	3.58		0.38
Level Of Service Module:																
2Way95thQ:	0.6	xxxx	xxxxx		0.7	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	
Control Del:	9.6	xxxx	xxxxx		8.9	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*		A	*	*		*	*	*		*	*	*	
Movement:	LT	-	LTR	- RT	LT	-	LTR	- RT	LT	-	LTR	- RT	LT	-	LTR	- RT
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	0	xxxxx		xxxx	0	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*		*	*	*		*	*	*		*	*	*	
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				xxxxxx			
ApproachLOS:	*				*				F				F			

Note: Queue reported is the number of cars per lane.

Willow Bend
Near Term plus PM

Base Queue Report (cars)

Node	Intersection	Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R
#21	[HCM2kAvgQ]:	7	9	0	0	20	20	0	0	0	17	17	17
#22	[HCM2kAvgQ]:	0	15	5	13	9	0	16	16	16	0	0	0
#23	[HCM2kAvgQ]:	2	8	8	8	8	8	5	4	4	2	2	9
#24	[HCM2kAvgQ]:	0	3	3	2	3	0	0	0	0	1	0	2
#25	[2Way95thQ]:	0.0	xxxx	xxxx	xxxx	xxxx	xxxx	0.4	0.4	0.4	xxxx	xxxx	xxxx
#26	[2Way95thQ]:	xxxx	xxxx	xxxx	0.1	xxxx	xxxx	xxxx	xxxx	xxxx	0.1	0.1	0.1
#27	[2Way95thQ]:	xxxx	xxxx	xxxx	0.1	xxxx	xxxx	xxxx	xxxx	xxxx	0.1	0.1	0.1
#28	[2Way95thQ]:	0.1	xxxx	xxxx	0.1	xxxx	xxxx	1.2	1.2	1.2	0.5	0.5	0.5

Appendix F

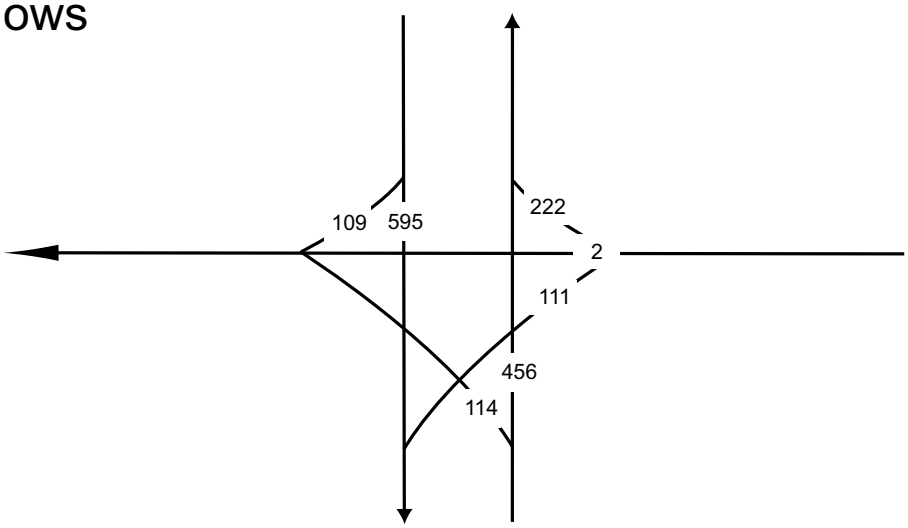
Caltrans ILV Calculation Worksheets for SR-86

ILV Calculation

SR-86 at I-8 Westbound

Existing, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
335	114	352, 352, 228, 228	

Critical Lane Summary

Phase 1:	335
Phase 2:	114
Phase 3:	352
Phase 4:	
Total:	801

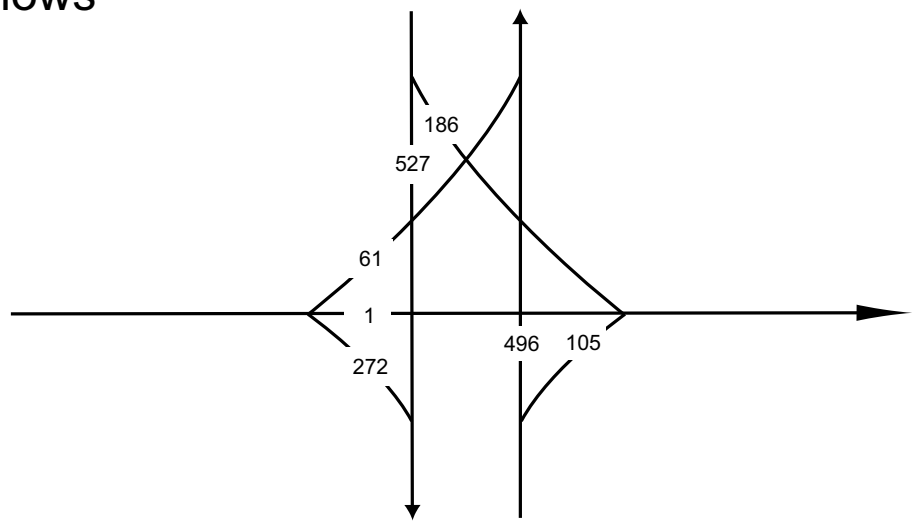
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ILV Calculation

SR-86 at I-8 Eastbound

Existing, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
334	186	263 264 248 248 105	

Critical Lane Summary

Phase 1:	334
Phase 2:	186
Phase 3:	264
Phase 4:	
Total:	784

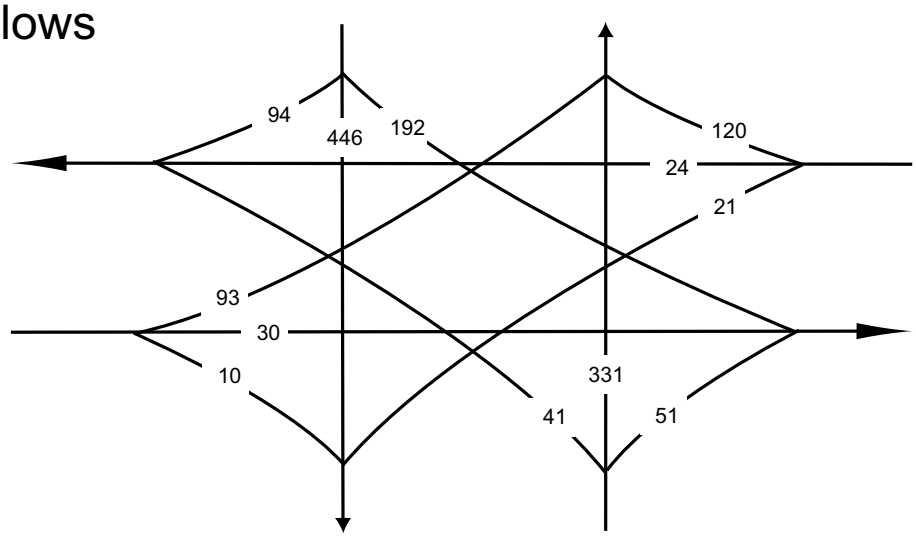
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

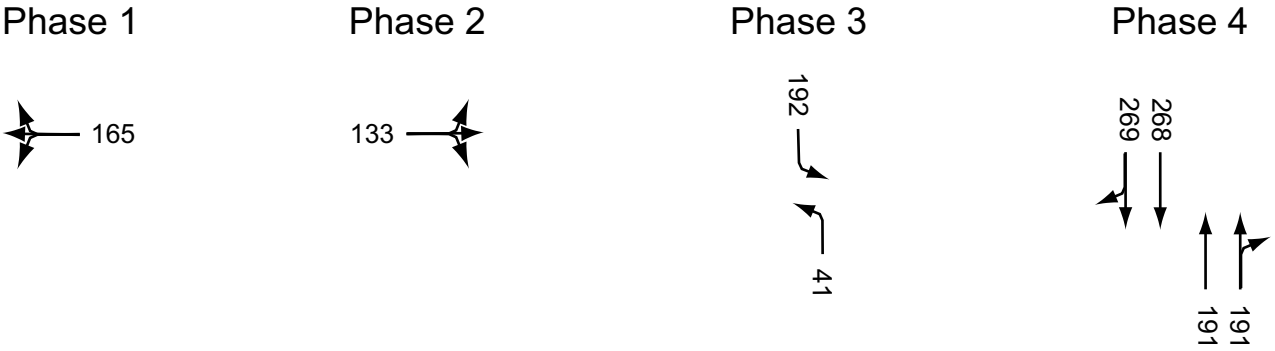
SR-86 at Wake Ave

Existing, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Summary

Phase 1:	165
Phase 2:	133
Phase 3:	192
Phase 4:	269
Total:	759

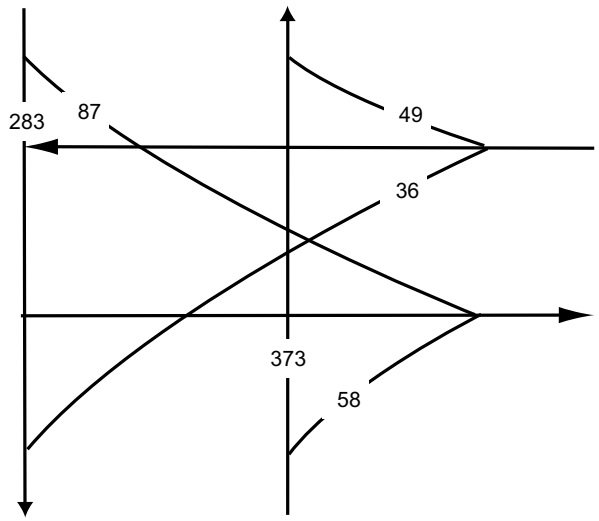
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at Danenberg Rd

Existing, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
85	87	141, 142, 216, 215	

Critical Lane Summary

Phase 1:	85
Phase 2:	87
Phase 3:	216
Phase 4:	
Total:	388

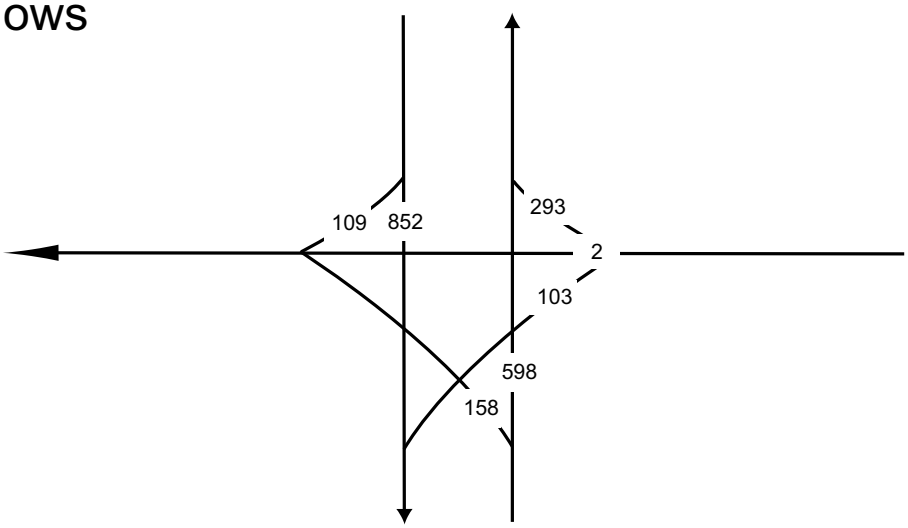
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at I-8 Westbound

Existing, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
398	158	481, 480, 299, 299	

Critical Lane Summary

Phase 1:	398
Phase 2:	158
Phase 3:	481
Phase 4:	
Total:	1037

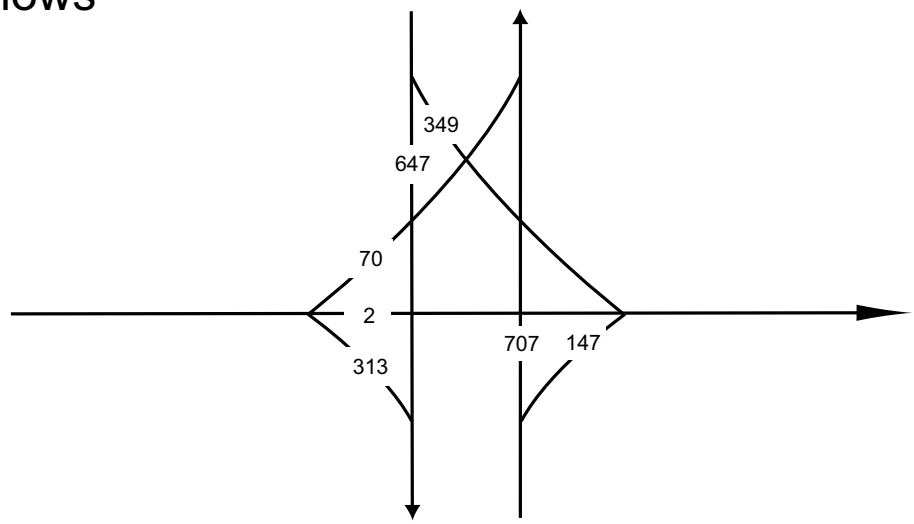
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at I-8 Eastbound

Existing, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
385	349	323, 324	
		353, 354, 147	

Critical Lane Summary

Phase 1:	385
Phase 2:	349
Phase 3:	354
Phase 4:	
Total:	1088

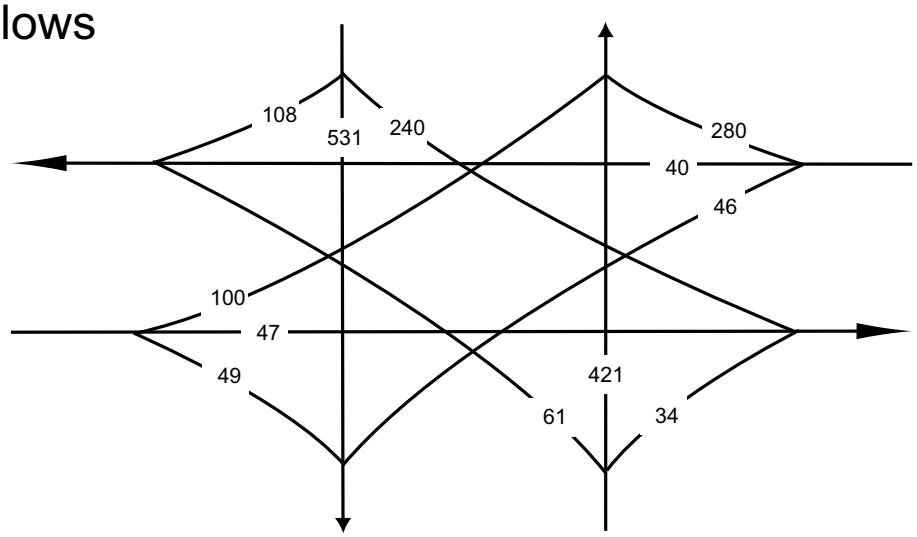
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at Wake Ave

Existing, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
366	196	240 / 61	320 / 319 / 228 / 227

Critical Lane Summary

Phase 1:	366
Phase 2:	196
Phase 3:	240
Phase 4:	320
Total:	1122

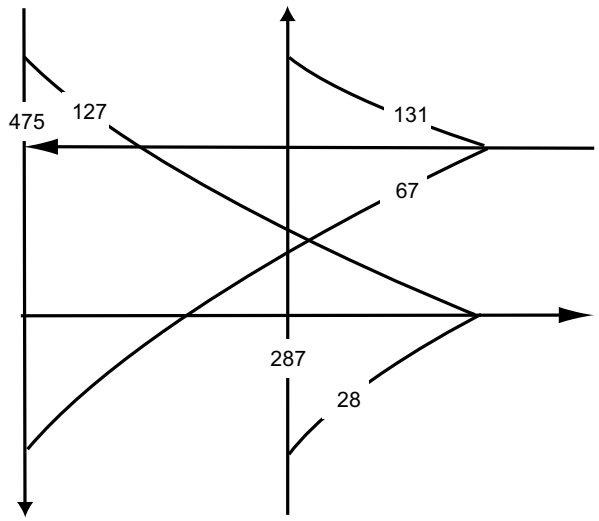
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at Danenberg Rd

Existing, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
198	127	238, 237, 158, 157	

Critical Lane Summary

Phase 1:	198
Phase 2:	127
Phase 3:	238
Phase 4:	
Total:	563

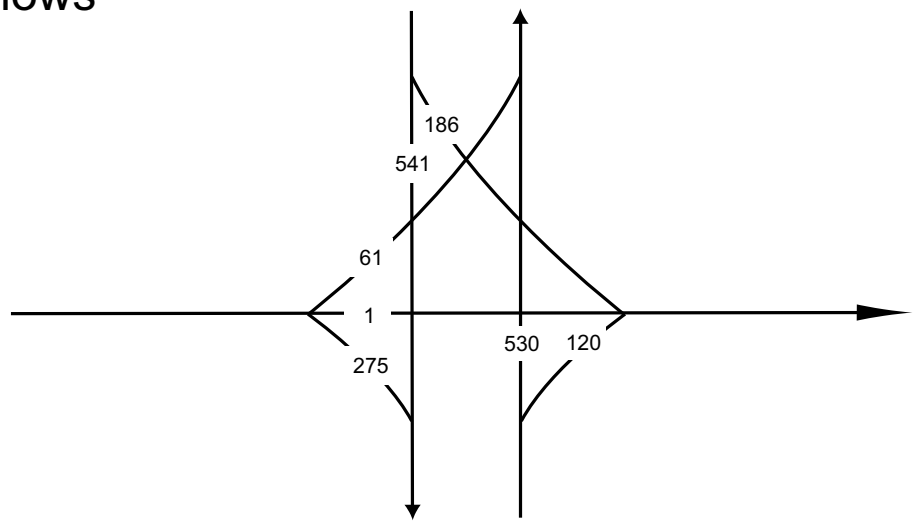
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at I-8 Eastbound

Existing with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
337	186	270 271 265 265 120	

Critical Lane Summary

Phase 1:	337
Phase 2:	186
Phase 3:	271
Phase 4:	
Total:	794

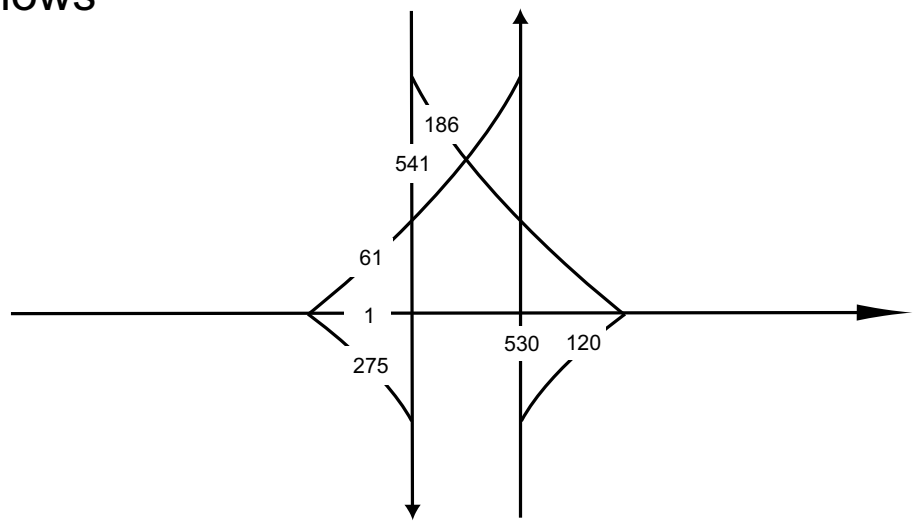
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at I-8 Eastbound

Existing with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
337	186	270 271 265 265 120	

Critical Lane Summary

Phase 1:	337
Phase 2:	186
Phase 3:	271
Phase 4:	
Total:	794

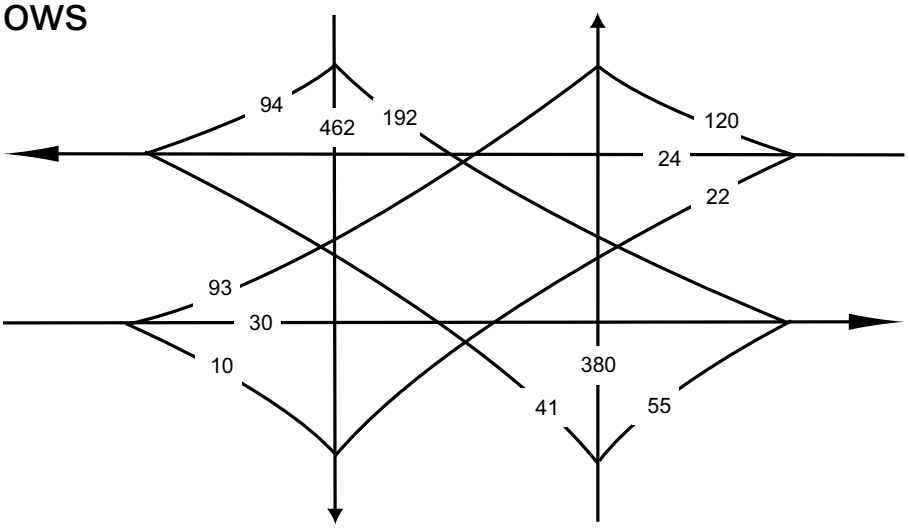
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at Wake Ave

Existing with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
166	133	192 / 41	277 / 278 / 218 / 217

Critical Lane Summary

Phase 1:	166
Phase 2:	133
Phase 3:	192
Phase 4:	278
Total:	769

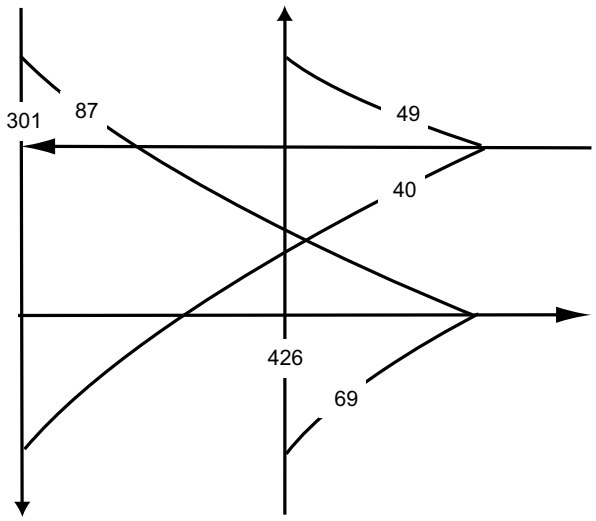
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at Danenberg Rd

Existing with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
89	87	150, 151, 248, 247	

Critical Lane Summary

Phase 1:	89
Phase 2:	87
Phase 3:	248
Phase 4:	
Total:	424

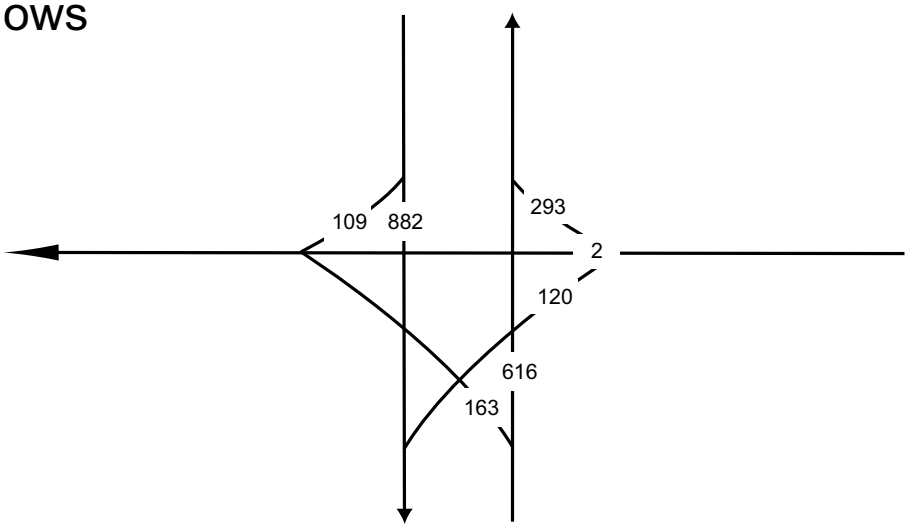
Stable	/ Unstable /	Stop-and-Go
X<1200	1200<X<1500	1500<X

ILV Calculation

SR-86 at I-8 Westbound

Existing with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
415	163	495, 496, 308, 308	

Critical Lane Summary

Phase 1:	415
Phase 2:	163
Phase 3:	496
Phase 4:	
Total:	1074

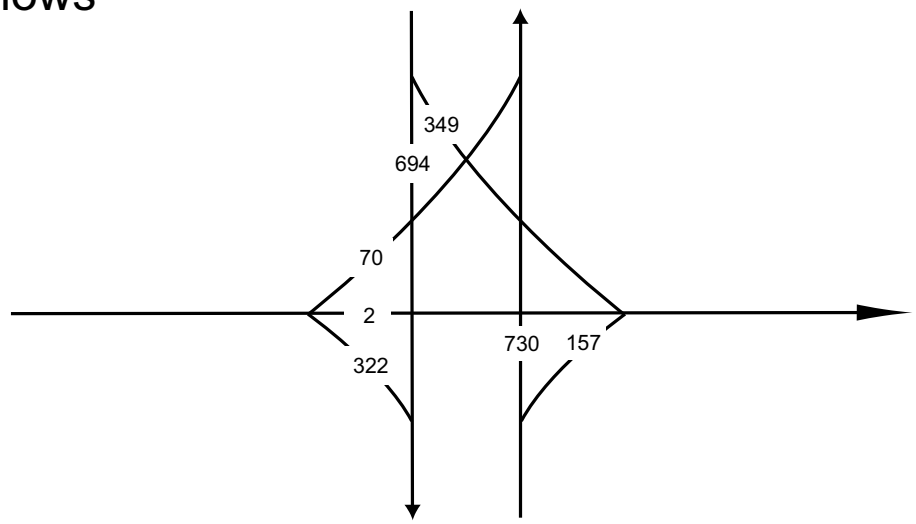
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ILV Calculation

SR-86 at I-8 Eastbound

Existing with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
394	349	347 347 365 365 157	

Critical Lane Summary

Phase 1:	394
Phase 2:	349
Phase 3:	365
Phase 4:	
Total:	1108

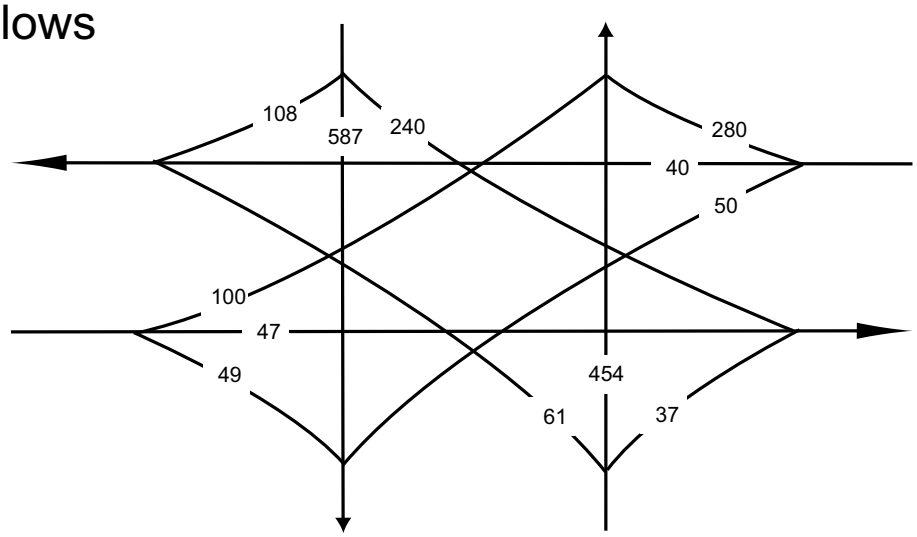
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ILV Calculation

SR-86 at Wake Ave

Existing with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
370	196	240 / 61	347 / 348 / 246 / 245

Critical Lane Summary

Phase 1:	370
Phase 2:	196
Phase 3:	240
Phase 4:	348
Total:	1154

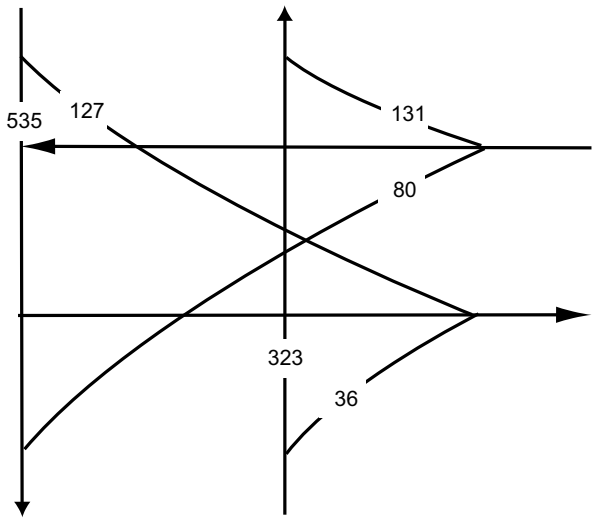
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ILV Calculation

SR-86 at Danenberg Rd

Existing with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
211	127	268, 267, 180, 179	

Critical Lane Summary

Phase 1:	211
Phase 2:	127
Phase 3:	268
Phase 4:	
Total:	606

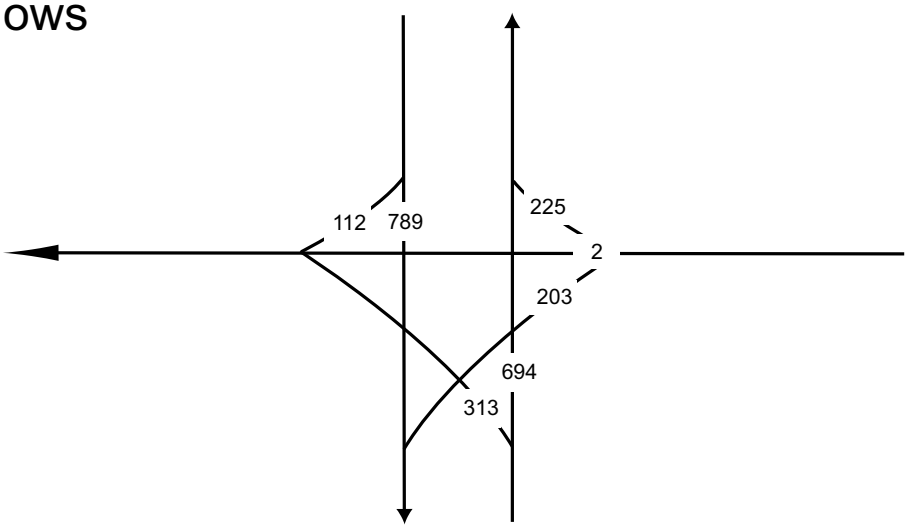
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ILV Calculation

SR-86 at I-8 Westbound

Near Term, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
430	313	450 451 347 347	

Critical Lane Summary

Phase 1:	430
Phase 2:	313
Phase 3:	451
Phase 4:	
Total:	1194

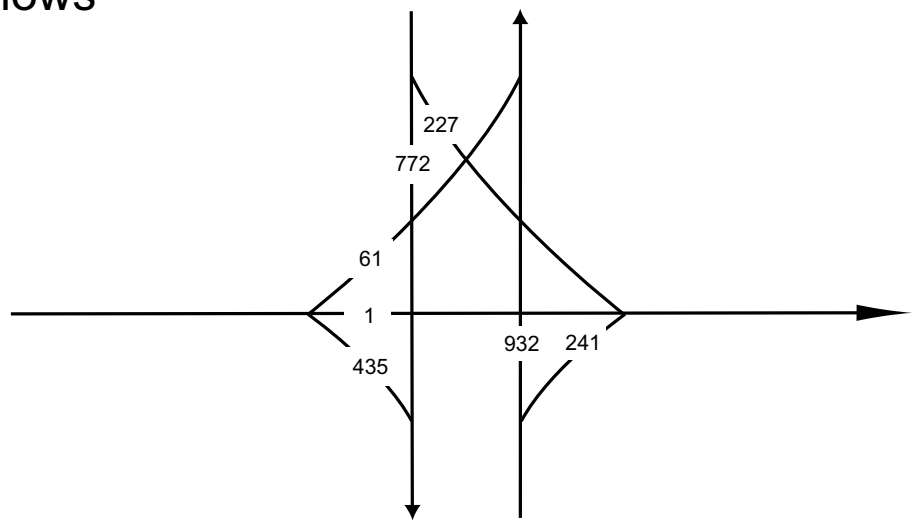
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ILV Calculation

SR-86 at I-8 Eastbound

Near Term, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
497	227	386 386 466 466 241	

Critical Lane Summary

Phase 1:	497
Phase 2:	227
Phase 3:	466
Phase 4:	
Total:	1190

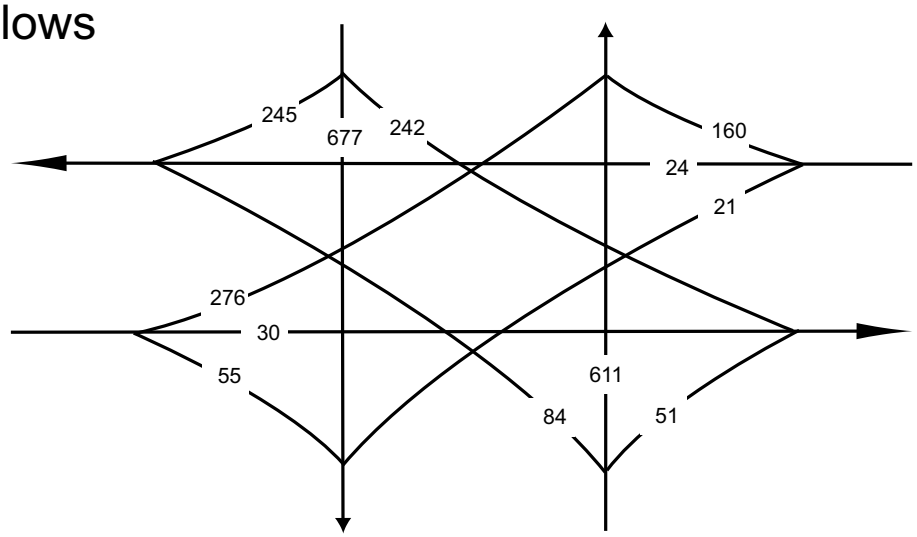
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ILV Calculation

SR-86 at Wake Ave

Near Term, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
205	361	242 / 84	461 / 461 / 331 / 331

Critical Lane Summary

Phase 1:	205
Phase 2:	361
Phase 3:	242
Phase 4:	461
Total:	1269

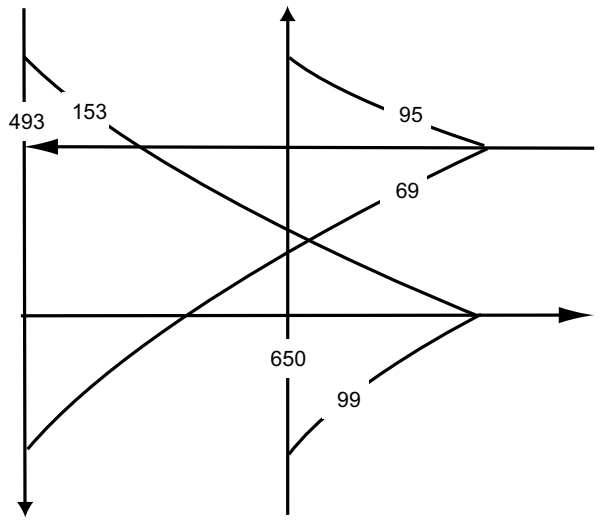
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ILV Calculation

SR-86 at Danenberg Rd

Near Term, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
164	153	247, 246, 375, 374	

Critical Lane Summary

Phase 1:	164
Phase 2:	153
Phase 3:	375
Phase 4:	
Total:	692

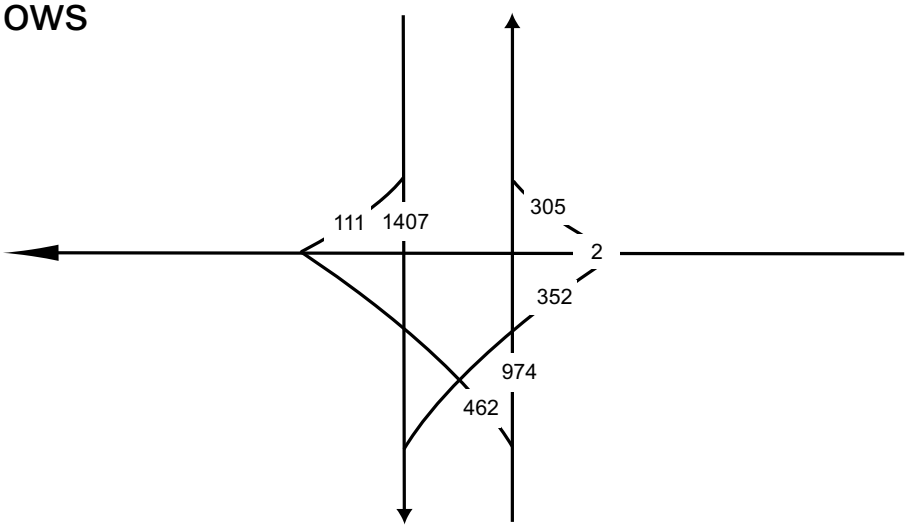
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at I-8 Westbound

Near Term, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
659	462	759 759 487 487	

Critical Lane Summary

Phase 1:	659
Phase 2:	462
Phase 3:	759
Phase 4:	
Total:	1880

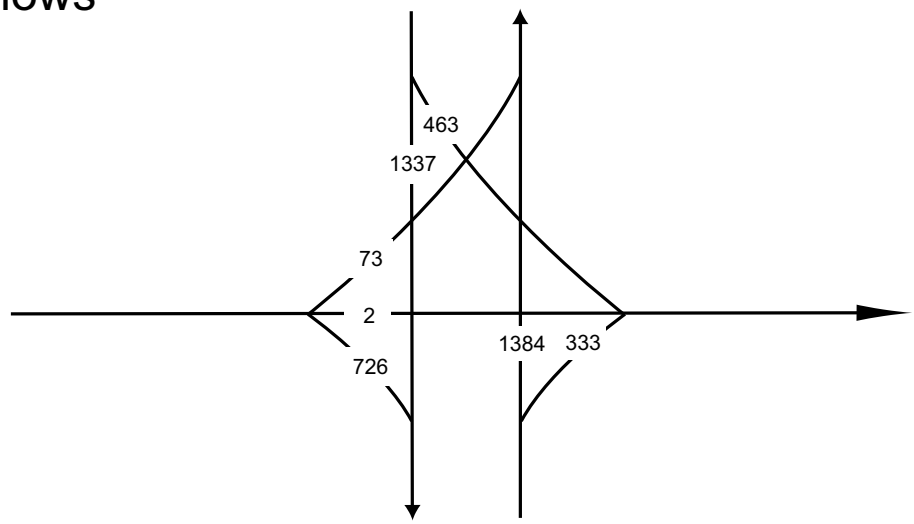
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ILV Calculation

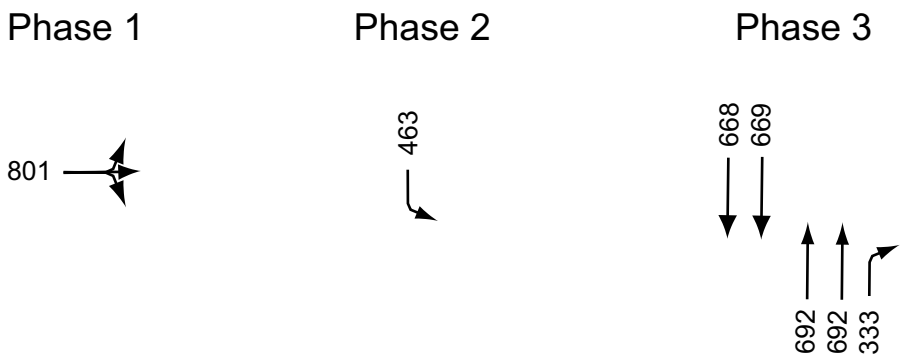
SR-86 at I-8 Eastbound

Near Term, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Summary

Phase 1:	801
Phase 2:	463
Phase 3:	669
Phase 4:	
Total:	1933

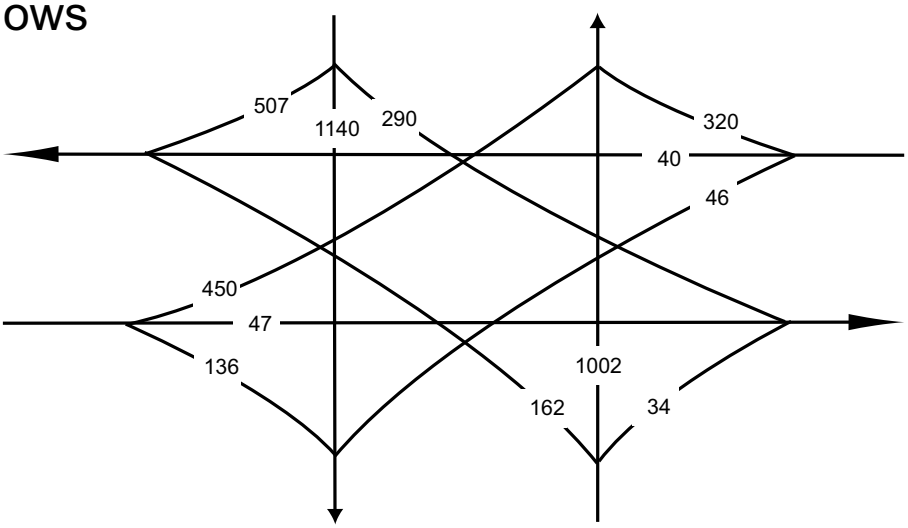
Stable	/	Unstable	/	Stop-and-Go
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ILV Calculation

SR-86 at Wake Ave

Near Term, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
406	633	290 / 162	824 / 823 / 518 / 518

Critical Lane Summary

Phase 1:	406
Phase 2:	633
Phase 3:	290
Phase 4:	824
Total:	2153

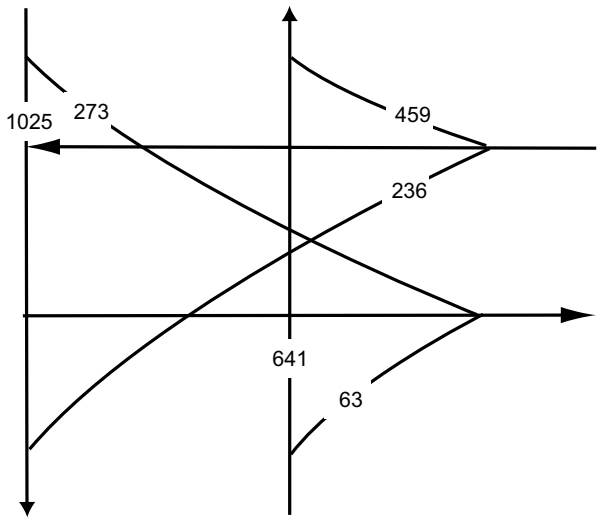
Stable (X<1200) / Unstable (1200<X<1500) / **Stop-and-Go (1500<X)**

ILV Calculation

SR-86 at Danenberg Rd

Near Term, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
695	273	513, 512	
		352, 352	

Critical Lane Summary

Phase 1:	695
Phase 2:	273
Phase 3:	513
Phase 4:	
Total:	1481

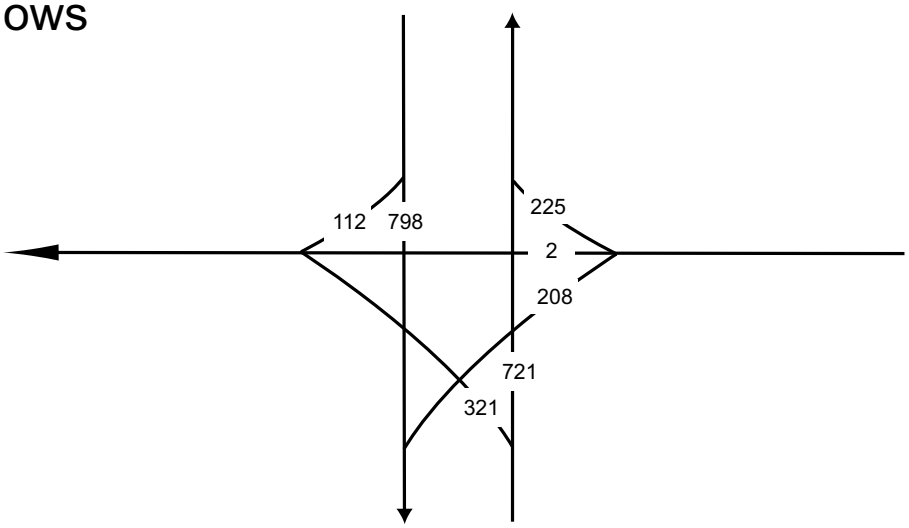
Stable (X<1200) / **Unstable (1200<X<1500)** / Stop-and-Go (1500<X)

ILV Calculation

SR-86 at I-8 Westbound

Near Term with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
435	321	455 455 360 361	

Critical Lane Summary

Phase 1:	435
Phase 2:	321
Phase 3:	455
Phase 4:	
Total:	1211

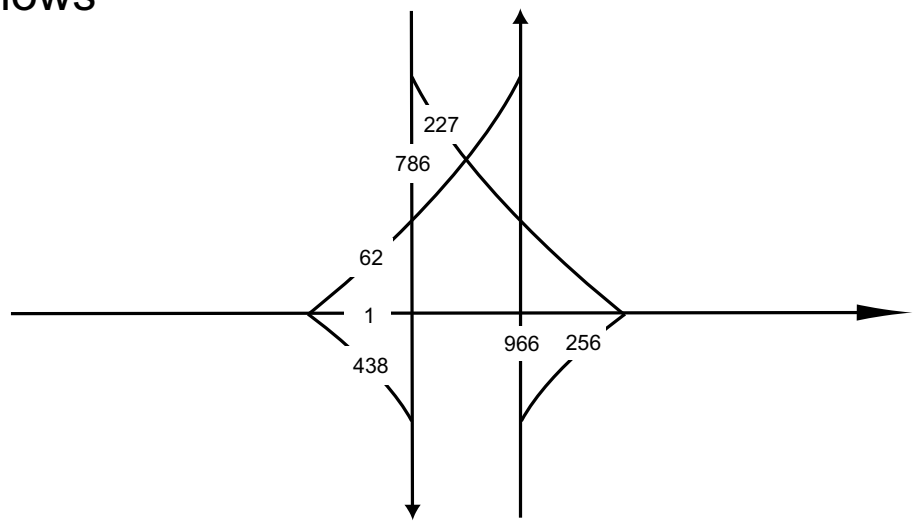
Stable (X<1200) / **Unstable (1200<X<1500)** / Stop-and-Go (1500<X)

ILV Calculation

SR-86 at I-8 Eastbound

Near Term with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
501	227	393 393	
		483 483 256	

Critical Lane Summary

Phase 1:	501
Phase 2:	227
Phase 3:	483
Phase 4:	
Total:	1211

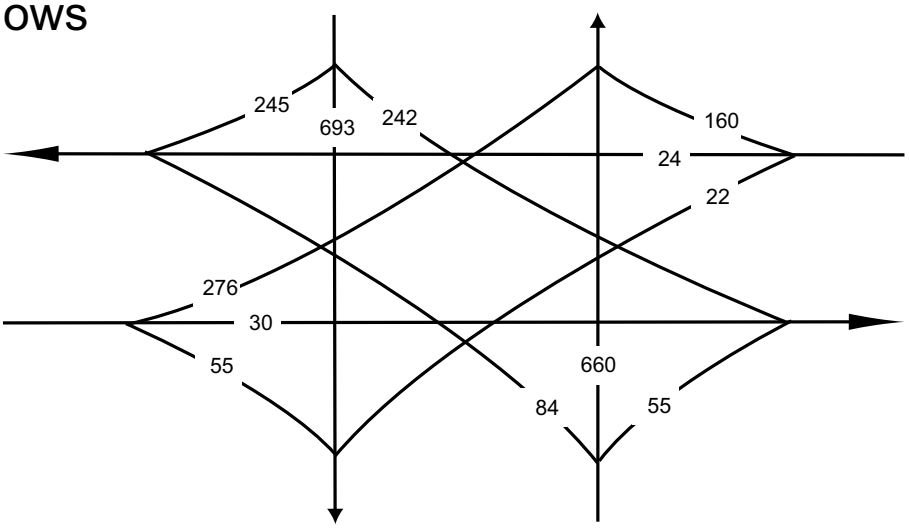
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ILV Calculation

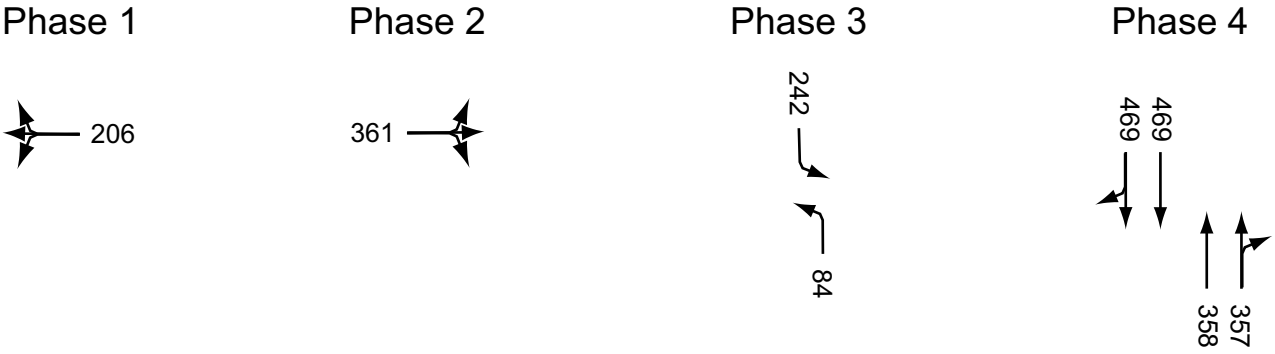
SR-86 at Wake Ave

Near Term with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)



Critical Lane Summary

Phase 1:	206
Phase 2:	361
Phase 3:	242
Phase 4:	469
Total:	1278

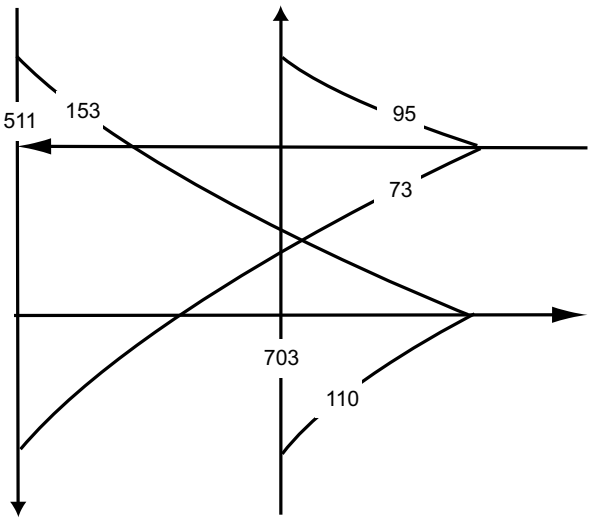
Stable (X<1200) / **Unstable (1200<X<1500)** / Stop-and-Go (1500<X)

ILV Calculation

SR-86 at Danenberg Rd

Near Term with Project, AM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
168	153	256, 255, 407, 406	

Critical Lane Summary

Phase 1:	168
Phase 2:	153
Phase 3:	407
Phase 4:	
Total:	728

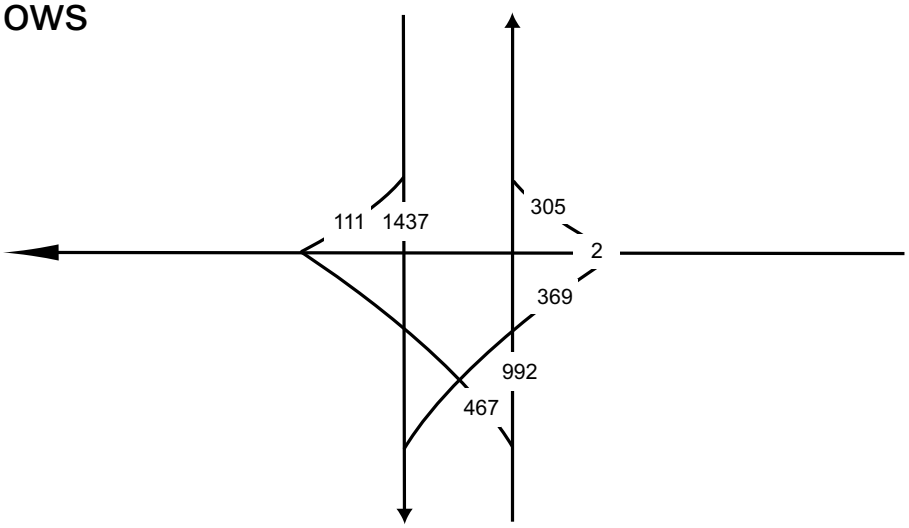
Stable	/ Unstable /	Stop-and-Go
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ILV Calculation

SR-86 at I-8 Westbound

Near Term with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
676	467	774 774 496 496	

Critical Lane Summary

Phase 1:	676
Phase 2:	467
Phase 3:	774
Phase 4:	
Total:	1917

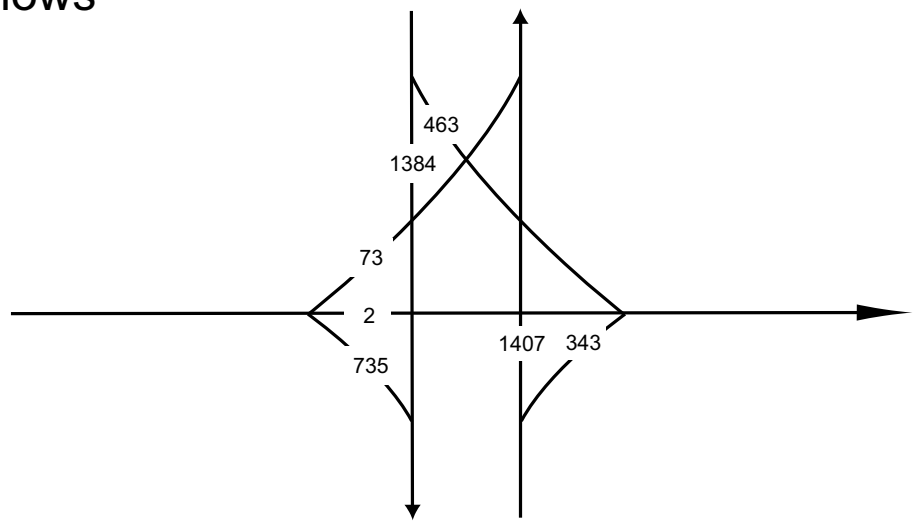
Stable	/	Unstable	/	Stop-and-Go
X<1200		1200<X<1500		1500<X

ILV Calculation

SR-86 at I-8 Eastbound

Near Term with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
810	463	692 692 704 703 343	

Critical Lane Summary

Phase 1:	810
Phase 2:	463
Phase 3:	704
Phase 4:	
Total:	1977

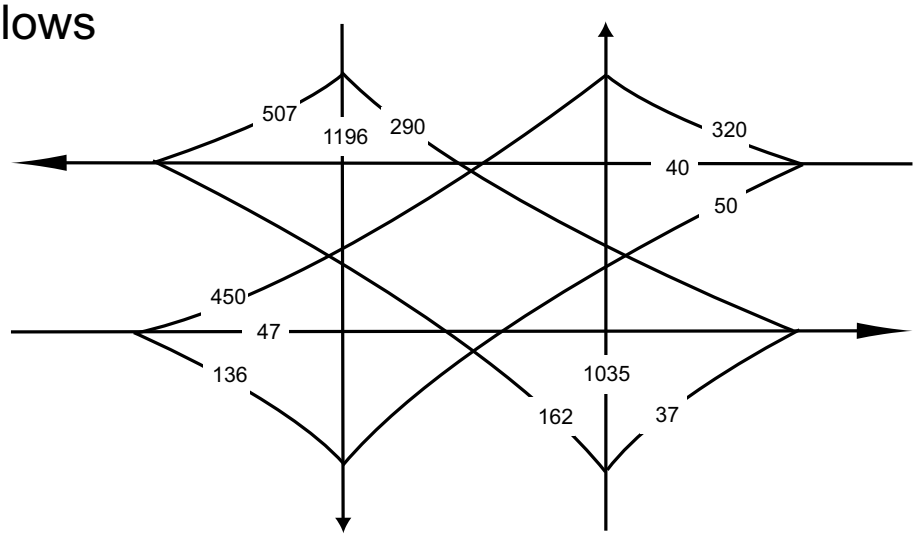
Stable	/	Unstable	/	Stop-and-Go
X<1200		1200<X<1500		1500<X

ILV Calculation

SR-86 at Wake Ave

Near Term with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
410	633	290 / 162	851 / 852 / 536 / 536

Critical Lane Summary

Phase 1:	410
Phase 2:	633
Phase 3:	290
Phase 4:	852
Total:	2185

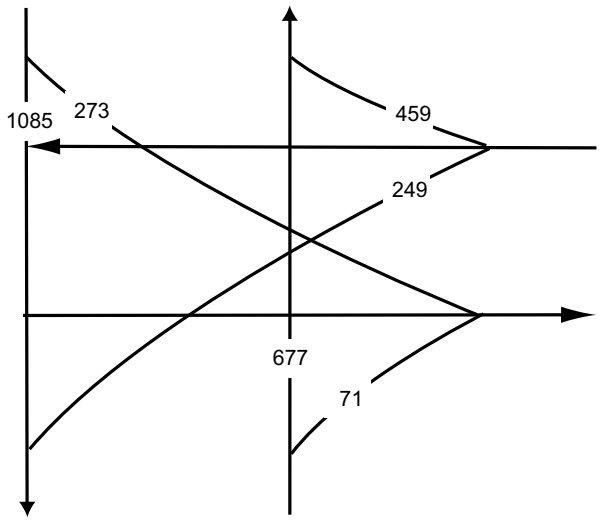
Stable (X<1200) / Unstable (1200<X<1500) / **Stop-and-Go (1500<X)**

ILV Calculation

SR-86 at Danenberg Rd

Near Term with Project, PM Peak

Traffic Flows



Lane Volumes (ILV/Hr)

Phase 1	Phase 2	Phase 3	Phase 4
708	273	542, 543	
		374, 374	

Critical Lane Summary

Phase 1:	787
Phase 2:	273
Phase 3:	543
Phase 4:	
Total:	1524

Stable (X<1200) / Unstable (1200<X<1500) / **Stop-and-Go (1500<X)**

Response to Comments
on the Draft Environmental Impact Report
for
City of El Centro
Zone Change 05-05 and
Tentative Subdivision Map (Willow Bend)
State Clearinghouse Number: 2005101128

Prepared for:

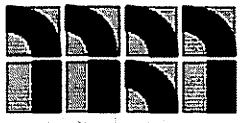
City of El Centro
Planning Department
1275 Main Street
El Centro, CA 92243

Contact: Oliver Alvarado, Planning Director

Prepared by:

Michael Brandman Associates
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Contact: Kara E. Palm, Project Manager



October 27, 2006

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SECTION 1: INTRODUCTION

1.1 - PURPOSE

In accordance with § 15088 of the State of California Environmental Quality Act (CEQA) Guidelines, the City of El Centro, as the lead agency, has evaluated the comments received on the Draft EIR. . The responses to the comments and the Draft EIR comprise the Final EIR for use by the City of El Centro in their review.

This Response to Comments document is organized as follows:

- **Section 1 - Introduction.**
- **Section 2 - List of Commentors.** Provides a list of the agencies, organizations, and individuals that commented on the Draft EIR.
- **Section 3 - Responses to Comments.** Includes a copy of all of the letters received and provides responses to comments on environmental issues describing the disposition of the issues, explaining the EIR analysis, supporting the EIR conclusions, and/or providing information or corrections as appropriate. This section is organized with a copy of the comment letter followed with the corresponding responses.
- **Section 4 - Errata.** Includes an addendum listing refinements and clarifications, which have been incorporated.

SECTION 2:
LIST OF COMMENTORS

A list of public agencies, organizations, and individuals that provided comments on the Draft EIR is presented below. Each comment has been assigned a code. Individual comments within each communication have been numbered so comments can be crossed-referenced with responses. Section 4, Responses to Comments, includes the text of the communication followed by the corresponding response.

COMMENTOR **CODE**

State Agencies

State of California Native American Heritage Commission, August 16, 2006 ..... NAHC
State of California Department of California Highway Patrol, August 30, 2006..... CHP
State of California Department of Transportation, September 5, 2006 ..... CALTRANS
State of California Public Utilities Commission, September 18, 2006 ..... PUC
State of California Department of Toxic Substances Control, September 25, 2006 ..... DTSC
State of California Governor's Office of Planning and Research, September 25, 2006 ..... OPR

Regional Agencies

California Regional Water Quality Control Board, September 12, 2006,..... RWQCB
Southern California Association of Governments, September 12, 2006..... SCAG

County Agencies

Imperial County Local Agency Formation Commission, August 13, 2006..... LAFCO
County of Imperial Public Health Department, August 21, 2006 ..... ICPHD
County of Imperial Public Works Department, September 6, 2006..... ICPWD
Imperial County Planning and Development Services, September 12, 2006..... ICPDS
Imperial County Air Pollution Control District, September 18, 2006..... ICAPCD

Local Agencies

Central Union High School District, August 18, 2006..... CUHSD
McCabe Union School District, September 5, 2006 ..... MUSD

Private Organizations and Persons

D. R. Horton, September 25, 2006 ..... DRH

SECTION 3:
RESPONSES TO COMMENTS

3.1 - INTRODUCTION

In accordance with Section 15088 of the California Environmental Quality Act (CEQA) Guidelines, the City of El Centro as the lead agency evaluated the comments received on the Draft EIR (State Clearinghouse No. 2005101128) for the Zone Change 05-05 and Tentative Subdivision Map Willow Bend Project and has prepared the following responses to the comments received. This Response to Comments document becomes part of the Final EIR for the project in accordance with § 15132 of the CEQA Guidelines.

3.2 - COMMENT LETTERS AND RESPONSES

The comment letters reproduced in the following pages follow the same organization as used in Sections 2's List of Commentors.

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

Clear 9.22.06 e

August 16, 2006

RECEIVED
AUG 22 2006
STATE CLEARING HOUSE

Mr. Oliver Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

Re: SCH#2005101128; CEQA Draft Environmental Impact Report (EIR); Zone Change 05-05 and Tentative Subdivision Map for the Willow Bend Project; Imperial County, California

Dear Mr. Alvarado:

Thank you for the opportunity to comment on the above-referenced document. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR per CEQA guidelines § 15064.5(b)(c). In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the area of project effect (APE), and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS). The record search will determine: NAHC-1

- If a part or the entire APE) has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure. NAHC-2
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ Contact the Native American Heritage Commission (NAHC) for:

* A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity who may have additional cultural resource information. Please provide this office with the following citation format to assist with the Sacred Lands File search request: USGS 7.5-minute quadrangle citation with name, township, range and section; . NAHC-3

- The NAHC advises the use of Native American Monitors to ensure proper identification and care given cultural resources that may be discovered. The NAHC recommends that contact be made with Native American Contacts on the attached list to get their input on potential project impact, particularly the contacts of the on the list.

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence.

- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities. NAHC-4
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.

* CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC-5

NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens. NAHC-5 CONT

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the CEQA Guidelines mandate procedures to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery. NAHC-6

√ Lead agencies should consider avoidance, as defined in § 15370 of the CEQA Guidelines, when significant cultural resources are discovered during the course of project planning. NAHC-7

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse
Attachment: List of Native American Contacts

3.2.1 - State Agencies

State of California Native American Heritage Commission, August 16, 2006 (NAHC)

Response to Comment NAHC-1

As noted on page 5.4-2 of the DEIR, as part of the Phase I Cultural Resources Survey, MBA contracted with Karen Collins of the Southeastern Information Center to conduct a cultural resources records search.

Response to Comment NAHC-2

As stated in Appendix E, Cultural Resources Assessment of the DEIR, at the request of the City of El Centro Planning Department, Michael Brandman Associates (MBA) has conducted a cultural resource block-transect survey for the proposed development.

The purpose of this report is to delineate the location of the project area, identify all potentially significant cultural and paleontological resources located within the project area, evaluate any detected cultural resources and, if they will be impacted by the proposed development, propose recommendations for mitigation. Completion of this investigation fulfills the requirements of the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA) as Amended, and Executive Order 11593 requirements. Published California State Office of Historic Preservation (OHP) procedures for cultural resource surveys, as found on their website, and the Archaeological Resource Management Reports (ARMR) reporting format were followed.

Response to Comment NAHC-3

A sacred lands search with the Native American Heritage Commission (NAHC) has taken place as part of this study, but this was associated with fact-finding only. We note that the City may be required to undertake Native American consultations to fulfill processes associated with SB18 (Burton).

Response to Comment NAHC-4

No significant impact on cultural resources are expected to occur based on the cultural resources assessment prepared for the project; however out of abundance of caution the following measure will further reduce potential impacts. If archeological resources are discovered during construction no further excavation or disturbance of the area or resources are found shall occur until a qualified archeologist evaluates the finds. I f the find is determined to be a unique archeological resource contingency funding and a time allotment sufficient to allow for implementation of avoidance

measures or appropriate mitigation should be available. Work could continue on other parts of the project site while the unique archeological resource mitigation takes place. If the qualified archaeologist determines that the find is a unique archaeological resource, the resource site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (OHP). If the site is determined to be significant, an adequate amount of data at the site shall be collected by the qualified archaeologist. The archaeologist shall determine the amount of data needed to be collected and an appropriate technical report must be prepared and submitted to the City and San Joaquin Valley Information Center. If the site is determined to be not significant, the site need not be mitigated for as described above.

Response to Comment NAHC-5

Please see Mitigation Measures CR 5.4-1 and CR 5.4-2 on pages 5.4-5 and 5.4-6 of the DEIR for a discussion of discovering human remains during construction.

Response to Comment NAHC-6

Please see Response to Comment NAHC-5.

Response to Comment NAHC-7

As required, if in the event that previously unknown cultural resources are discovered during the course of project planning, the City of El Centro will adhere to §15370 of the CEQA Guidelines.

State of California—Business, Transportation and Housing Agency ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
EL CENTRO AREA
2331 Highway 86
Imperial, CA 92251
(760) 482-2500
(800) 735-2929 (TT/TDD)
(800) 735-2922 (Voice)

RECEIVED
SEP 01 2006
PLANNING DEPT.
CITY OF EL CENTRO

August, 30, 2006
File No.: 625.9641

Oliver M. Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

Dear Mr. Alvarado:

Thank you for the opportunity to review the Draft Environmental Impact Report (DEIR) for the proposed "Willow Bend" project, State Clearinghouse (SCH) #2005101128. The California Highway Patrol (CHP) is the primary agency that provides traffic law enforcement, safety and management on the roadways in the unincorporated portions of Imperial County. CHP-1

The proposed "Willow Bend" project is immediately adjacent to State Route 86. State Route 86 is currently heavily traveled roadways connecting the cities of El Centro, Calexico and the town of Heber. Also adjacent to the area is Interstate 8 with exit ramps to State Route 86. Upon completion of this project, the increase in passenger vehicle and commercial truck traffic on these roadways, along with the Imperial Valley Mall traffic and the new schools proposed in the area, will have a significant impact on our ability to provide critical services elsewhere in Imperial County. The surrounding intersections in the area are reaching levels that are becoming critical. You state in your report that the upgrade of the surrounding intersections would be left to future decisions by the El Centro city engineer. We feel it is necessary that these intersections be upgraded prior the completion of the project, because it will have a potentially significant impact to accumulative traffic. Due to the substantial increase in traffic, there is a possibility of exceeding the traffic load and capacity of the existing street system. Based on that information, I would request that each phase of this development be presented to the El Centro Area in order to adequately address the increased amount of service required as well as the issue of road improvements with regards to traffic congestion and traffic safety. CHP-2

Should you have any questions concerning this matter, please do not hesitate to contact Officer Richard Bird at (760) 482-2500. CHP-3

Sincerely,

R.E. JONES, Captain
Commander
El Centro Area

cc: Special Projects Section
Border Division

Safety, Service, and Security

State of California Department of California Highway Patrol, August 30, 2006 (CHP)

Response to Comment CHP-1

The comment is noted that the CHP is the primary agency that provides traffic law enforcement, safety, and management on the roadways in unincorporated Imperial County.

Response to Comment CHP-2

Once incorporated, the project site will be served by the City of El Centro Police Department.

The proposed project will not result in any project only traffic related impacts; however, project related traffic will contribute to cumulative traffic related impacts. In lieu of an adopted Traffic Impact Fee (TIF), the City of El Centro Engineer will determine whether the project applicant shall implement the improvements at affected intersections and roadway segments or if the project applicant will pay a fair share towards cumulative improvements.

Please see Response to Comment CALTRANS-2 regarding fair share contribution.

Response to Comment CHP-3

The comment regarding the CHP contact is noted.

DEPARTMENT OF TRANSPORTATION
District 11
4050 Taylor Street, MS 240
San Diego, CA 92110
PHONE (619) 688-6954
FAX (619) 688-4299

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PLANNING DEPT.
CITY OF EL CENTRO

September 5, 2006

11-IMP-86
PM 5.00
DEIR (SCH 2005101128)
Willow Bend

Mr. Oliver Alvarado
City of El Centro
1275 W. Main Street
El Centro, CA 92243

Dear Mr. Alvarado:

The California Department of Transportation (Caltrans) received a copy of the Draft Environmental Impact Report (DEIR – SCH 2005101128) for the Willow Bend residential project located on the west side of State Route 86 (SR-86), south of Interstate 8 (I-8) between McCabe and Horne Roads. Caltrans has the following comments:

- Table 8-1 Suggested Mitigation, Figure 8-1, in the Revised Traffic Impact Study (July 2006) shows a proposed signal at Horne Road. The Memorandum of Understanding (MOU) dated February 10, 1997 for "Future improvement and access management plan for SR-86 south of I-8 to the El Centro City limits" does not allow for the signalization of this intersection. The TIS/DEIR and mitigation for Horne Road should be updated based on not signalizing Horne Road. CALTRANS -1

- In lieu of an adopted Transportation Impact Fee (TIF) program, Caltrans supports Fair Share contributions for all cumulative impact mitigation. Major deficiencies are identified for the Near Term Cumulative conditions. Caltrans and the City should coordinate to determine the appropriate mitigation and the timing of the improvements. A mechanism such as a traffic mitigation monitoring plan should be developed by the City for fair share contributions to monitor actual cumulative impacts and to insure that roadway segments and intersections remain at acceptable levels of service. Should the level of service reach unacceptable levels, the City should delay the issuance of building permits for any project until the appropriate cumulative impact mitigation is completed. A traffic mitigation monitoring plan should be developed and incorporated into the DEIR for the Willow Bend project detailing a phasing/implementation plan for cumulative impact mitigation. CALTRANS -2

- Caltrans future concept for SR-86 calls for the upgrade from a conventional 2-lane highway to a four-lane facility. Therefore, the proposed development must be compatible with proposed future improvements to SR-86. The applicant should obtain an Irrevocable Offer of Dedication (IOD) from the City and a slope rights / drainage easement in order to accomplish preserving the necessary right-of-way for future improvements. CALTRANS -3

- All lighting within this project should be placed and/or shielded so as not to be hazardous to vehicles traveling on SR-86. CALTRANS -4

- Caltrans will not be held responsible for any noise impacts to this development, including from the ultimate configuration of SR-86. CALTRANS -5

- All signs visible to traffic on SR-86 need to be constructed in compliance with County and State regulations. CALTRANS -6

- Improvements to project frontage along SR-86 should include curb, gutter, and sidewalk to accommodate pedestrians and disabled persons. CALTRANS -7

- Any mitigation work performed within Caltrans right of way will require an encroachment permit. Additional information regarding encroachment permits may be obtained by contacting our Permits Office at (619) 688-6158. Early coordination with our agency is strongly advised for all encroachment permits. CALTRANS -8

  If a developer proposes any work or improvements within the Caltrans right of way, the projects environmental studies must include such work. The developer is responsible for quantifying the environmental impacts of the improvements (project level analysis) and completing all appropriate mitigation measures for the impacts. The developer will also be responsible for procuring any necessary permits or approvals from the regulatory and resource agencies for the improvements. CALTRANS -9

If you have any questions, please contact Jacob Armstrong, Development Review Branch, at (619) 688-6960.

Sincerely,

MARIO H. ORSO, Chief
Development Review Branch

Cc: Daniel Arvizo, DD&E

State of California Department of Transportation, September 5, 2006 (CALTRANS)

Response to Comment CALTRANS-1

Section 3 of the Memorandum of Understanding states that Horne Road is exempt from the one-quarter mile restriction. Furthermore, a letter from CALTRANS dated October 9, 2003 states that any improvements within CALTRANS right-of-way must be supported by the project's environmental studies. The signalized intersection spacing between Dannenberg Road and Horne Road would be 600 feet. This signal would improve safety for left-turning vehicles from Horne Road to SR-86.

Response to Comment CALTRANS-2

The comment is noted that in lieu of an adopted Traffic Impact Fee, that CALTRANS supports fair share contributions for near-term cumulative impacts. As stated on page 6-13 of the DEIR, "The City Engineer shall make the determination of whether the payment or proportionate share or installation of the improvements is required. This shall be completed at the time of project approval. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for all cumulatively impacted locations."

Response to Comment CALTRANS-3

As noted on page 6-13 of the DEIR, as roadway improvements effect intersections and roadways under the jurisdiction of CALTRANS along State Route (SR) 86, improvements are in accordance with the Memorandum of Understanding regarding SR 86 between CALTRANS and the City of El Centro. The project applicant, as required, will obtain an Irrevocable Offer of Dedication.

Response to Comment CALTRANS-4

Project lighting shall be in accordance with the City of El Centro's lighting ordinance and CALTRANS guidelines.

Response to Comment CALTRANS-5

An Environmental Noise Assessment was prepared for the proposed project and is included in Appendix H and summarized in Section 5.7 of the DEIR. As discussed on page 6-8 of the DEIR, the project will include the construction of a 6-foot high sound wall and all homes shall have mechanical ventilation or air conditioning to reduce noise impacts from SR 86 to less than significant (see Mitigation Measures N6-1 and N 6-2). It is noted that CALTRANS is not responsible for noise impacts as a result of traffic traveling along SR 86.

Response to Comment CALTRANS-6

As required, all project related signage along SR-86will be in compliance with County and State regulations.

Response to Comment CALTRANS-7

As required, all project related improvements, along SR-86 and within the CALTRANS right of way will be in compliance with applicable regulations.

Response to Comment CALTRANS-8

Please see Response to Comment CALTRANS-3. In addition, as required, the applicant shall obtain an encroachment improvement for any improvements within the CALTRANS right-of-way.

Response to Comment CALTRANS-9

Please see Response to Comments CALTRANS-3 and CALTRANS-8.

STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION
320 WEST 4TH STREET, SUITE 500
LOS ANGELES, CA 90013

ARNOLD SCHWARZENEGGER, *Governor*

RECEIVED
SEP 25 2006
PLANNING DEPT.
CITY OF EL CENTRO

September 18, 2006

Oliver Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

Dear Mr. Alvarado:

Re: SCH# 2005101128; Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)

As the state agency responsible for rail safety within California, we recommend that any development projects planned adjacent to or near the Union Pacific Railroad (UPRR) right-of-way be planned with the safety of the rail corridor in mind. New developments may increase traffic volumes not only on streets and at intersections, but also at at-grade highway-rail crossings. This includes considering pedestrian circulation patterns/destinations with respect to railroad right-of-way.

Safety factors to consider include, but are not limited to, the planning for grade separations for major thoroughfares, improvements to existing at-grade highway-rail crossings due to increase in traffic volumes and appropriate fencing to limit the access of trespassers onto the railroad right-of-way. PUC-1

The above-mentioned safety improvements should be considered when approval is sought for the new development. Working with Commission staff early in the conceptual design phase will help improve the safety to motorists and pedestrians in the City.

Please advise us on the status of the project. If you have any questions in this matter, please contact me at (213) 576-7078 or at rxm@cpuc.ca.gov.

Sincerely,

Rosa Muñoz, PE
Utilities Engineer
Rail Crossings Engineering Section
Consumer Protection & Safety Division

C: Freddy Cheung, UPRR

State of California Public Utilities Commission, September 18, 2006 (PUC)

Response to Comment PUC-1

The proposed project does not include development within a Union Pacific Railroad right-of-way.

Linda S. Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maureen F. Gorsen, Director
5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

September 25, 2006

Mr. Oliver Alvarado
City of El Centro, Planning Department
1275 Main Street
El Centro, California 92243

DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR CITY OF EL CENTRO ZONE CHANGE 05-05 AND TENTATIVE SUBDIVISION MAP (SCH#2005101128)

Dear Mr. Alvarado:

The Department of Toxic Substances Control (DTSC) has received your submitted (EIR) document for the above-mentioned project. As stated in your document: "The proposed project is the development of a single-family residential community on approximately 38 acres. The project includes the subdivision of 38 acres of farmland to provide for 131 single-family residential lots, a 3.02-acre retention basin, and 1.67-acre park. The purpose of this project is to supply single-family housing to meet the growth projections of the City of El Centro contiguous to similar development within the City's Sphere-of-Influence; to locate the development to meet anticipated growth in areas of relatively lesser environmental sensitivity; accommodating growth while balancing environmental considerations; to provide public infrastructure improvements for the orderly expansion of urban development; and to locate housing adjacent to major highway arterials (SR-86) and with convenient access to Interstate 8 to promote efficient traffic flows and minimize traffic demands on local and collector streets".

DTSC has previously issued comments regarding the Notice of Preparation on November 28, 2005, which have not been fully addressed. The comments are as follows:

1. The draft EIR needs to identify and determine whether current or historic uses at the Project site have resulted in any release of hazardous wastes/substances at the Project area. DTSC-1

2. The draft EIR needs to identify any known or potentially contaminated sites within the proposed Project area. For all identified sites, the draft EIR should evaluate whether conditions at the site pose a threat to human health or the environment. A Phase I Assessment may be sufficient to identify these sites. Following are the databases of some of the regulatory agencies: DTSC-2

- National Priorities List (NPL): A list is maintained by the United States Environmental Protection Agency (U.S.EPA).
- CalSites: A Database primarily used by the California Department of Toxic Substances Control.
- Resource Conservation and Recovery Information System (RCRIS): A database of RCRA facilities that is maintained by U.S. EPA.
- Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS): A database of CERCLA sites that is maintained by U.S.EPA.
- Solid Waste Information System (SWIS): A database provided by the California Integrated Waste Management Board which consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations.
- Leaking Underground Storage Tanks (LUST) / Spills, Leaks, Investigations and Cleanups (SLIC): A list that is maintained by Regional Water Quality Control Boards (RWQCBs).
- Local County and City maintain lists for hazardous substances cleanup sites and leaking underground storage tanks.

DTSC-2 CONT

3. The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may be contaminated, and the government agency to provide appropriate regulatory oversight. If hazardous materials or wastes were stored at the site, an environmental assessment should be conducted to determine if a release has occurred. If so, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. It may be necessary to determine if an expedited response action is required to reduce existing or potential threats to public health or the environment. If no immediate threat exists, the final remedy should be implemented in compliance with state laws, regulations and policies.

DTSC-3

4. If the subject property was previously used for agriculture, onsite soils could contain pesticide residues. Proper investigation and remedial action may be necessary to ensure the site does not pose a risk to the future residents.

DTSC-4

5. All environmental investigations, sampling and/or remediation should be conducted under a Workplan approved and overseen by a regulatory agency that has jurisdiction to oversee hazardous waste cleanup. The findings and sampling results from the subsequent report should be clearly summarized in the EIR. DTSC-5

6. Proper investigation, sampling and remedial actions, if necessary, should be conducted at the site prior to the new development or any construction, and overseen by a regulatory agency. DTSC-6

7. If any property adjacent to the project site is contaminated with hazardous chemicals, and if the proposed project is within 2,000 feet from a contaminated site, then the proposed development may fall within the "Border Zone of a Contaminated Property". Appropriate precautions should be taken prior to construction if the proposed project is within a "Border Zone Property". DTSC-7

8. Human health and the environment of sensitive receptors should be protected during the construction or demolition activities. A study of the site overseen by the appropriate government agency might have to be conducted to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment. DTSC-8

9. If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If so, the facility should obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942. DTSC-9

10. If hazardous wastes are (a) stored in tanks or containers for more than ninety days, (b) treated onsite, or (c) disposed of onsite, then a permit from DTSC may be required. If so, the facility should contact DTSC at (818) 551-2171 to initiate pre application discussions and determine the permitting process applicable to the facility. DTSC-10

11. Certain hazardous waste treatment processes may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA. DTSC-11

12. If the project plans include discharging wastewater to a storm drain, you may be required to obtain a wastewater discharge permit from the overseeing Regional Water Quality Control Board. DTSC-12

13. If during construction/demolition of the project, soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented. If it is determined that contaminated soil and/or groundwater exist, the EIR should identify how any required investigation and/or remediation will be conducted, and the appropriate government agency to provide regulatory oversight. DTSC-13

14. During project construction and implementation, all chemicals (including herbicides and pesticides, runoff, hazardous materials and waste) should be handled, stored, transported, and disposed of properly and in accordance with applicable local, state, and federal regulations. DTSC-14

15. If structures on the Project Site contain potentially hazardous materials, such as; asbestos-containing materials, lead-based paint, and mercury- or PCB-containing materials, such materials should be removed properly prior to demolition and disposed of at appropriate landfills or recycled, in accordance with the regulatory guidance provided in California Code of Regulation (CCR) and following the requirements of the Universal Waste Rule (40 CFR, Part 9). DTSC-15

If you have any questions regarding this letter, please contact me at (714) 484-5461 or Mr. Al Shami, Project Manager, at (714) 484-5472 or at "ashami@dtsc.ca.gov".

Sincerely,

Greg Holmes for
Unit Chief
Southern California Cleanup Operations Branch - Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

CEQA # 1502

5. All environmental investigations, sampling and/or remediation should be conducted under a Workplan approved and overseen by a regulatory agency that has jurisdiction to oversee hazardous waste cleanup. The findings and sampling results from the subsequent report should be clearly summarized in the EIR. DTSC-5

6. Proper investigation, sampling and remedial actions, if necessary, should be conducted at the site prior to the new development or any construction, and overseen by a regulatory agency. DTSC-6

7. If any property adjacent to the project site is contaminated with hazardous chemicals, and if the proposed project is within 2,000 feet from a contaminated site, then the proposed development may fall within the "Border Zone of a Contaminated Property". Appropriate precautions should be taken prior to construction if the proposed project is within a "Border Zone Property". DTSC-7

8. Human health and the environment of sensitive receptors should be protected during the construction or demolition activities. A study of the site overseen by the appropriate government agency might have to be conducted to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment. DTSC-8

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11. Certain hazardous waste treatment processes may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA. DTSC-11

12. If the project plans include discharging wastewater to a storm drain, you may be required to obtain a wastewater discharge permit from the overseeing Regional Water Quality Control Board. DTSC-12

13. If during construction/demolition of the project, soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented. If it is determined that contaminated soil and/or groundwater exist, the EIR should identify how any required investigation and/or remediation will be conducted, and the appropriate government agency to provide regulatory oversight. DTSC-13

14. During project construction and implementation, all chemicals (including herbicides and pesticides, runoff, hazardous materials and waste) should be handled, stored, transported, and disposed of properly and in accordance with applicable local, state, and federal regulations. DTSC-14

15. If structures on the Project Site contain potentially hazardous materials, such as; asbestos-containing materials, lead-based paint, and mercury- or PCB-containing materials, such materials should be removed properly prior to demolition and disposed of at appropriate landfills or recycled, in accordance with the regulatory guidance provided in California Code of Regulation (CCR) and following the requirements of the Universal Waste Rule (40 CFR, Part 9). DTSC-15

If you have any questions regarding this letter, please contact me at (714) 484-5461 or Mr. Al Shami, Project Manager, at (714) 484-5472 or at "ashami@dtsc.ca.gov".

Sincerely,

Greg Holmes for
Unit Chief
Southern California Cleanup Operations Branch - Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

CEQA # 1502

State of California Department of Toxic Substances Control, September 25, 2006 (DTSC)

Response to Comment DTSC-1

A Phase I Environmental Site Assessment (ESA) prepared in accordance with the American Society for Testing Materials Standard (ASTM) E 1527-00. The ASTM standard is the most widely accepted nationwide protocol for environmental assessment of commercial properties and seeks to identify "recognized environmental conditions" on a property. Additionally, a supplemental Pesticide Scan Report were prepared for the proposed project and are included in Appendix G and summarized in Section 5.6 of the DEIR

Response to Comment DTSC-2

The Phase I ESA included a review of all applicable regulatory databases per ASTM Standard E 1527-00.

Response to Comment DTSC-3

Please see Response to Comment DTSC-1. Additionally, as noted in Mitigation Measure HM 5.6-2, prior to the issuance of grading permits, the applicant shall coordinate with DTSC in regard to the results of the pesticide scan.

Response to Comment DTSC-4

Please see Response to Comment DTSC-3.

Response to Comment DTSC-5

Please see Response to Comment DTSC-3.

Response to Comment DTSC-6

Please see Response to Comment DTSC-3.

Response to Comment DTSC-7

One property, located 0.5 to 1-mile north of the project site was listed on a regulatory database reviewed in accordance with ASTM E 1527-00. As noted on page 5.6-7 of the DEIR, this property was listed on the Notify 65 database. A gasoline leak was detected in May 1989, Subsequent remediation occurred and the case was closed in September 1996.

Response to Comment DTSC-8

Please see Response to Comment DTSC-1.

Response to Comment DTSC-9

As noted on page 5.6-9 of the DEIR, construction may involve the limited transport, storage, usage, or disposal of hazardous materials and as noted on page 5.6-11 of the DEIR, project operation will involve the use of common household hazardous wastes. All site operations (short-term and long-term) will be in accordance with all applicable regulations including the California Hazardous Waste Control Law and the Hazardous Waste Control Regulations. Section 5.6-1 of the DEIR outlines the applicable hazardous waste laws.

Response to Comment DTSC-10

Please see Response to Comment DTSC-9.

Response to Comment DTSC-11

The comment is noted. If applicable, the project applicant will obtain authorization from the Certified Unified Program Agency.

Response to Comment DTSC-12

As noted in the Initial Study and Notice of Preparation prepared for the proposed project, "The proposed project will be implemented in accordance with all applicable water quality standards and waste discharge requirements, which will ensure that the quality and quantity of surface water flowing from the site would not be substantially affected."

Response to Comment DTSC-13

A Phase I ESA did not reveal any known soil or groundwater contamination on site; however, historically, the project site has been used for agricultural production. A Pesticide Scan Report was prepared. As noted in Section 5.6 of the DEIR, the pesticide scan revealed concentrations of DDE in four soil samples; yet, the concentration of DDE in the soil is below the current action limits as determined by DTSC. Regardless, Mitigation Measure HM 5.6-2 requires the applicant to review the pesticide scan with DTSC prior to the issuance of a grading permit. DTSC shall provide written verification that no further action is required in relation to the presence of DDE in near surface soils. Al project related activities will be in accordance with the applicable hazardous materials/wastes regulations as required.

Response to Comment DTSC-14

Al project related activities will be in accordance with the applicable hazardous materials/wastes regulations as required.

Response to Comment DTSC-15

Site investigations performed in accordance with the Phase I ESA, which is included in Appendix G of the DEIR did not reveal any asbestos, lead based paint, mercury, or PCB containing materials onsite. Al project related activities will be in accordance with the applicable hazardous materials/wastes regulations as required.

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

September 25, 2006

Oliver Alvarado
City of El Centro
1275 Main Street
El Centro, CA 92243

Subject: Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
SCH#: 2005101128

Dear Oliver Alvarado:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on September 22, 2006, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

OPR-1

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2005101128
Project Title Change of Zone 05-05 and Tentative Subdivision Map (Willow Bend)
Lead Agency El Centro, City of

Type EIR Draft EIR

Description The proposed project is the development of a single-family residential community on approximately 38 acres. The project includes the subdivision of 38 acres of farmland to provide for 131 single-family residential lots, a 3.02-acre retention basin, and 1.67-acre park. The purpose of this project is to supply single-family housing to meet the growth projections of the City of El Centro contiguous to similar development within the City's Sphere of Influence; to locate projections of the City of El Centro contiguous to similar development within the City's Sphere of Influence; to locate development to meet anticipated growth in areas of relatively lesser environmental sensitivity, accomodating growth while balancing environmental considerations; to provide public infrastructure improvements for the orderly expansion of urban development; and to locate housing adjacent to major highway arterials (SR-86) and with convenient access to I-8 to promote efficient traffic flows and minimize traffic demands on local and collector streets.

Lead Agency Contact

Name Oliver Alvarado
Agency City of El Centro
Phone (760) 337-4545 **Fax**
email
Address 1275 Main Street
City El Centro **State** CA **Zip** 92243

Project Location

County Imperial
City El Centro
Region
Cross Streets McCabe Road, east of 8th Street, and west of 4th Street (SR-86)
Parcel No.
Township 16S **Range** 14E **Section** 83 **Base**

Proximity to:

Highways SR-86
Airports
Railways
Waterways
Schools
Land Use Vacant land that historically has been utilized for farmland.
Z: General Agriculture/Urban Overlay (A2U)

Project Issues Agricultural Land; Air Quality; Archaeologic-Historic; Cumulative Effects; Growth Inducing; Noise; Public Services; Schools/Universities; Sewer Capacity; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Supply; Wildlife

Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 7; Department of Parks and Recreation; Native American Heritage Commission; Office of Historic Preservation; Office of Emergency Services; Department of Health Services; Department of Fish and Game, Region 6; Department of Water Resources; California Highway Patrol; Caltrans, District 11; Department of Toxic Substances Control

Date Received 08/09/2006 **Start of Review** 08/09/2006 **End of Review** 09/22/2006

Note: Blanks in data fields result from insufficient information provided by lead agency.

State of California Governor's Office of Planning and Research, September 25, 2006 (OPR)

Response to Comment OPR-1

Comment is noted, and it is acknowledged that the Draft EIR was distributed to selected state agencies for review. No specific comments on the Draft EIR were provided; therefore, no further response is necessary.

Linda S. Adams
Secretary for
Environmental Protection

California Regional Water Quality Control Board
Colorado River Basin Region

73-720 Fred Waring Drive, Suite 100, Palm Desert, California 92260
(760) 346-7491 • Fax (760) 341-6820
http://www.waterboards.ca.gov/coloradoriver

Arnold Schwarzenegger
Governor

September 12, 2006

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SEP 14 2006
PLANNING DEPT.
CITY OF EL CENTRO

Oliver Alvarado, Planning Director
Planning Department
City of El Centro
1275 Main Street
El Centro, CA 92243

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT FOR CITY OF EL CENTRO ZONE CHANGE 05-05 AND TENTATIVE SUBDIVISION MAP (WILLOW BEND), SCH #2005101128

The Regional Board reviews the submitted CEQA documents generated by lead agencies and provides comments regarding overall adequacy of the document, water quality impacts that need to be addressed or are inadequately addressed, and the need for permits, certification, or mitigation from the Regional Board.

The following comments are in response to the submitted Draft Environmental Impact Report for the above referenced project dated August 9, 2006.

The following permit may be needed:

A. CONSTRUCTION ACTIVITIES (STORM WATER AND 401 WATER QUALITY CERTIFICATION)

1. Storm Water Construction General Permit 99-08-DWD. Dischargers whose projects disturb 1 or more acres of soil or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity. Here is the website hyperlink - http://www.waterboards.ca.gov/stormwtr/construction.html RWQCB-1

2. 401 Water Quality Certification. If appropriate, an application for water quality certification for this project needs to be filed with this Regional Board. Before anyone can obtain a federal permit for any activity that may result in a discharge to a surface water of the United States, they must obtain certification from the appropriate state pursuant to Section 401 of the Clean Water Act. Section 401 provides the states with a mechanism to ensure that RWQCB-2

federally permitted activities meet state requirements to protect water quality. If the United States Army Corp of Engineers (USACE) has determined the project is outside federal jurisdiction and a 404 permit is not needed, provide a copy of the USACE jurisdictional disclaimer letter. Here is the website hyperlink - http://www.waterboards.ca.gov/coloradoriver/regulatory2/401Cert.html

RWQCB-2
CONT

If have any questions concerning this matter, please contact me at (760) 340-4521.

JOHN CARMONA
Senior Water Resources Control Engineer

JC/tab

cc: Theresa Illare, Jay Mirpour

File: ER IMP ED

3.2.2 - Local Agencies

California Regional Water Quality Control Board, September 12, 2006 (RWQCB)

Response to Comment RWQCB-1

Please see Response to Comment DTSC-12 regarding water quality.

Response to Comment RWQCB-2

Please see Response to Comment DTSC-12 regarding water quality.

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800
f (213) 236-1825

www.scag.ca.gov

Officers: President: Yvonne B. Burke, Los Angeles County • First Vice President: Gary Ovitt, San Bernardino County • Second Vice President: Richard Dixon, Lake Forest • Immediate Past President: Toni Young, Port Hueneme

Imperial County: Victor Carrillo, Imperial County • Jon Edney, El Centro

Los Angeles County: Yvonne B. Burke, Los Angeles County • Zev Yaroslavsky, Los Angeles County • Jim Aldinger, Manhattan Beach • Harry Baldwin, San Gabriel • Paul Bowlen, Cerritos • Todd Campbell, Burbank • Tony Cardenas, Los Angeles • Stan Carroll, La Habra Heights • Margaret Clark, Rosemead • Gene Daniels, Paramount • Mike Dispenza, Palmdale • Judy Dunlap, Inglewood • Rae Gabelich, Long Beach • David Gafin, Downey • Eric Garcetti, Los Angeles • Wendy Greuel, Los Angeles • Frank Gurulé, Cudahy • Janice Hahn, Los Angeles • Isadore Hall, Compton • Keith W. Hanks, Azusa • José Huizar, Los Angeles • Tom LaBonge, Los Angeles • Paula Lantz, Pomona • Paul Nowatka, Torrance • Pam O'Connor, Santa Monica • Alex Padilla, Los Angeles • Bernard Parks, Los Angeles • Jan Perry, Los Angeles • Ed Reyes, Los Angeles • Bill Rosendahl, Los Angeles • Greig Smith, Los Angeles • Tom Sykes, Walnut • Paul Talbot, Alhambra • Mike Ten, South Pasadena • Tonia Reyes Uranga, Long Beach • Antonio Villaraigosa, Los Angeles • Dennis Washburn, Calabasas • Jack Weiss, Los Angeles • Herb J. Wesson, Jr., Los Angeles • Dennis Zine, Los Angeles

Orange County: Chris Norby, Orange County • Christine Barnes, La Palma • John Beauman, Brea • Lou Bone, Tustin • Art Brown, Buena Park • Richard Chavez, Anaheim • Debbie Cook, Huntington Beach • Leslie Daigle, Newport Beach • Richard Dixon, Lake Forest • Paul Glaab, Laguna Niguel • Marilynn Poe, Los Alamitos

Riverside County: Jeff Stone, Riverside County • Thomas Buckley, Lake Elsinore • Bonnie Flickinger, Moreno Valley • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Ron Roberts, Temecula

San Bernardino County: Gary Ovitt, San Bernardino County • Lawrence Dale, Barstow • Paul Eaton, Montclair • Lee Ann Garcia, Grand Terrace • Tim Jasper, Town of Apple Valley • Larry McCallon, Highland • Deborah Robertson, Rialto • Alan Wapner, Ontario

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Orange County Transportation Authority: Lou Correa, County of Orange

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Keith Millhouse, Moorpark

559 05.09.06

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SEP 14 2006
PLANNING DEPT.
CITY OF EL CENTRO

September 12, 2006

Mr. Oliver Alvarado
Planning Director
City of El Centro Planning Department
1275 Main Street
El Centro, CA 92243

RE: SCAG Clearinghouse No. I 20060545 City of El Centro Zone Change 05-05 and Tentative Subdivision Map (Willow Bend)

Dear Mr. Alvarado:

Thank you for submitting the **City of El Centro Zone Change 05-05 and Tentative Subdivision Map (Willow Bend)** for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies. SCAG-1

We have reviewed the **City of El Centro Zone Change 05-05 and Tentative Subdivision Map (Willow Bend)**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time. SCAG-2

A description of the proposed Project was published in SCAG's **August 1-15, 2006** Intergovernmental Review Clearinghouse Report for public review and comment. SCAG-3

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1851. Thank you. SCAG-4

Sincerely,

Pauline Jones for

APRIL GRAYSON
Associate Regional Planner
Intergovernmental Review

Doc 125766

6.

Southern California Association of Governments, September 12, 2006 (SCAG)

Response to Comment SCAG-1

This comment is noted, and acknowledges SCAG's responsibilities as a regional planning organization.

Response to Comment SCAG-2

This comment is noted, and acknowledges SCAG's determination that the proposed project is not regionally significant. No specific comments on the Draft EIR were provided; therefore, no further response is necessary.

Response to Comment SCAG-3

This comment is noted, and acknowledges SCAG's publication of the proposed project's description in its 2006 Intergovernmental Review Clearinghouse Report (August 1-15, 2006).

Response to Comment SCAG-4

This comment regarding future correspondence is noted.

LOCAL Agency Formation Commission
IMPERIAL COUNTY
EXECUTIVE OFFICER - JURG HEUBERGER,CEP

CERTIFIED MAIL #7004 1350 0002 4587 3951

RECEIVED
AUG 24 2006
PLANNING DEPT.
CITY OF EL CENTRO

August 13, 2006

City of El Centro
1275 Main Street
El Centro, CA 92243

RE: Response to DERI 2005101128 (Willow Bend)

Mr. Alvarado:

The following comments are submitted on behalf of the Local Agency Formation Commission on the above referenced project. As always we appreciate the opportunity to review this project, particularly since as a Responsible Agency we will also be expected to utilize this document.

Our comments therefore are as follows:

1) We received the document on August 11, 2006 but no cover letter to indicate when the comment period ends! We would expect that other agencies and commenter's received some indication on the close of the comment period. LAFCO-1

2) Pg. 2-6: Section 5.1: (also section 5.1.3 on page 5.1-8) We recognize and understand that conversion of ag land has no direct mitigation, short of replacement land in another area, i.e. conversion of open desert land. We would however suggest that by requiring the developer to acquire other farm land and place it into a trust under the Williamson Act or by having the developer negotiate with an exiting farmer for Williamson Act inclusion would provide some future protection for ag land, not to mention added benefits both in funding for the Valley and in making farming for viable for the farmer. LAFCO-2

3) Pg. 2-8: Section 5.2: We will defer to the APCD to address all air mitigation requirements, however we would disagree that "no" air quality mitigation measures are feasible for the long term. We would recommend that the City review prior comments by the Air District on mitigation measures that are feasible. LAFCO-3

4) Pg. 2-13: Section 5.7: We do not see a proposed mitigation measure for traffic generated noise along south 4th St.? At the very least the LAFCO-4

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www.imperialcounty.net/lafco E-MAIL: jurgh@icoe.k12.ca.us

proposed wall indicated in the subsequent chapter should be listed as mitigation measures. LAFCO-4 CONT

5) Pg. 2-14: Section 5.8: We have on a number of EIR commented that "landfill capacity" is a long term issue, and we would gain reiterate that some measure of mitigation needs to be included in this EIR as the City cannot conclude that there is capacity forever? LAFCO-5

6) Pg. 2-15: Section 5.9: We do not concur that there are no project generated traffic impacts. We understand that there are cumulative "but for this project" there would be no intersections required on South 4th, so the project does have a project related impact. LAFCO-6

7) Pg. 2-14: Section 6: (Agriculture) we disagree with the conclusion, as stated above under comment #2. LAFCO-7

8) Pg. 2-16: Section 6: (Traffic) In a global response, a number of the mitigation measures indicate a change in levels of service from F to E or from D to E, and a percentage of fair share. While we understand that it should not be the burden of one developer to upgrade a system to the minimum of LOS C, we would expect that the fair share improvement costs be based on an improvement cost of bringing these intersections and road segments to acceptable LOS levels, i.e. "C". If that is not the case then the DEIR needs to explain how the City or Caltrans will ultimately bring these segments or intersections to LOS C! LAFCO-8

9) Pg. 2-16: Section 6: (Traffic) We see no fair share contributions to a variety of road segments or intersections that this project will impact. In fact the impact analysis seems rather focused in terms of distance from the project. We would request that the same level of analysis be performed as was performed on the Linda Vista project and similar mitigation measures be applied. In particular we would expect a fair share contribution by this project to the intersections of SR 86 and McCabe (signalization and turn lanes); Dogwood and McCabe (interchange design and construction); Clark Rd. and McCabe Rd. intersection (signalization and turn lanes), among others. We also question whether Wake Ave, Horne Rd. and project access road meet the spacing requirements for a full intersection along HWY 86? Lastly, the improvements required should be delineated in the conditions of approval and not left to the "Future" decisions of the City Engineer. We will therefore expect to see that determination before the project is submitted to LAFCO. LAFCO-9

10) Pg. 5.8-3: Section PSU 5.8-1: it is unclear what the mitigation measure is. TO enter into an agreement leaves open to the imagination a lot of options, including no agreement. What exactly is this project expected to mitigate and how? LAFCO-10

11) Pg. 5.8-6. Section PSU 5.8-2: Same question as under 10 above. LAFCO-11

12) Pg. 5.8-9: Section 5.8-9: School impacts do not appear to have been adequately addressed or mitigated. It will be necessary that prior to annexation these issues are resolved and an agreement between the School's and the developer presented to LAFCO. LAFCO-12

13) Pg. 5.8-12: Section 5.8-13: Is it not a negative under the difference in the parkland for baseline. In other words is not the City short 13.3 acres? LAFCO-13

14) Pg. 5.8-19: Below table 5.8-20 the paragraph references Table 5.8-20 but we believe this should be Table 5.8-17. We also must disagree that long term impacts are insignificant as the DEIR has not analyzed options should the Allied Site not be permitted past its current operational limits of 2010 or 2012, so what happens after that site is closed or at capacity? Also what happens if the County ceases to operate the Imperial site which may be a real possible? LAFCO-14

15) Pg. 5.9-1: Exhibit 5.9-1. If this is indeed the total project study area for traffic for this project then it is completely inadequate. The County as well as LAFCO have previously indicated that traffic must be reviewed on a regional basis. Therefore at the very least, an analysis of McCabe and Dogwood Rd. intersection must be addressed, as must McCabe and Clark Rd., SR 86 and Dogwood, and McCabe and Austin. In addition the road segments to these intersections must be addressed. LAFCO-15

16) Pg. 6-2 under Cumulative we have the following comments:
   a. Agriculture: Previously stated that there are impact mitigations that can be achieved.
   b. Air Quality, we will defer to the APCD.
   c. Traffic. Already noted that traffic analysis is incomplete and does not address regional impacts. LAFCO-16

17) Regional Medical Center: It is our understanding that EC policy requires that "health" services be addressed. We did not find a section dealing with the EC Hospital or Health Services in general. Is this not applicable to all Projects? LAFCO-17

Thank you for the opportunity to comment on this project. If you have any questions, please contact us.

Sincerely

Jurg Heuberger, CEP
Executive Officer to LAFCO

Cc: Ruben, Duran, City Manager
Terry Hagen, City Public Works
Bill Brunet, County Public Works
Steve Birdsall, APCO
Robertta Burns, County CEO
Joanne Yeager, LAFCO Counsel
Darrell Gardner, Assist. County Planning Dir.
California Highway Patrol
CALTRANS, B. Figge and M. Orso
Ralph Cordova, County Counsel
Files: 10.105, 10.124, 10.130, 10.133, 10.134, 10.175, 10.258, 50.000, 50.004, 50.008, 50.009, 50.010, 50.018

JH/ca.S:/LAFCO/El Centro/EC 1-05 Willowbend/response to Willowbend DEIR 08-11-06-Certified

3.2.3 - County Agencies

Imperial County Local Agency Formation Commission, August 13, 2006 (LAFCO)

Response to Comment LAFCO-1

In accordance with California Public Resources Code §21092, the City of El Centro posted the Notice of Availability of the DEIR in the Imperial Valley Press at the time of the commencement of the public review period for the DEIR. The posting included the start and end date for the 45-day review period for the DEIR.

Response to Comment LAFCO-2

Presently there is no formal program that has been implemented in the County of Imperial for the mitigation of the conversion of agricultural lands through the purchase and/or dedication of agricultural land offsite to be placed in a Williamson Act trust or the negotiation of a Williamson Act trust between a project applicant and a farmer not currently in a Williamson Act contract.. Therefore this is not considered feasible mitigation. The proposed project will result in a significant unavoidable impact in relation to the conversion of designated farmland and the City of El Centro will prepare a State of Overriding Considerations in relation to this impact.

Response to Comment LAFCO-3

The comment regarding air Quality mitigation measures is noted. Please see Response to Comment ICAPCD-1 through ICAPCD-8.

Response to Comment LAFCO-4

The proposed project will not result in any-project related long-term traffic related noise impacts. However, under the cumulative scenario, the project site will experience a traffic related noise impact without mitigation. The project will include the construction of a 6-foot high sound wall (see Mitigation measure N 6-1). This measure is included on page 2-15 (Executive Summary Table 2-1) and page 6-8 of the DEIR.

Response to Comment LAFCO-5

Allied Landfill has the capacity for the next 15 years. The proposed project is to be built out by the year 2008 and as such it is well within the near term capacity factored into the landfill volumes.

Response to Comment LAFCO-6

Katz Okitsu & Associates in conjunction with the City of El Centro determined the project site study area, which is considered to be conservative. As stated in the Traffic Impact Study, which is contained within Appendix I of the DEIR, the scope of the study area was based on a review of on-

going traffic studies and a working knowledge of the local transportation system. Regional guidelines (e.g. City of San Diego, SANTEC, SANDAG CMP etc.) require a study area to include any intersection that the project will add 50 or more peak hour peak direction trips. It was determined that the proposed project individually and cumulatively would not contribute traffic volumes along South 4th Avenue at a rate that was considered to have a potential impact. (i.e. 50 or more peak hour direction trips).

Response to Comment LAFCO-7

Please see Response to Comment LAFCO-2.

Response to Comment LAFCO-8

The mitigation measures described in the Traffic Impact Study improve all segments and intersections to a level of service (LOS) D or better, which is considered acceptable. Three of the ten improvements mitigate to LOS D, all other mitigation measures improve the level of service to LOS C or better. Other regional guidelines (e.g. City of San Diego, SANTEC, SANDAG CMP etc.) identify LOS D as an acceptable level of service, which is considered acceptable with the City of El Centro's roadway and intersection significance criteria.

Response to Comment LAFCO-9

The study area for the proposed project includes those locations that are expected to be affected by the project. As discussed in the Traffic Impact Study, included in Appendix I of the DEIR, the scope of the study area is based on a review of on-going traffic studies and a working knowledge of the local transportation system. Regional guidelines (e.g. City of San Diego, SANTEC, SANDAG CMP etc.) require a study area to include any intersection that the project will add 50 or more peak hour peak direction trips. For this traffic study we have analyzed eight intersections, three of which will experience less than 50 additional trips in the peak hour peak direction as a result of the proposed project. Therefore, the study area is conservative.

The existing signalized intersection spacing on SR-86 south of I-8 between Wake Avenue and Dannenberg Road is 1,500 feet. The signalized intersection spacing between Dannenberg Road and Horne Road would be 600 feet. This signal would improve safety for left-turning vehicles from Horne Road to SR-86. Please see Response to Comment CALTRANS-1.

Response to Comment LAFCO-10

The developer will be required to pay two fees: The Development Impact Fee (DIF), which is paid at the time building permits are pulled. The DIF funds are allocated to cover any additional capital

improvement costs brought up by the project. The second fee (which is paid prior to the recordation of the final map) is for police and fire services. These are fees collected for hiring additional fire and police personnel that may be required due to the impact of the project.

Response to Comment LAFCO-11

Please see Response to Comment LAFCO-10.

Response to Comment LAFCO-12

As stated on page 5.8-9 of the DEIR,

> In accordance with SB 50, the project proponent will be required to pay a school impact fee to each affected school district, to help fund new and expanded classroom and support facilities. Currently the McCabe Union Elementary School District and Central Union High School District impose fees of $2.57 and $2.01per square foot of residential development respectively; however, impact fees are determined by the findings of the annual School Facilities Needs Analyses prepared by each school district throughout the State. Therefore, homebuilders will be required to pay the school impact fee as published at the time of issuance of building permits. As cited in the Government Code Section 65995, the payment of this statutory fee, "is deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization.

Therefore, potential impacts on schools would be less than significant.

Response to Comment LAFCO-13

The comment is noted. In Table 5.8-13 on page 5.8-12 of the DEIR, the City currently has a deficit of 13.3 acres of parkland. As stated on page 5.8-12 of the DEIR, buildout of the City of El Centro General Plan would necessitate the provision of additional parkland to maintain the City's parkland standard of 3.0 acres per 1,000 persons. New development is conditioned to provide all the land and improvements required to achieve the parkland standard.

Response to Comment LAFCO-14

The comment is noted. Table 5.8-17 has been eliminated from the document. This correction is included in Section 4, Errata of this document. Please see Response to Comment LAFCO-5.

Response to Comment LAFCO-15

In the peak hour peak direction, the project is adding less than 5 trips to McCabe Road. This number of project trips is negligible and will not cause a significant impact. Austin Road will experience even less of an increase in traffic due to the project. Please see Responses to Comments LAFCO-6 and LAFCO-9.

Response to Comment LAFCO-16

The comment is noted. The proposed project will require a Statement of Overriding Consideration for the significant and unavoidable impacts to farmland.

The City of El Centro in conjunction with Katz Okitsu & Associates determined the intersections and roadway segments to be included within the study area based upon the project's traffic generation and distribution. As stated in the Traffic Impact Study (Appendix I of the DEIR), the scope of the study area is based on a review of on-going traffic studies and a working knowledge of the local transportation system.

Response to Comment LAFCO-17

The City of El Centro does not have a policy requiring the analysis of health services.

COUNTY OF IMPERIAL

PUBLIC HEALTH DEPARTMENT

DIVISION OF ENVIRONMENTAL HEALTH SERVICES
Courthouse • 939 Main Street – B7 • El Centro, CA 92243
Phone (760) 482-4203 • FAX (760) 352-1309

ROBIN HODGKIN, M.P.A.
Director

STEPHEN W. MUNDAY, M.D., M.S.
Health Officer

MARK JOHNSTON, R.E.H.S., Division Supervisor

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AUG 25 2006

PLANNING DEPT.
CITY OF EL CENTRO

August 21, 2006

Mr. Jurg Hueberger, Director
Imperial County Planning and Development Dept.
801 Main Street
El Centro, CA 92243

Subject: Draft Environmental Impact Report for City of El Centro Zone Change 05-05 and Tentative Subdivision Map (Willow Bend), SCH #2005101128

Dear Mr. Heuberger:

The Imperial County Public Health Department's Division of Environmental Health Services appreciates the opportunity to comment on the above subject document. Environmental Health Services has completed its review of the document and has the following comments:

Section 5.8.6 – Potable Water

- The DEIR states the City of El Centro uses an average of 244 million gallons per month, which equals to approximately 8 millions gallons per day (mgd). As part of the projects potential impact on the City's ability to provide potable water to its residents, the project does not appear to analyze the current demands on the City's existing 13.5 mgd capacity plant. Also, the project's assessment does not appear to account for the City's peak summer demand of 12.5 mgd. At a minimum, this project should assess its potential impacts in relation to the demands of already authorized future residential and commercial developments. ICPHD-1

Section 5.8.7 – Wastewater

- The DEIR states the City of El Centro generates an average of 4.25 million gallons per day (mgd) and has a design capacity of 8 mgd. The project does not appear to analyze the potential impacts associated with peak demands nor does it assess the projects potential impact in relation to the demands of already authorized future residential and commercial developments. ICPHD-2

Section 5.8.8 – Solid Waste

The DEIR identifies Allied Imperial Landfill as the City of El Centro's "primary" landfill for disposal. The DEIR does not discuss any vehicle trip limitations for the landfills. The Allied Imperial Landfill is permitted for a 174 vehicle trips per day, whereas, the Imperial and Calexico Solid Waste Site's are permitted for 50 and 75 vehicle trips per day, respective. ICPHD-3

Although, the DEIR identifies the Imperial and Calexico Solid Waste Sites as alternative landfills for handling the City of El Centro's generated solid waste, both facilities have significantly reduced ICPHD-4

permitted maximum daily tonnage and permitted vehicle trips. In order for either one of the County operated landfills (Imperial Solid Waste Site or Calexico Solid Waste Site) to meet the needs of the City's daily peak flow, one or both landfills will require permit revisions in order to meet the city's daily solid waste disposal needs. ICPHD-4 CONT

Secondly, the City of El Centro currently contracts with Allied Waste for the collection and disposal of City's residential and commercially generated solid waste. The DEIR leads the reviewer to believe the City could direct the disposal of their solid waste to one of or a combination of the three identified landfills. ICPHD

The DEIR should reflect the impacts the project would have in relation to approved future residential and commercial developments. In addition, the project should reflect the impacts on the City's existing solid waste collection and disposal operation with respect to remaining site life of the Allied Imperial Landfill. ICPHD-6

Storm Water Retention Basins

- Although the DEIR does not elaborate on the management of the proposed projects storm water retention basins, required routine maintenance of the basins is critical for minimizing and or eliminating the potential for mosquito breeding and the potential spread of the West Nile Virus. ICPHD-7

- The property owner should be required to assign qualified maintenance personnel for periodic inspection and cleaning out of the retention basins on a routine frequency or on a frequency as determined by the Imperial County Mosquito Abatement District. Basin maintenance should include, but is not limited to, the removal of woody vegetation, trash, debris, and any other foreign material from the basin and drainage system. The property owner is required to maintain an access road to and around the basin. The basin should only receive water from storm events. All other fugitive or "nuisance" water (landscape water, etc.) should be conveyed through a grease/oil separator to an Imperial Irrigation District drain, if consistent with IID requirements, this will require engineering of the drainage system to prevent routine discharges of nuisance water into the storm water basin and the resulting marshy conditions that breed mosquitoes. ICPHD-8

Furthermore, the storm water retention basin must be engineered to prevent standing water longer than 72 hours. In the event that this design is not possible, a mosquito abatement program shall be drafted for review and approval by the Imperial County Mosquito Abatement District. ICPHD-9

Lastly, section 5.6.1 of the Hazardous and Hazardous Materials section references the "California Department of Health Services – Toxic Substances Control Division (DTSC)". During the '90s major organizational changes took place within California's environmental regulatory programs. With the Governor's Reorganization Plan, the California Environmental Protection Agency (Cal/EPA) (July 17, 1991) was created. Under this order, the Toxic Substances Control Program under DHS became the new Department of Toxic Substance Control (DTSC). You may want to update your resources. ICPHD-10

Should you have questions, please do not hesitate to contact me at 760-482-4203.

Sincerely,

Jeff Lamoure, REHS III
Environmental Health Services

Cc: Oliver Alvarado, City of El Centro, Planning Department
G:\Solid Waste\Other Solid Waste\DEIR for Zone Change Willow Bend Project in EC 8-21-06.doc

County of Imperial Public Health Department, August 21, 2006 (ICPHD)

Response to Comment ICPHD-1

The water treatment plant's existing capacity is 13.5 mgd. The average daily demand is 8 mgd per day. On peak days, demand is approximately 12.5 mgd. The city is currently planning the expansion of the water treatment facility to twice its existing capacity within the next two years. As an interim solution to water treatment needs, the City has completed filter upgrades to the existing plant thereby increasing capacity to 17 mgd.

Response to Comment ICPHD-2

The wastewater treatment plant capacity is 8 million gallons per day (mgd) and the project demand capacity for the City for 2005 was 4.1 mgd. The City has no plans for constructing a second wastewater treatment plant or expanding the existing plant. Therefore, with the payment of the mandatory development impact fees, the proposed project would not result in significant impacts to sewer services.

Response to Comment ICPHD-3

While residents may dispose of their waste at any County landfill for a fee, it is noted that the primary landfill serving the site will be the privately operated Allied Landfill. Waste will be hauled from the project site by a private hauler contacted with the City. It is noted that currently the City contracts with Allied Waste to haul residential solid waste to the Allied Landfill. Allied Imperial Landfill is a 42-acre landfill that opened in January 2000 and has a closure date of 2012. An additional 160 acres have been purchased, 100 acres, which will be used as a landfill and 60-acres, which will be used as a buffer. This additional acreage has a 30-year capacity and will be able to accept 1,000 tons of solid waste per day l for a fee, the primary landfill serving the site is the Allied Landfill. This correction is included in Section 4, Errata, of this document.

Response to Comment ICPHD-4

Please see Response to Comment ICPHD-3.

Response to Comment ICPHD-5

Please see Response to Comment ICPHD-3.

Response to Comment ICPHD-6

Please see Response to Comment ICPHD-3.

Response to Comment ICPHD-7

The proposed project is required to be consistent with the California Health and Safety Code, which addresses mosquito abatement through appropriate design. All retention facilities and drainage improvements of the project will be installed in accordance with the City's Retention Basin Standards. The primary purpose of the Retention Basin Standards is to reduce the maximum flow rate and load on the stormwater drainage collection system, which is currently operated and maintained by the Imperial Irrigation District. The standards also incorporate pollution control and groundwater recharge concepts.

Response to Comment ICPHD-8

Please see Response to Comment ICPHD-7.

Response to Comment ICPHD-9

Please see Response to Comment ICPHD-7.

Response to Comment ICPHD-10

The comment is noted that the former California Department of Health Services – Toxic Substances Control Division (DTSC) is now the Department of Toxic Substances Control.

County of Imperial
Building Roads into the Next Century
PUBLIC WORKS DEPARTMENT

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PLANNING DEPT.
CITY OF EL CENTRO

September 6, 2006

Mr. Oliver Alvarado, Planning Director
City of El Centro Planning Department
1275 Main Street
El Centro, CA 92243

SUBJECT: Draft Environmental Impact Report for City of El Centro Zone Change 05-05 and Tentative Subdivision Map (Willow Bend)

Dear Mr. Alvarado:

This letter is in response to the above mentioned Draft EIR received August 11, 2006 and prepared by Michael Brandman Associates.

The project site is located in the County of Imperial, within the Sphere of Influence of the City of El Centro, California. The 38 acre project site is located east, south, and west of the City of El Centro jurisdictional boundaries, approximately 0.9 mile south of Interstate (I) 8 in Tract 83, of Township 16 South, Range 14 East, of the United states Geological Survey El Centro 7.5- minute topographic. Specifically, the proposed project site is situated north of McCabe Road, east of 8th Street, west of 4th Street (State Route (SR) 86)

The project includes the subdivision of 38 acres of farmland to provide for 131 single-family residential lots, 3.02-acre retention basin, and 1.67-acre park. Project site access is via SR-86 and two project access drives (Willow Bend Drive and Countryside Drive.)

The EIR was reviewed and this Department offers the following comments:

1. Section 5.9 page 2-14 (Transportation and Traffic) it currently states that with the implementation of the proposed project all intersections and road way segment will operate at an acceptable LOS. Table 5.9-11; Year 2008 roadway segment capacity reflect a LOS of D for roadway segment for Hwy.86 from McCabe Road to project access. (Please clarify). ICPWD-1

2. Although the project will ultimately lie within the City of El Centro, the County is concerned primarily with the additional traffic impacts and resulting burden to the surrounding County road network which provides regional and interregional movement of people goods and services. It is therefore requested that the Traffic Impact Study include the following segments and all included intersections. ICPWD-2

Road Segments

-McCabe Road from Dogwood Road to State Route 86.
-McCabe Road from Austin Road to La Brucherie Road.
-McCabe Road from Clark Road to State Route 86.
-McCabe Road from Clark Road to La Brucherie Road.

ICPWD-2 CONT

Road Intersections

-Dogwood Road and McCabe Road (North and South)
-La Brucherie Road and McCabe Road.
-Clark Road and McCabe Road.
-Austin Road and McCabe Road.

3. County Requires Level of service "C" in analysis and anything less than "C' is not acceptable in the County road segments and Intersections. Table 6-5 Intersection level of service for Near-term Conditions, States LOS of D for the following Intersection which are under County jurisdictions State Route 86 / Heber Road and State Route 86 / McCabe Road. The Fair share cost toward the signalization of both Intersections shall be approved by the Director of Public Works for Imperial County. ICPWD-3

4. Section 5.9 Transportation and Traffic; page 5.9-1; Under Regulatory Conditions it states there are no federal, state, or local regulatory standards that are applicable to approval of the proposed project. Our department believes that Caltrans must be contacted due to the project location and impact to Hwy 86 and Hwy.8. ICPWD-4

5. Section 5.9; Physical Conditions:

   a) McCabe Road is currently classified as a minor Arterial under the current (County Circulation Element of the General Plan) requiring 102 feet of right-of-way.
   b) Horne Road is currently classified as a local County road requiring 60 feet of right-of-way.

   ICPWD-5

6. Page 2-15 (Transportation and Traffic near term scenario Intersections) McCabe Road and Horne Road are currently under County jurisdiction. Although they intersect with SR-86, any proposed work impacting County right-of-way will involve securing an encroachment permit from Public Works Department. This includes any wet or dry utilities, signage, etc. ICPWD-6

7. Section 5.8.8; Solid Waste; Under *Landfills* it states that solid waste generated in the City of El Centro is disposed of at one of the three landfills in Imperial County. The three landfills include the Imperial Solid Waste Site and the Calexico Solid Waste Site which are operated by the County of Imperial Public Works Department.

   The statement mentioned above is inaccurate. Residents of the City of El Centro may be allowed to dispose any waste at County landfills; but are charged a disposal fee. The City of El Centro has a Solid Waste Disposal contract with a private hauler and utilizes a private landfill. There is no existing contract between City and County for disposal of city waste at County landfills. ICPWD-7

8. Page 6-16 Table 6-7 (Horizon year 2025 Roadway Segment Condition) State Route 86 should read : Between McCabe Road and project access (South of Horne Road) ICPWD-8

9. Section 5.9.1 Existing Conditions; Dogwood Road; Austin Road, La Brucherie Road, and Clark Road should be included in the analysis of the principal roadways in the existing project circulation system. ICPWD-9

10. Section 5.9.1 Existing Conditions, Under Level of Service Criteria. Even though this project will be under City of El Centro jurisdiction, there are some County's Road Segments and Intersections that will be greatly impacted. Therefore mentioned of Imperial County General Plan Circulation Element should be provided. ICPWD-10

11. Table for Horizon year 2025 for roadway Intersection where not included as part of Draft EIR. ICPWD-11

Thank you for the opportunity to review and comment on this Draft EIR.

Should you have any questions, please do not hesitate to contact myself at (760) 482-4462

Respectfully,

William S. Brunet, P.E.
Director of Public Works

By: Manuel Ortiz

Manuel Ortiz
Assistant County Engineer

LL/ga

County of Imperial Public Works Department, September 6, 2006 (ICPWD)

Response to Comment ICPWD-1

Level of service D is considered an acceptable level of service according to the significance standards of this analysis. These standards are consistent with other regional adopted guidelines (e.g. City of San Diego, SANTEC, SANDAG CMP etc.).

Response to Comment ICPWD-2

Please see Response to Comments LAFCO-6 and LAFCO-9.

Response to Comment ICPWD-3

The traffic study does not analyze the intersection of SR-86/Heber Road. The level of service after mitigation at SR-86/McCabe Road is LOS C. Therefore, there appears to be a discrepancy in the comment.

Response to Comment ICPWD-4

Mitigation measures contained within Section 6 of the DEIR are in accordance with the Memorandum of Understanding (MOU) between CALTRANS and the City of El Centro regarding State Route 86. CALTRANS reviewed and commented on the DEIR and the associated Traffic Impact Study. Please see Response to Comments CALTRANS-1 through CALTRANS-9.

Response to Comment ICPWD-5

The clarification is noted that McCabe Road is currently classified as a minor arterial requiring 102 feet of right-of-way and that Horne Road is currently classified as a local County road requiring 60 feet of right-of-way. These revisions are included in Section 4, Errata, of this document.

Response to Comment ICPWD-6

The comment is noted. The project applicant will obtain an encroachment permit from the County of Imperial Public Works Department for any improvements that occur within the right-of-way of McCabe Road and Horne Road.

Response to Comment ICPWD-7

The comment is noted that residents of the City of El Centro may dispose any waste at any County landfill for a disposal fee. The correction is included in Section 4, Errata, of this document.

Response to Comment ICPWD-8

The correction is noted and is included in Section 4, Errata of this document.

Response to Comment ICPWD-9

Please see Response to Comment LAFCO-9 regarding roadways within the study area.

Response to Comment ICPWD-10

Please see Response to Comment LAFCO-9.

Response to Comment ICPWD-11

The Table for Horizon Year 2025 Roadway Segment Conditions is included as Table 6-7 on page 6-16 of the DEIR and as Table 6-1 on page 33 of the Traffic Impact Study, which was included as Appendix I of the DEIR.

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES
PLANNING / BUILDING INSPECTION / ECONOMIC DEVELOPMENT / PLANNING COMMISSION / A.L.U.C.

JURG HEUBERGER, AICP,CEP,CBO
PLANNING & DEVELOPMENT SERVICES DIRECTOR

CERTIFIED MAIL 7003-2260-0003-7208-0259

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SEP 18 2006
PLANNING DEPT.
CITY OF EL CENTRO

September 12, 2006

City of El Centro
1275 Main Street
El Centro, CA 92243

Attention: **Oliver Alvarado, Planning Director**

Subject: **Response to City of El Centro "Draft Environmental Impact Report" Zone Change 05-05 and Tentative Subdivision for Willow Bend (EC1-05)**

Dear Oliver:

The Planning & Development Services Department has on August 11, 2006, received the City's Draft Environmental Impact Report (DEIR), SCH #2005101128 (dated August 9, 2006) for the above Zone Change and Tentative Subdivision Map for the Willow Bend project for review and comment. There was no City cover letter indicating what the deadline for submission of comments (typically a 45-day comment period) ending approximately on **September 20, 2006**.

Please find the following comments on the City's DEIR document:

(1) On page iv, Table of Contents, Listing of Appendices, the DEIR apparently does not have a Fiscal Impact Analysis (FIA) included within the document. Has a Fiscal Impact Analysis been prepared by the City for the Willow Bend project? If so, it should be made an attachment to the Final EIR for public review purposes. ICPDS 1

Are the ADT's generated by this project consistent with the Fiscal Impact Analysis? Without the benefit of having the FIA to review, a comprehensive comment on this document cannot be provided at this time.

(2) In the "Notice of Preparation" for the project, the project is defined as the subdivision and zone change for a 38-acre agricultural parcel into "...**120** single-family units..." However, within the DEIR, Section 2: Executive Summary, 2.1 – Proposed Project, page 2-1, it states that the project "...includes the subdivision of 38 acres of farmland to provide for **131** single-family residential lots..." This is also identified in numerous places throughout the DEIR. Also, within the Appendices, Appendix I, Traffic Impact Study, 1.0, The Project, Project Description, states "...The project consists of **131** single-family dwelling units..." ICPDS 2

Also, within the 5.2 – Air Quality, Section 5.2.2 – Project Impacts, page 5.2-11, it states "...The proposed project accommodates a maximum of **126** single-family residential dwelling units..." The Final EIR should clarify the correct number of single-family residences that are projected to be constructed for this project and explain any discrepancies. ICPD 3

(3) On page 5.6-3, the Date Drain is discussed and it is not clear whether or not this drainage ditch is within the development area. If so, how will this drainage ditch be handled, i.e. what will be the Imperial Irrigation District's role, and what financing mechanisms will cover any costs involved? The Date Drain No. 3 is described as bounding the subject property on the "north, northeast, and west". This should be corrected to read "north, northwest, and west" in the Final EIR. ICPD 4

(4) The County is preparing a 50-year traffic circulation plan (Circulation/Scenic Highways Element) for the entire County. The project site is located north of McCabe Road, east of 8th Street, and West of 4th Street with two access drives proposed, i.e. Willow Bend Drive and Countryside Drive. In the future conceptually, State Route 86 is being considered as a major north-south corridor as a four lane "expressway", approximately 134' to 158' in width with access points at 3/4 mile to 1 mile spacing, with highly restrictive access, no parking and raised/landscaped medians.

The proposed Zone Change and the Tentative Subdivision Map project must take into account the above criteria and the Final EIR should clarify the spacing for the two access driveways into the Willow Bend project site as it relates to access onto State Route 86. ICPD 5

Within Section 5.9, the traffic impact analysis appears to be narrowly addressing the specific project area and not on a "regional" basis. The City's consultant who prepared Appendix I, Traffic Impact Study, only references the "El Centro General Plan Circulation Element (2004)" and does not address the 50-year plan that the County, various cities and CALTRANS have been discussing for a coordinated effort at managing future traffic circulation patterns throughout the County. The Final EIR should address other County roads and intersections, e.g. McCabe and Dogwood Road, McCabe and Clark Road, State Route 86 and Dogwood, McCabe and Austin Roads as to their rights-of-way, roadway capacities and spacing onto State Route 86, to ensure that both County roads and City streets are adequately analyzed for this project.

(5) The Cumulative Impacts, Air Quality Section, page 6-5, under "Mitigation Measures", it states that "...the proposed project will incrementally contribute to a significant cumulative effect because the project emissions combined with emissions from all other projects in the Salton Sea Air Basin will form cumulatively considerable air quality impacts with regard to these pollutants..." ICPD 6

This section goes on to state "...See mitigation measures..." but does not indicate whether or not the City Council will prepare a "Statement of Overriding Consideration" for the air quality impacts of the Willow Bend project.

The Imperial County Air Pollution Control District should be contacted to determine the "cumulative" emissions from previously approved City projects and the Final EIR should clarify and ensure that all applicable air quality impacts have been appropriately mitigated. ICPDS 6 CONT

(6) Within Section 8, Other CEQA Considerations, 8.1 – Significant Unavoidable Impacts, page 8-1, it states that "...the conversion of agricultural land to urban uses would constitute a significant loss of Prime Farmland or Farmland of Statewide Importance. Potential impacts in this regard would be significant and unavoidable under CEQA. No feasible measures are available from the project applicant to reduce this potential impact to a level less than significant. However, the project site meets LAFCO criteria to be converted from agricultural use to urban use, and impacts would be less than significant in this regard..." ICPDS 7

The Final EIR should clarify how this statement of the conversion of agricultural lands and the meeting of LAFCO criteria would reduce this proposed conversion of agricultural land to a "less than significant" impact.

(7) Within Section 9, Organizations and Persons Contacted, 9.1 – Public Agencies, it identifies a number of agencies but does not include CALTRANS, State agencies, or any of the Imperial County Departments that would be affected by the Willow Bend Zone Change and Tentative Subdivision Map project. ICPDS 8

The Final EIR should **add** these agencies **or** explain why they were not contacted with regard to the Willow Bend project.

(8) Within Section 11: References, page 11-1, the various references that are identified do not include any County documents that are impacted by the converting of agricultural lands within the County, i.e. the "Agricultural Element", the "Urban" area classification within the County's General Plan, Land Use Element, and future cumulative traffic impacts associated with the project as they relate to the existing County "Circulation/Scenic Highways Element". ICPDS 9

There are a few "typos" found within the document, e.g. on page 6-17, within the footnote it states, "...Please note that TIS indicates that there is a 2025 Future Year Impact along SRj-86 between McCabe Road and the project access...", the "**SRj-86**" should read "**SR-86**"; and on page 10-1, Section 10: Report Preparation Personnel, 10.1 – EIR Preparation Personnel, Lead Agencies, Local Agency Formation Commission, "Jerg Heuberger, Executive Officer" should read "Jurg Heuberger". ICPDS 10

In Summary:

With the above concerns addressed in the Final EIR, we continue to look forward to working with the City of El Centro and other affected agencies on the proposed Willow Bend Zone Change, Tentative Subdivision Map, and annexation of the project site.

ICPDS 11

If you have any questions on the above, please contact me at (760) 482-4236, extension 4279, or via e-mail at darrellgardner@imperialcounty.net.

Sincerely,

Darrell Gardner, Assistant Director
Planning & Development Services

CC: Robertta Burns, County Executive Officer
Ralph Cordova, County Counsel
Jurg Heuberger, LAFCO Executive Officer
Joanne L. Yeager, Assistant County Counsel
Stephen L. Birdsall, Ag. Comm/APCD
William R. Brunet, Public Works Director
Bill Figge, CALTRANS, District 11
Terry Hagen, El Centro Public Works Director
Jim Minnick, County Planning Division Manager
WillowBend (EC1-05)
Files: 10.101, 10.105, 10.124, 10.130, 10.133, 10.134, 10.175, 10.258
50.000, 50.004, 50.008, 50.009, 50.010, 50.018

JH/DG/JM/RC/LF/ID/S:/LAFCO/El Centro/Willow Bend (EC1-05)/WillowBendDEIRResponseLetter

Imperial County Planning and Development Services, September 12, 2006 (ICPDS)

Response to Comment ICPDS-1

This comment is noted. Preparing a Fiscal Impact Analysis (FIA) is not required under CEQA, and therefore no FIA was prepared for the proposed project.

Response to Comment ICPDS-2

As noted, the proposed project will include the subdivision of 38 acres of farmland to provide for 131 single-family dwelling units.

Response to Comment ICPDS-3

Please see Response to Comment ICPDS-2 above. The Final EIR will consistently identify the number of proposed dwelling units as 131.

Response to Comment ICPDS-4

The comment is noted that the Date Drain is located north, northwest, and west side of the project site. This correction is included in Section 4, Errata, of the document. It is the policy of the Imperial Irrigation District that canals be undergrounded as part of development. The project applicant will be responsible with costs associated with the undergrounding of this portion of the canal. The undergrounding of the canal is required to be in compliance with the *IID Water Department Requirements and Project Process* (March 18, 2005), which addresses general irrigation and discharge issues and mitigation of impacts on IID's irrigation and drainage system. The document also details how a project is processed through the IID.

Response to Comment ICPDS-5

Please see Response to Comment LAFCO-9 regarding the traffic study area and the existing spacing of signalized intersections along SR-86.

Response to Comment ICPDS-6

The proposed project will require a Statement of Overriding Considerations for cumulative air quality impacts. The Imperial County Air Pollution Control District (ICAPCD) was contacted during the preparation of the DEIR. In addition, the ICAPCD had the opportunity to comment on the DEIR, please see Response to Comment ICAPCD-1 through ICAPCD-8.

Response to Comment ICPDS-7

The Imperial County Local Agency Formation Commission (LAFCO) has the authority to exercise its power to conserve and preserve agricultural land pursuant to the following standards:

1. LAFCO may approve a change in organization, which will result in the conversion of prime agricultural land in open space use to other uses, only if the Commission finds that the proposal will lead to the planned, orderly, and efficient development of an area. For purposes of this standard, a proposal lends to the planned, orderly, and efficient development of an area only if the Commission finds that all of the following criteria are met:

    a. The land subject to the change in organization is contiguous to either existing developed lands or lands that have received all General Plan, zoning and subdivision map, or use permit approvals for such development.

    b. The proposed development of the subject lands is consistent with the Sphere of Influence Plan, including the "Service Area Plan" of the affected agency or agencies.

    c. Development of all or a substantial portion of the subject land will occur within five years. In the case of very large developments, it may approve annexation if all or a substantial portion of the subject land is likely to develop within 10 years, and appropriate assurance is made to LAFCO.

    d. Insufficient vacant non-prime lands exist within the applicable Sphere of Influence plan, accessible and developable for the same general type of use.

2. LAFCO may approve a change in organization, which would result in the conversion of prime agricultural land in open space use to non-open space use(s), only if the Commission finds the proposal will have no significant adverse effect on the physical and economic integrity of other agricultural lands. In making this determination, LAFCO will consider the following factors:

    a. The agricultural significance of the subject and adjacent areas relative to other agricultural lands in the region.
    b. The use of the subject and the adjacent areas.
    c. Whether public facilities related to the proposal would be sized or situated so as to facilitate the conversion of adjacent or nearly agricultural lands, or will be extended through or adjacent to, any other agricultural lands, which lie between the project site and existing facilities.
    d. Whether natural or man-made barriers serve to buffer adjacent or near by agricultural land from the effects of the proposed development.
    e. Applicable provisions of the General Plan open space and land use elements, applicable growth-management policies, or other statutory provisions designed to protect agriculture.

3. The LAFCO will comment upon, whenever feasible, Notices of Preparation (NOP) for Environmental Impact Reports that propose the pre-emption of large tracts of open space and agricultural lands and that are not scheduled for urbanization within a five-year period. Potential adverse impacts related to the loss of open space or agricultural land also will be commented upon by LAFCO.

4. LAFCO will discourage the conversion, particularly the premature conversion, of agricultural lands to non-agricultural (i.e., urban) planned uses in or around areas that are not planned for urban uses by the County General Plan. LAFCO will also evaluate and discourage the conversion of "prime agricultural land" or land of "state wide significance" if the City or District has other lesser "quality" agricultural lands available that would be compatible

As stated on page 5.1-7 and 5.1-8 of the DEIR,

> Imperial County LAFCO regulates the conversion of agricultural land to urban uses by virtue of its authority to approve or deny annexations of unincorporated areas into incorporated cities. To determine if agricultural land is being prematurely converted to urban uses, LAFCO has specific threshold criteria it uses to evaluate individual annexation applications. That criteria is summarized in 5.1.2 Regulatory Framework. Below is discussion of the proposed project's consistency with LAFCO agricultural conversion criteria:
>
> The east side of the project site is immediately adjacent to the City of El Centro limits and urban uses within the city limits. This satisfies LAFCO requirements for contiguousness with existing or planned urban development.
>
> The project site is within a Tier II Growth Area, as defined by the City of El Centro General Plan. There are three Tiers, I, II, and III, and their designation reflects the availability of infrastructure to support urban development. Tier I is the "Current Service Area;" Tier II is the "Planned Urban Service Area;" and Tier III is the "Future Urban Service Area." As the project site is in Tier II, it contains land adjacent to the city limits, but contains limited infrastructure. Note that the General Plan states that the Tier Growth Areas numbering system reflects the infrastructure necessary to serve planned development and is not intended to be a sequence of future development. Regardless, the proposed project is consistent with the Urban Service Plan of the City of El Centro.
>
> Finally, the project site is expected to be developed within the next five years because insufficient available land of similar acreage to the project site exists within the El Centro city limits. The absence of developable land of this size within the limits of the City of El Centro and the demand for new housing creates the reasonable expectation that the project site will

be converted to urban uses within the next five years. This condition satisfies the last two LAFCO requirements.

In summary, the project site meets LAFCO criteria to be converted from agricultural use to urban use. Impacts would be less than significant in this regard.

However, as outlined in Appendix G of the CEQA Guidelines, a project will have a significant unavoidable impact if it results in the conversion of prime farmland. Therefore, the proposed project will have a significant and unavoidable impact in this regard and will require the City of El Centro to adopt a Statement of Overriding Considerations in relation to the conversion of prime farmland to urban uses.

Response to Comment ICPDS-8

Section 9 of the DEIR includes all Organizations and Personnel contacted by MBA as part of the preparation of the DEIR. CALTRANS as with any other public agency had the opportunity to comment on the Initial Study/Notice of Preparation and the DEIR (see Response to Comments CALTRANS-1 through CALTRANS-9). Public Agencies, such as CALTRANS or the Imperial County Air Pollution Control District (see ICAPCD-1 through ICAPCD-8) may have been contacted as part of the preparation of the various technical reports prepared for the proposed project and as such would be included in the reference sections of those documents, which are included as appendices to the DEIR.

Response to Comment ICPDS-9

The proposed project is within the sphere-of-influence of the City of El Centro and is proposed to be annexed into the City of El Centro. As such, the City of El Centro's General Plan is the appropriate planning document in regards to plan consistency.

Response to Comment ICPDS-10

The comment regarding the County working with El Centro is noted in regard to the typos.

Response to Comment ICPDS-11

The comment is noted.

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (760) 482-4606
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AIR POLLUTION CONTROL DISTRICT

September 18, 2006

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CITY MANAGER
2006 9 20 11:36
CITY OF EL CENTRO

Mr. Oliver M. Alvarado, AICP
Director of Planning & Housing
City of El Centro
1275 Main Street
El Centro, CA 92243-2816

SUBJECT: Draft Environmental Impact Report; Zone Change 05-05; Tentative Subdivision Map for Willow Bend

Dear Mr. Alvarado:

The Draft Environmental Impact Report (EIR), Zone Change 05-05 and Tentative Subdivision Map for the Willow Bend project has been reviewed. Thank you for giving the Imperial County Air Pollution Control District (Air District) an opportunity to review this project. The project review includes 38 acres of farmland that will be converted into 131 single-family residential lots with a 3.02 acre retention basin and a 1.67 acre park. The Air Quality section of the Draft EIR addressed the short-term, long-term and consistency with the Air Quality Management Plan (AQMP). The Air District has strived to address the parameter analysis and possibly some misnomers or inconsistencies within the report as concisely as possible. The intentions and direction of the draft EIR are immediately evident upon reading section 2.3 – Significant Unavoidable Adverse Environmental Effects on page 2-2. "With the implementation of the mitigation measures proposed, no significant unavoidable project-related or cumulative impacts will occur, with the exception of impacts to agricultural resources and air quality...." The summary of the analysis further explains that both construction and operational impacts will be reduced to less than significant however meeting the consistency of the AQMP will exceed the AQMP projections and cause the proposed project to "result in a higher density, and more vehicle trips and vehicle miles traveled than what was anticipated in the Attainment Plan and PM-10 Plan." Finally, the draft EIR makes the correlation that "Because the project will result in more people and more traffic than what was considered in the plan, the project is not consistent with the Attainment Plan and PM-10 Plan, and therefore would create a significant impact in this regard. No mitigation is available to reduce this significant impact to less than significant." To this the Air District disagrees. To mitigate the increase in emissions due to local growth the CEQA Air Quality Handbook provides standard and discretionary site design & energy efficiency measures which may be applied and for the PM10 issue the application of Best Available Control Measures under the requirements of Regulation VIII are necessary.

ICAPCD-1

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

6

Table 2-1: Summary of Project Impacts and Mitigation Measures

While the summary indicates that with mitigation measures found in the CEQA Air Quality Handbook for Imperial County the impact will be reduced to "Less than significant" please be mindful that Regulation VIII is mandatory and directly tied to the reduction of PM_{10} levels in Imperial County. The Air District would like to see those mitigation measures found within Regulation VIII listed with language indicating commitment to the implementation of those same measures. ICAPCD-2

Section 5.2 – Air Quality

The Air District would like to see not only a complete description of the pollutants which comprise the "Ambient Air Quality Standards" but in addition, there adverse affects and the target groups which are affected. As a side note, California Ambient Air Quality Standards are not only different they are stricter than federal standards thus conformity to California standards assures conformity to federal standards. ICAPCD-3

Similarly, the number of state violations for ozone for the year 2005 was 8 not 4 and under the federal 8 hr standard there has been no noticeable improvement. ICAPCD-4

As clarification, please note that CEQA section 15382 which was quoted under "Thresholds of Significance," does not only call to question the "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected...." But it clearly calls for the "potentially substantial, adverse change...." Thus, the impact of a project should be examined through the characterization of "substantial or potentially substantial adverse change in any of the physical conditions within the area affected..." ICAPCD-5

Table 5.2-3: Short-term Construction Emissions

The draft EIR indicates that with mitigation the short-term effects during the construction phase will be reduced to less than significant. Again, the Air District would like to see a very definitive tie between the CEQA mitigation measures and those of Regulation VIII, including language demonstrating commitment to these mitigation measures. Please note that the table demonstrates higher than average levels of ROG and NOx during the construction phase and thus must be mitigated. ICAPCD-6

While the long-term emissions of the project are considered as less than significant without mitigation as a stand alone project it cannot be equally applied to the cumulative portion of the project. The potential of this project to add to the overall increase in emissions within the air basin is real and cannot be dismissed with a statement that there is no "mitigation" available. What the Air District would like see is the application of proactive solutions in design and energy efficiency. ICAPCD-7

In closing, the Air District feels that the final analysis finding that project inconsistent with the AQMP and having a cumulative impact on air quality deserves the attention to those measures mentioned above. Should you have any questions regarding this letter, please contact Reyes Romero, Monica Soucier or myself at (760) 482 4606. ICAPCD-8

Sincerely,

For:

Brad Poiriez
Air Pollution Control Officer

cc: Jurg Heuberger, Executive Officer, LAFCO
Joanne Yeager, LAFCO Counsel
Darrell Gardner, Asst. Planning and Development Director
Frank Fiorenza, Acting Public Works Director

Imperial County Air Pollution Control District, September 18, 2006 (ICAPCD)

Response to Comment ICAPCD-1

Because the proposed project was determined to exceed the population projections and vehicle trips contemplated for the project area in the Attainment Plan and the PM-10 Plan, the analysis of air quality impacts focused on ways to reduce vehicle trips and vehicle miles traveled. However, in reviewing the project area it was determined that logical pedestrian and bicycle paths where not feasible because of the distance to existing and proposed commercial areas, schools, parks and other logical destinations. Further exacerbating the problem is the fact that if the project included pedestrian and bicycle paths that they would not connect to any existing or proposed network of paths in the project area. For these reasons, mitigation to reduce vehicle trips was deemed infeasible.

Response to Comment ICAPCD-2

All standard and discretionary mitigation measures listed in Section 7.1 of the CEQA Air Quality Handbook for Imperial County are included in the project and listed in Section 5.2.3 of the Draft EIR. Mitigation Measure Air Quality 5.2-8, requires the applicant to provide a site specific Fugitive Dust Control Plan and include all best management practices including watering all disturbed soils a minimum of 2 times per day, covering all haul vehicles, replanting inactive disturbed areas, restricting vehicle speeds to 15 mph on unpaved roadways. Implementation of this plan would fulfill all the requirements found in Regulation VIII.

Response to Comment ICAPCD-3

Section 5.2.1 of the Draft EIR describes in detail each of the criteria air pollutants, the adverse health effects associated with each pollutant, the State and Federal Ambient Air Quality Standards for each pollutant (Table 5.2.1 of the Draft EIR), the attainment status of the State and Federal Ambient Air Quality Standards for the project area (Table 5.2.2 of the Draft EIR) for each of these pollutants, and the highest documented concentration of the criteria pollutants in the project area (Table 5.2.2 of the Draft EIR).

Response to Comment ICAPCD-4

At the time of the air quality evaluation for the project (March 2006), the California Air Resources Board (CARB) website had preliminary information concerning the number of days the project area was in violation of the State's 1-hour Ozone Standard. At that time the CARB website showed 4 violations. Since that time this information has been updated and now shows 8 days that the project area was in violation of the State's 1-hour Ozone Standard. The Final EIR will correct the information in Table 5.2.2 to show 8 days in violation of the State's 1-hour Ozone Standard.

Response to Comment ICAPCD-5

The comment is noted. CEQA Guideline Section 15382 states,

> Significant effect on the environment means a substantial , or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to physical change may be considered in determining whether a physical change is significant.

Response to Comment ICAPCD-6

Mitigation Measures Air Quality 8 meets and exceeds all the requirements in Regulation VIII. Mitigation Measures Air Quality 1 through Air Quality 8, implements and exceeds all the standard and discretionary mitigation measures described in Section 7.1 of the CEQA Air Quality Handbook for Imperial County. Mitigation Measures Air Quality 1 through Air Quality 7 focuses on a reduction of exhaust emissions including NOx. Mitigation Measure Air Quality 9 substantially reduces emissions of ROCs during paint applications.

Response to Comment ICAPCD-7

See Response to Comment ICAPCD 1

Response to Comment ICAPCD-8

We concur with the District that the project's inconstancy with the AQMP and cumulative impacts to air quality deserve attention. However, as described in Response to Comment ICAPCD 1, there is not feasible mitigation that would reduce these impacts to less than significant.

BOARD OF TRUSTEES

Lee Hindman
Jacinto Jimenez
Efrain Silva
Jeanne Vogel
Steve Walker

CUHSD

Central Union High School District

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Superintendent
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Principal
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Desert Oasis High School

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Principal
Danette Morrell

August 18, 2006

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PLANNING DEPT.
CITY OF EL CENTRO

Oliver Alvarado, Planning Director
Planning Department
City of El Centro
1275 Main Street
EL Centro, CA 92243

Re: Change of Zone 05-05 and Tentative Subdivision Map(Willow Bend)

Dear Sirs,

Thank you for the opportunity to respond to the Change of Zone 05-05 and Tentative Subdivision Map. The project is located within the Central Union High School District. It proposes to create 131 new housing units. Based upon the District's student yield rate factor of (.358) 9-12 students per single-family home, it is anticipated that this project will generate (47) Forty-seven 9-12 students. CUHSD-1

This project is currently located within the attendance boundary of Central Union High School. This school's current enrollment is 1,740 and is anticipated to significantly increase within the next five years. The Central Union High School District is currently experiencing rapid residential growth, which will impact the District's existing schools. The District may be forced to change attendance boundaries due to potential overcrowding, which may affect this project. CUHSD-2

Senate Bill 50 does not adequately fund the development of school facilities with rising land values and construction costs. The short fall is significant to the development of adequate facilities to house additional students from the Willow Bend development. If this short fall is not met it is doubtful, Central Union High School District will be able to adequately house the additional student generated from this project. CUHSD-3

The District currently collects $2.01 per square foot in developer fees. This fee does not adequately mitigate impacts related to students generated from new housing units. Further mitigation may be requested by the District on a project-by-project basis in order to adequately house students generated by this project and other new projects within the District. CUHSD-4

We would like to meet with you and discuss how you can assist Central Union High School District in mitigation associated with your proposed development. Please do not hesitate to contact me at any time. CUHSD-5

Sincerely,

Orlando S. Johnson
Director of Business & Support Services

Kara E. Palm, Project Manager
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

3.2.4 - Local Agencies

Central Union High School District, August 18, 2006 (CUHSD)

Response to Comment CUHSD-1

The comment is noted, and confirms the data analyzed in the DEIR is correct.

Response to Comment CUHSD-2

The comment is noted that the district may be required to change its attendance boundaries

Response to Comment CUHSD-3

Please see Response to Comment LAFCO-12.

Response to Comment CUHSD-4

Please see Response to Comment LAFCO-12.

Response to Comment CUHSD-5

The comment is noted that CUHSD is willing to meet with the City to discuss the proposed project.

McCABE UNION SCHOOL DISTRICT

701 WEST McCABE ROAD • EL CENTRO, CALIFORNIA 92243
TELEPHONE (760) 352-5443 • FAX (760) 352-6812

AMANDA BROOKE
Superintendent

ARLYN ATADERO
Principal/Projects Director

BOARD OF TRUSTEES

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Mark Larson, Member

September 5, 2006

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SEP 06 2006
PLANNING DEPT.
CITY OF EL CENTRO

Mr. Oliver Alvarado
Planning Director
City of El Centro
1275 Main Street
El Centro, CA 92243

Subject: Comments on the Draft Environmental Impact Report for the City of El Centro Zone Change and Tentative Subdivision Map (Willow Bend)

Thank you for the opportunity to provide comments and recommendations regarding the proposed tentative map for the above referenced project.

An analysis of the project indicates that the project involves the development of a 38-acre site into 131 single-family homes. Based on the McCabe Union Elementary School District's State approved yield rate of .83 students per dwelling unit, it appears that this development has the potential to yield 109 students as reflected in the table on page 5.8-8. Using our State approved School Facilities Needs Analysis, we estimate that each unit will be approximately 2,250 square feet. Based on this estimate, it is anticipated that the development will yield $ 775,192 in developer fees. *With this amount added to State funding, the District is left with a gap of $576,693 – See attached worksheet.* MUSD-1

Additionally, there are improvements that must be made on McCabe Road and Austin Road. The current street frontages have no curbs, gutters, sidewalks, or turn lanes for access to the McCabe School site. The two streets, McCabe Road and Austin Road, are old narrow two-lane roads with a large irrigation canal immediately adjacent to Austin Road. The existing conditions create a safety hazard for students and parents accessing the McCabe School site. We have enclosed, for your review, a series of photographs illustrating the existing conditions. MUSD-2

The McCabe Union Elementary School District has no local or State funding to provide for the construction of the necessary road improvements and, therefore, is requesting that the developer assume a fair share portion of this project. The Draft EIR states that the traffic counts were completed in October 2005 (pg. 5.9-6). Since that time, McCabe School has enrolled an additional 350 students. Moreover, in October 2005 the traffic characteristics for West McCabe Road was rated at a Level of Service (LOS) C. Therefore, it is imperative to reiterate that the study is one year old and the student population has increased by 350 students. MUSD-3

The Draft EIR also states that the students generated by this development will attend a school placed in the Miller Burson Development. At this time, a school in the Miller Burson Development is still at the primitive planning stage. MUSD-4

I thank you in advance for your prompt attention to this letter. If you should have any questions, please do not hesitate to call me at 352-5443. We look forward to working with the City of El Centro and the project applicant regarding the proposed project. MUSD-5

Sincerely,

Amanda L. Brooke

Amanda Brooke
Superintendent

Cc: Ruben Duran, City Manager
Jurg Hueburger, LAFCO
Rita Noden, City Clerk
Armando Villa, DR Horton

Willow Bend
New School Construction
McCabe Union School District

9/5/2006

Item	Calculation	K-6 Amount	7-8 Amount	Total Cost/SFU
Cost Per Student	600 ADA K-6 School on 12 Acres ($13,000,000)	$21,667.00		
	900 ADA 7-8 School on 20 Acres ($24,500,000)		$27,222.00	
Student Yield Factor	(.74 K-6 students per SFU; .09 7-8students per SFU)	$16,033.58	$2,449.98	$18,483.56
	No. of Single Family Units			131
	Total Cost			**$2,421,346.36**
State Grant Amounts	Per Pupil Grants	$7,082.00	$7,490.00	
	Fire Detection	$9.00	$13.00	
	Fire Sprinkler	$135.00	$161.00	
	Site Acquisition*	$500.00	$556.00	
	Site Development**	$1,565.00	$1,777.00	
	Sub Total State Grants	$9,291.00	$9,997.00	
	Plus 5% Geographical Hardship***	$464.55	$499.85	
	Total State Grants	**$9,755.55**	**$10,496.85**	
	K-6($9,755.55x.74), 7-8($10,496.85x.09)	$7,219.11	$944.72	$8,163.82
	No. of Single Family Units			131
	Total State Funding			**$1,069,460.88**
Developer Fees	$2.63 a sq ft X 2,250 sq ft X 131 Homes			**$775,192.50**
	Total Funding			**$1,844,653.38**

Cost Gap/ For entire development	**$576,692.98**
Cost Gap/ Per SFU	**$4,402.24**

***Site Acquisition per SFNA**

$25,000 per acre @ 12 acres per K-6 site = $300,000 divided by 600 students = $500 per student
$25,000 per acre@ 20 acres per 7-8 site = $500,000 divided by 900 students = $556 per student

****Site Development per SFNA**

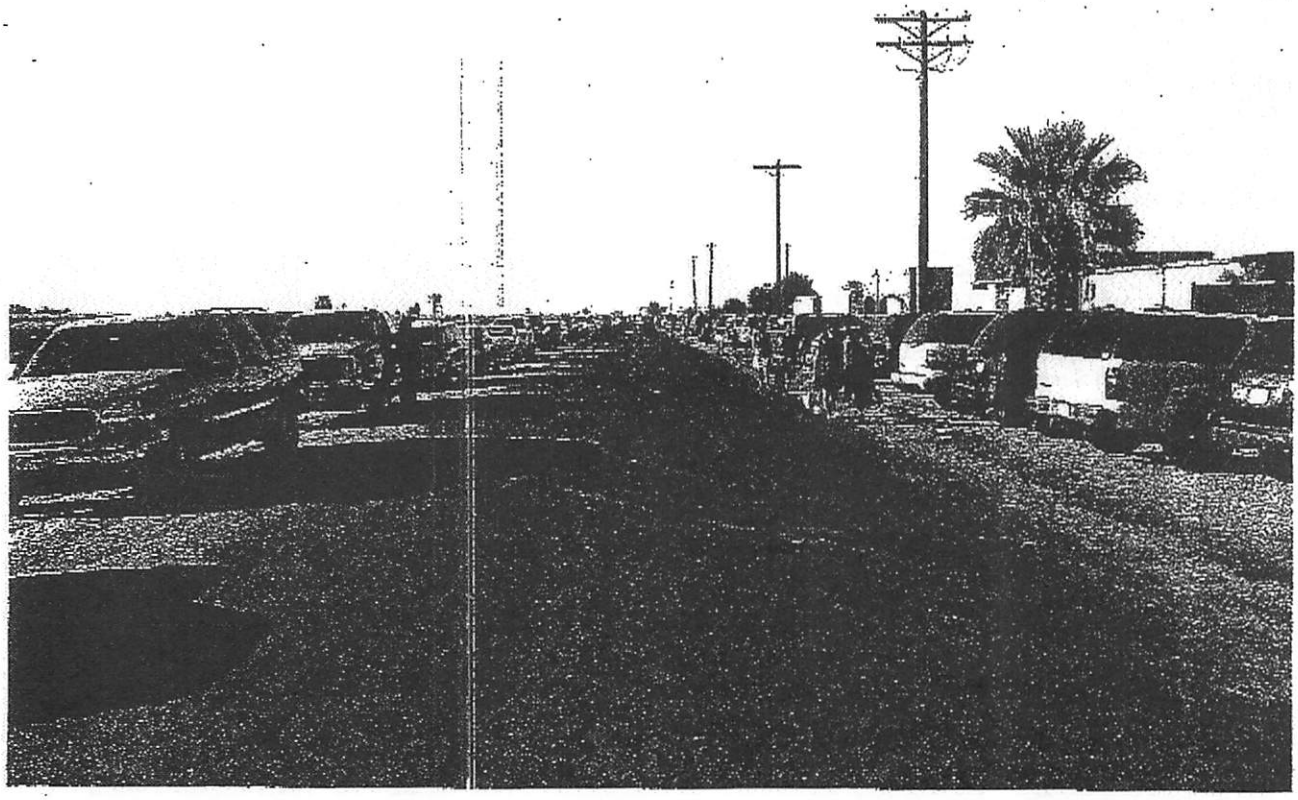
State grants for site improvements- off-site, service site, and utilities, based on 50% of site development costs

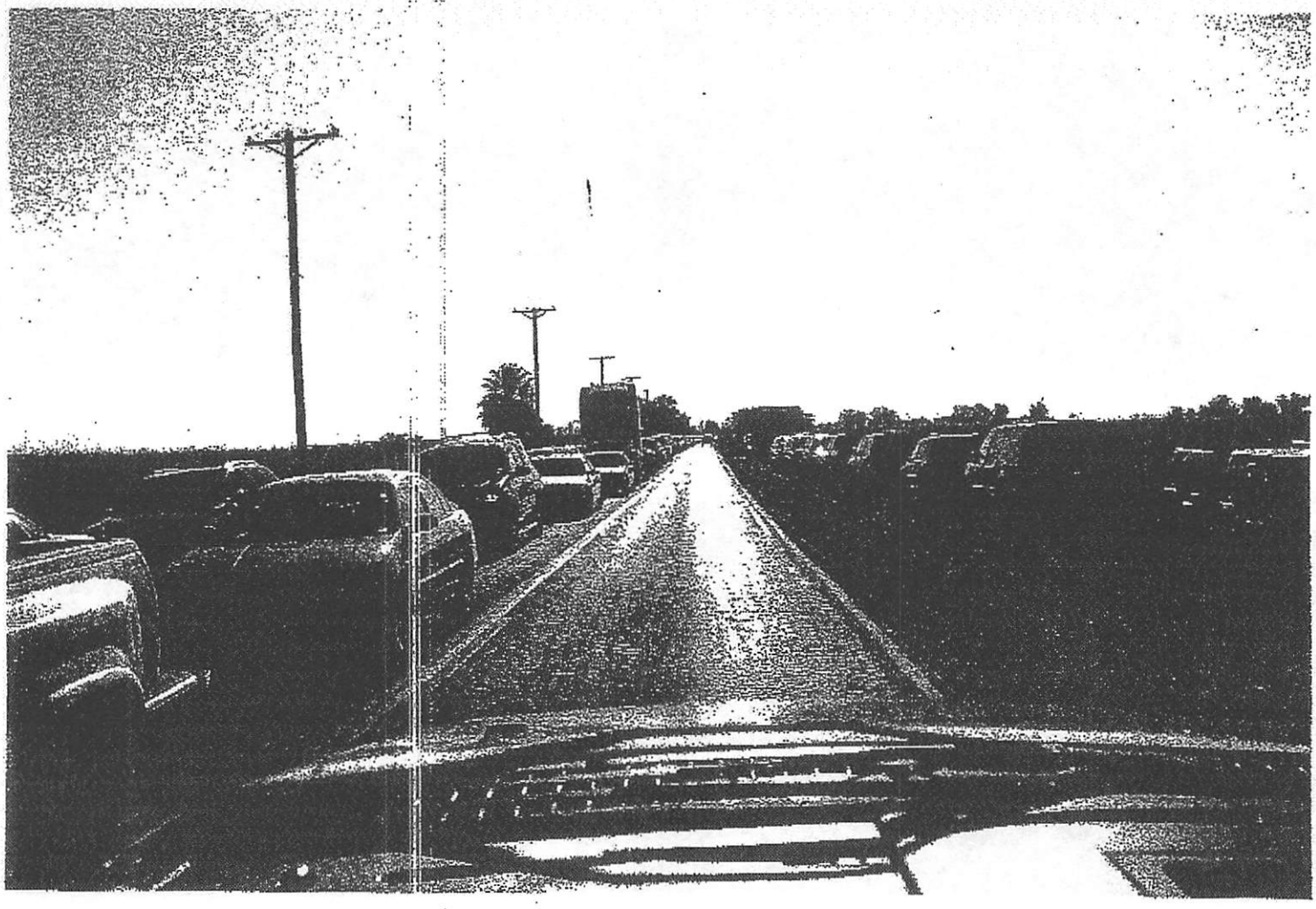
*****Geographic Hardship Grant**

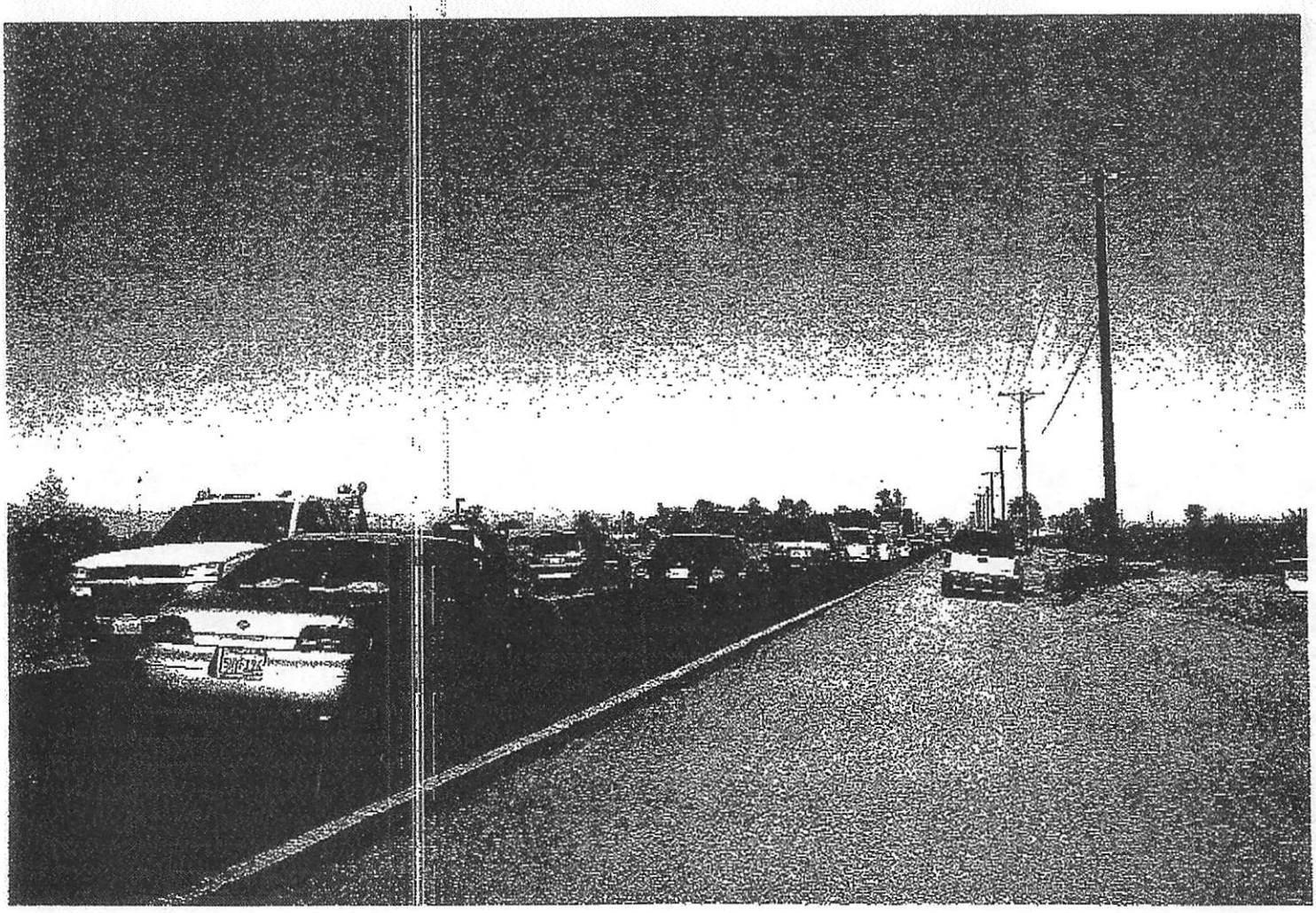
OPSC supplements grants by 5% for Imperial County school sites

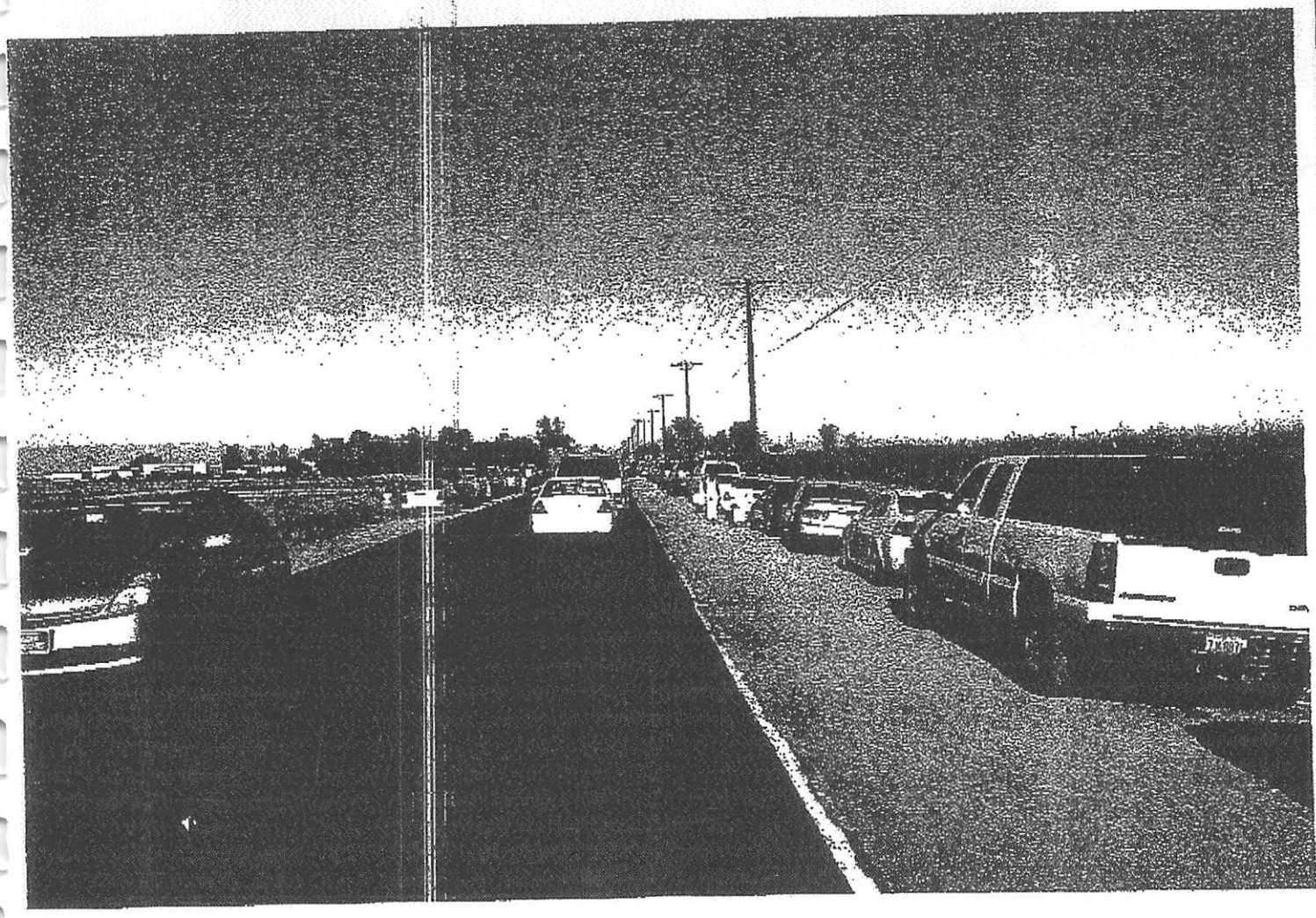
******Yield Factor, .83**

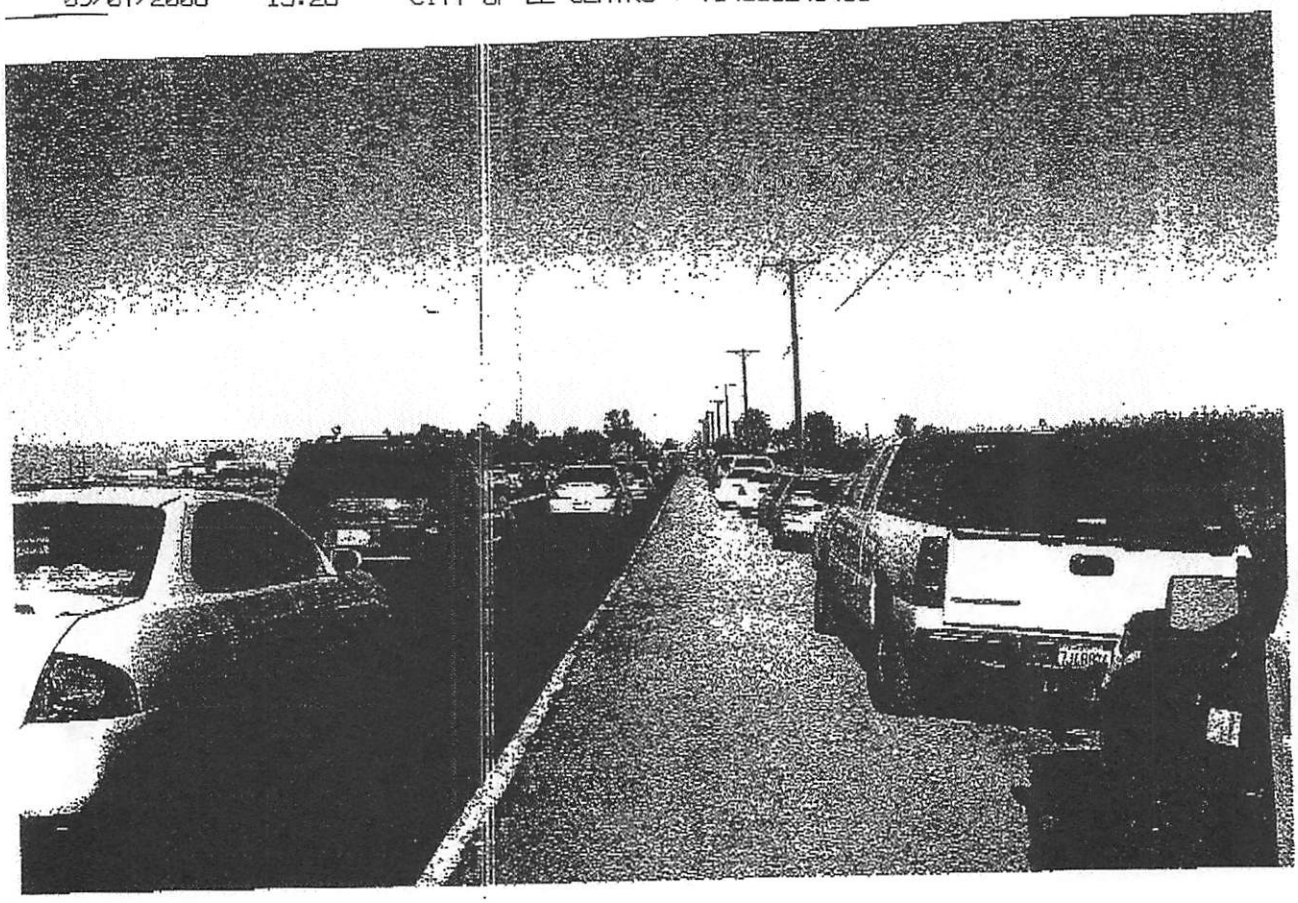
131 Single Family Homes generates 109 new students.

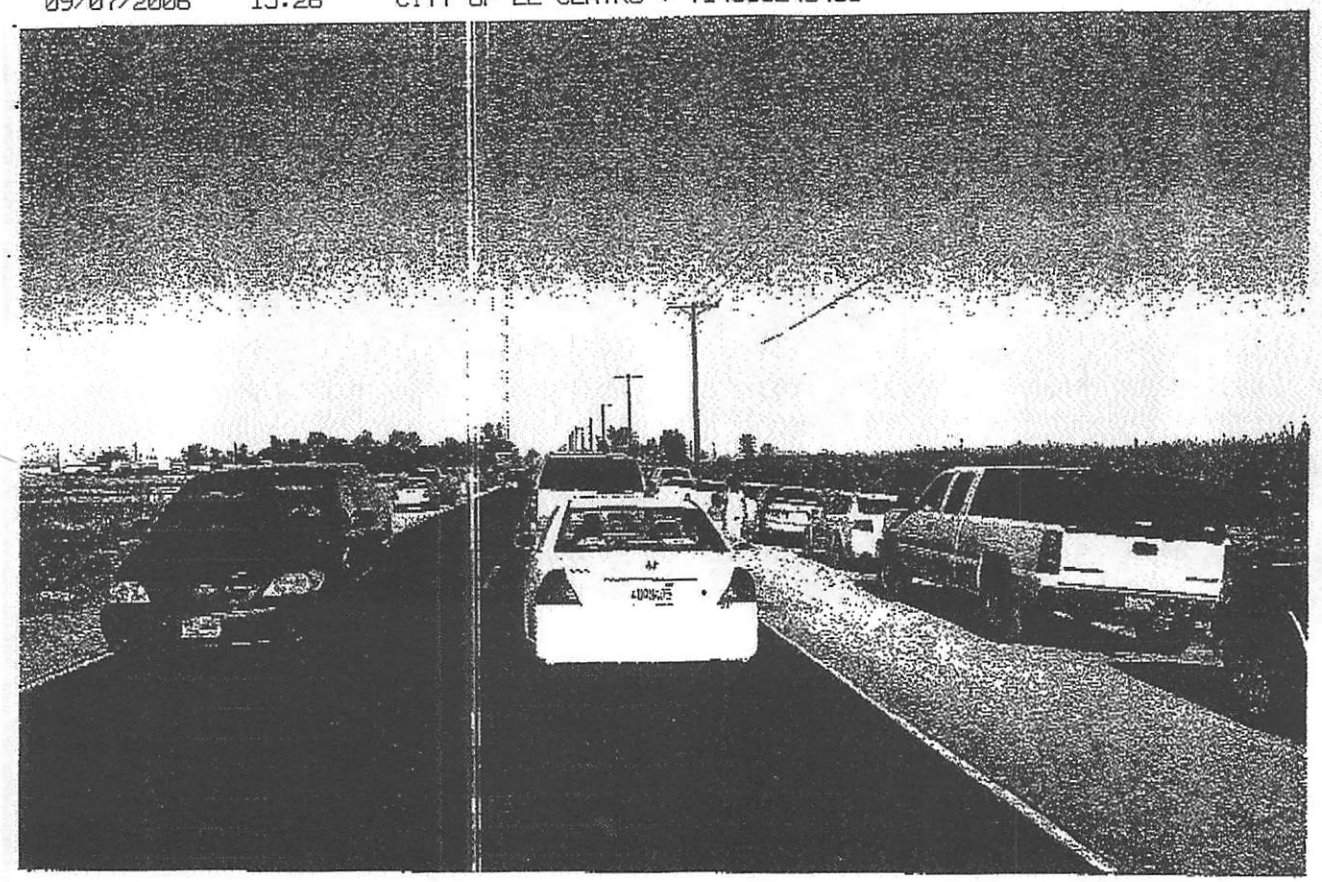


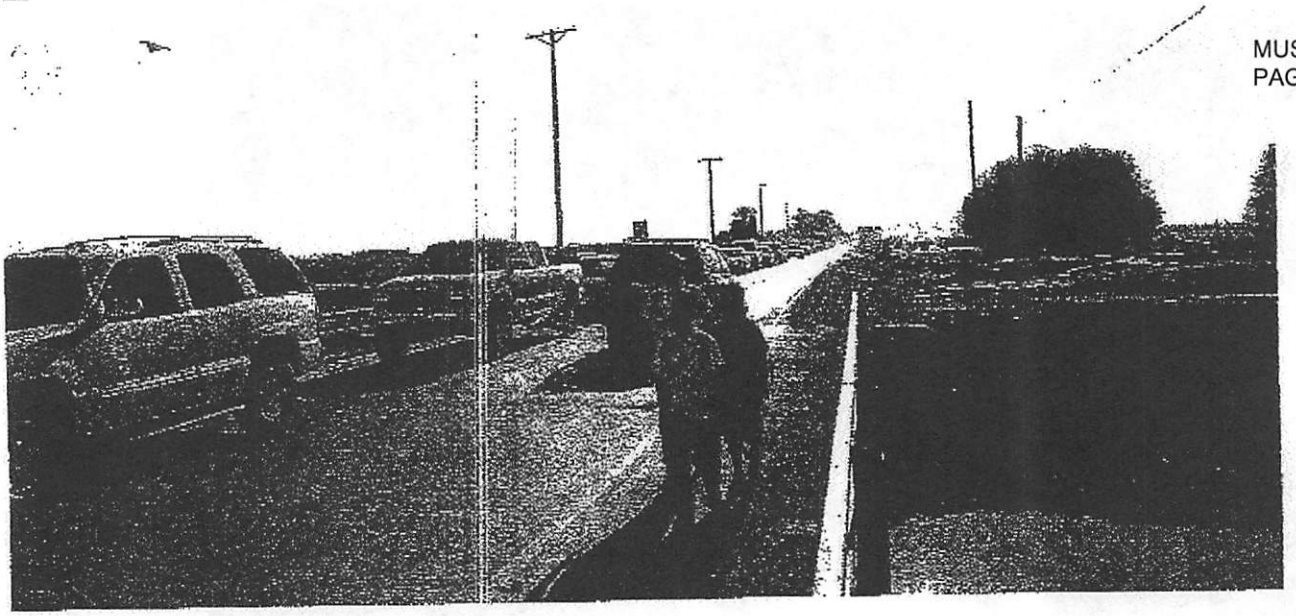






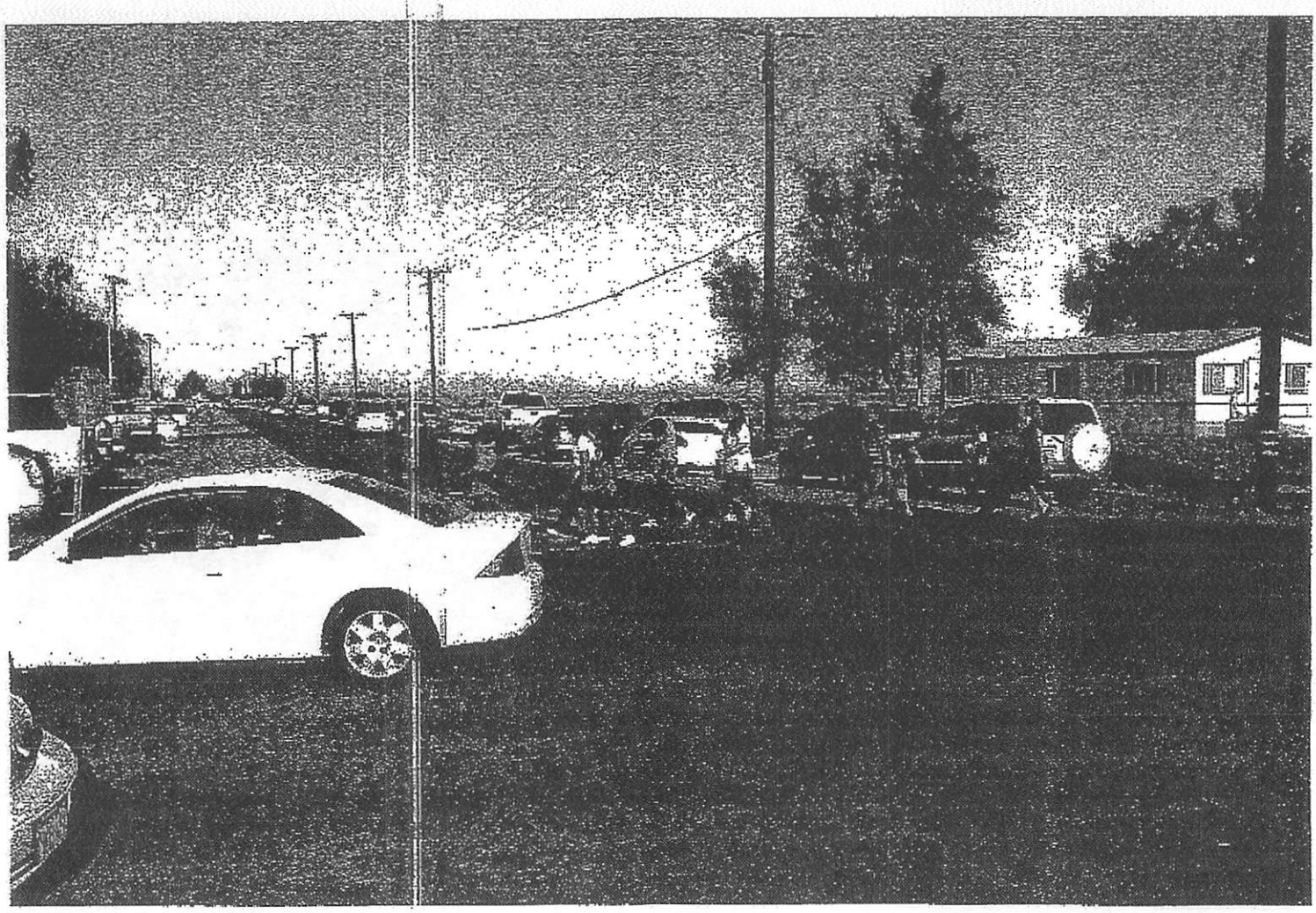


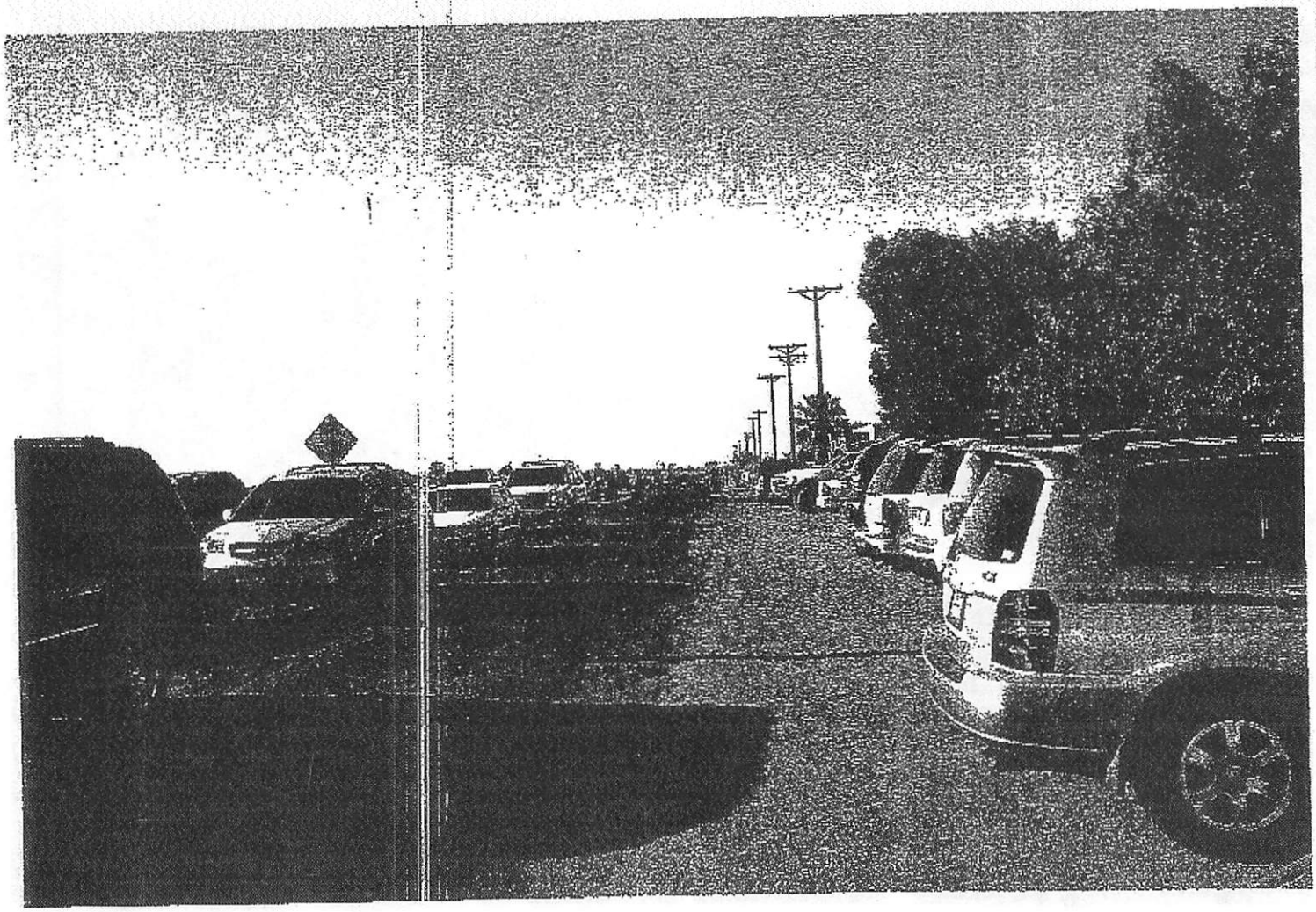


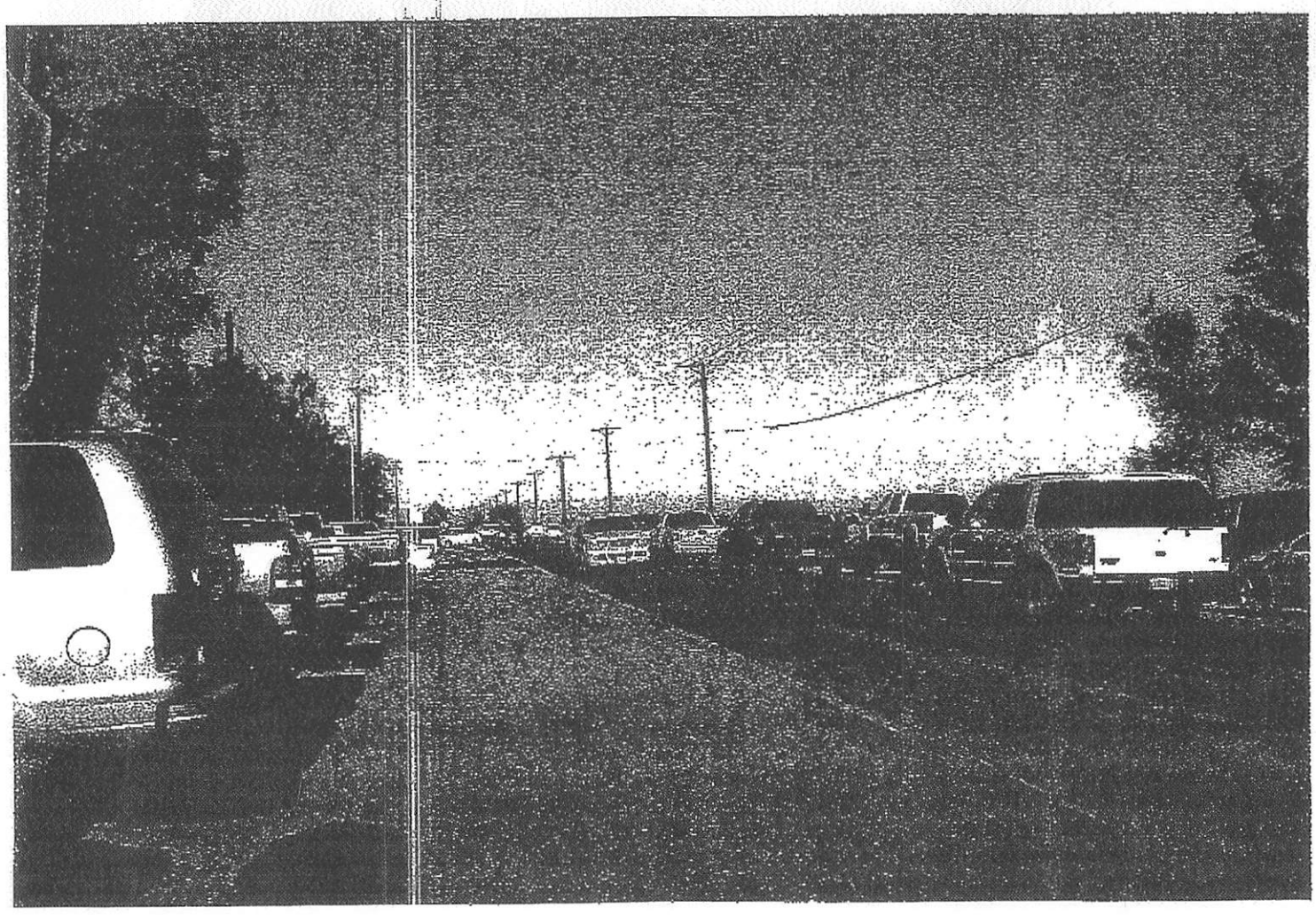


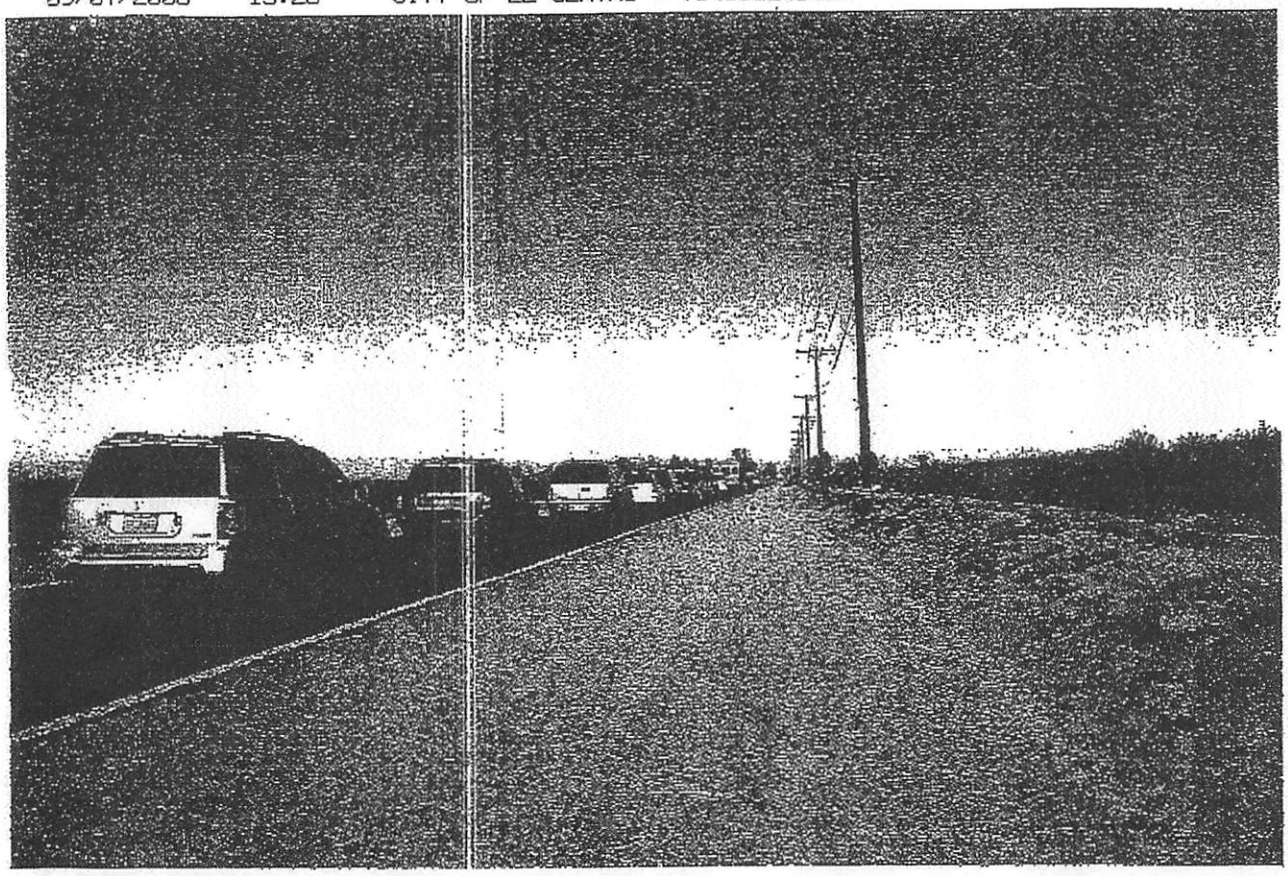












McCabe Union School District, September 5, 2006 (MUSD)

Response to Comment MUSD-1

The comment is noted that MUSD is in agreement with the numbers presented in Table 5.8-10 of the DEIR. Please see Response to Comment LAFCO-12.

Response to Comment MUSD-2

A Traffic Impact Study was prepared for the proposed project, which analyzed the proposed project and cumulative traffic generation and distribution on the surrounding circulation network (see Response to Comment LAFCO 16). In accordance with the thresholds established by the City of El Centro the proposed project will not result in a significant impact individually or cumulatively to either McCabe Road or Austin Road. In the peak hour direction, the project will add less than five trips to McCAbe Road and less than five to Austin Road. CEQA Guidelines § 15041 and § 15126.4 require that there be a nexus between the mitigation imposed upon an applicant and the impact. Given that the proposed project will not result in significant impacts to either McCAbe Road or Austin Road, the applicant is not responsible for providing improvements to these roadways. Please see Response to Comment LAFCO-6.

Response to Comment MUSD-3

The traffic counts for the traffic study were performed in October 2005. According to the McCabe Union School District, an additional 350 students now attend McCabe Union Elementary School. This has potentially increased the traffic on West McCabe Road; however, as stated above in MUSD 2, the project adds negligible trips to this road and will not cause a significant impact. Please see Response to Comment LAFCO-6.

Response to Comment MUSD-4

The comment regarding a future school site is noted.

Response to Comment MUSD-5

The comment regarding the District working with the City and the applicant is noted.

D·R·HORTON®
America's Builder

September 25, 2006

RECEIVED

SEP 25 2006

PLANNING DEPT.
CITY OF EL CENTRO

Ms. Norma Villicaña
Associate Planner
1275 Main Street
City of El Centro
El Centro, CA 92243

VIA: HAND DELIVERED ON SEPTEMBER 25, 2006

RE: Willow Bend DEIR Comments

Dear Ms. Villicaña:

Thank you the opportunity to review the Draft Environmental Impact Report (DEIR) for the Willow Bend project and would like the opportunity to provide the following comments to the DEIR prior to the close of the 45-day public review period:

1. Table 2-1: Summary of Project Impacts and Mitigation Measures Section 5.3, Proposed Mitigation 5.3-1 thru 5.3-6. There appears to be an inconsistency with these proposed Mitigation Measures and the standard practice protocol by CDFG in the Valley. In the Imperial Valley, only passive relocation protocol should be used for owl mitigation. Active relocation is not permitted. The proposed mitigation is not consistent with current mitigation that is being implemented by other biologist in the county. The owl consortium mitigation requirements are only recommendations and are not required. California Department of Fish and Game reviews proposed mitigation on a case by case basis which may include relocation to onsite artificial burrow within a fenced area of the detention basin. Currently off-site mitigation is not an alternative due to the unresolved issue of preserving agricultural sites in perpetuity for the burrowing owl. The biologist should contact Steve Gibson at CDFG @ (760) 200-9371. DRH-1
2. Table 2-1: Summary of Project Impacts and Mitigation Measures Section 6, Proposed Mitigation TT 6-4. This Mitigation Measure proposed a traffic signal at the intersection of Horne Road and Hwy 86. Traffic signalization at this intersection would be in conflict with the current Caltrans and city MOU along Hwy 86. DRH-2
3. Pages 5.8-3 and 5.8-6, under proposed Mitigation PSU 5.8-1 and 5.8-2. These Mitigation Measures require that the developer enter into a mitigation agreement prior to map recordation for city Police and Fire Services. Since the city already has a Development Impact Fee (DIF) system of which a portion covers police and fire services, why not just require the appropriate payment of DIF at the time of building permit issuance. The appropriate nexus studies have already been done with the implementation of the citywide DIF. We believe that the portion of DIF dedicated to police and fire more that adequately covers impacts to Police and Fire Services. DRH-3

RE: WILLOWBEND DRAFT EIR COMMENTS

Please feel free to contact me if you have any additional questions (760) 337-1533, ext., 1102 or via email at agvilla@drhorton.com.

Sincerely,
D.R. Horton, Inc. - Imperial County

Armando G. Villa
Director of Forward Planning

c: Oliver Alvarado, El Centro Planning Director
Elizabeth Shoemaker, DDE, Inc., Project Manager

3.2.5 - Private Organizations and Persons

D. R. Horton, September 25, 2006 (DRH)

Response to Comment DRH-1

Michael Brandman Associates (MBA) wrote in the DEIR "burrowing owls inside the project site shall be actively or passively relocated prior to construction activity in order to avoid direct impacts of burrow destruction". These two options were provided because at the writing of the DEIR, the Fish and Wildlife Service (FWS) and California Department of Fish and Game (CDFG) had different recommendations in regards to relocation of burrowing owl. At the time, the FWS was enforcing and prosecuting under the Migratory Bird Treaty Act (MBTA) those who destroyed occupied burrowing owl burrows year-round. Late last year this conflict was resolved and the FWS began enforcing the MBTA from February 1 through August 31. CDFG does informally approve active relocation of burrowing owl on a case by case basis when it is determined that passive relocation is not feasible (i.e. the site is surrounded by development). For this project site, passive relocation was recommended by the CDFG in their comment on the Negative Declaration.

As stated in CDFG's staff report on burrowing owl mitigation: "to offset the loss of foraging and burrow habitat on the project site, a minimum of 6.5 acres of foraging habitat per pair or unpaired resident bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. Protection of additional habitat acreage per pair or unpaired resident bird may be applicable in some instances. The California Burrowing Owl Consortium (CBOC) has also developed mitigation guidelines that can be incorporated by CEQA lead agencies and which are consistent with this staff report." CDFG's staff report continues to state that "the project sponsor should provide funding for long-term management and monitoring of the protected lands. The monitoring plan should include success criteria, remedial measures, and an annual report to the Department." MBA recommended mitigation measures based on CDFG's staff report and CBOC's mitigation measures.

The project site has a 3 acre retention basin proposed that is not of sufficient size to accommodate a single burrowing owl territory. The minimum acreage per pair or single owl is 6.5 acres.

MBA had a conversation with CDFG Staff Environmental Scientist Eddy Konno regarding off-site burrowing owl mitigation, and he recommended that if adjacent land to the site is not available, that land be acquired for conservation adjacent to existing protected/managed lands in the area. MBA is not aware of any existing issues to preserving/purchasing agricultural sites for burrowing owl.

Response to Comment DRH-2

Please see Response to Comment CALTRANS-1.

Response to Comment DRH-1

Please see Response to Comment LAFCO-10 regarding the Development Impact Fee.

SECTION 4: ERRATA

The following are revisions to the Zone Change 05-05 and Tentative Subdivision Map (Willow Bend) Draft EIR. These revisions are minor modifications and clarifications to (this these) document(s) and do not change the significance of any of the environmental issue conclusions within the DEIR. The revisions are listed by page number. All additions to the text are underline (underlined) and all deletions from the text are stricken (~~stricken~~).

Page 5.8-12

The following correction has been made in Table 5.8-13:

Table 5.8-13: Existing and Future Parkland Needs

Year	Population	Parkland/Resident Standard	Parkland Required	Existing Parkland	Difference
2000 (Baseline Year)	37,835	3.0 acres per 1,000 residents	133.5 acres	126.8 acres	~~+~~ -13.3 acres
2025 (General Plan Buildout)	134,238		402.7 acres	126.8 acres	-279.5 acres
Source: City of El Centro General Plan. Table PF-3. 2004.					

Page 5.8-17

The following correction is made in the first sentence of the third paragraph in Section 5.8.8:

> After processing solid waste generated in the City of El Centro is disposed of at ~~one of three landfills in Imperial County~~ Allied Imperial Landfills, which is a private landfill. Allied Imperial Landfill is a 42-acre landfill that opened in January 2000 and has a closure date of 2012. An additional 160 acres have been purchased, 100 acres, which will be used as a landfill and 60-acres, which will be used as a buffer. This additional acreage has a 30-year capacity and will be able to accept 1,000 tons of solid waste per day.

~~In addition, residents may for a disposal fee dispose of solid waste at any County landfill.~~

Page 5.8-17

Table 5.8-17 has been deleted:

~~Table 5.8-17: Landfill Summary~~

~~Landfill~~	~~Location~~	~~Operator~~	~~Permitted Daily Capacity~~	~~Remaining Capacity~~	~~Closure Date~~
~~Allied Imperial Landfill~~	~~Imperial, CA~~	~~Imperial Landfill, Inc.~~	~~1,135 tons~~	~~3.7 million cubic yards~~	~~2012~~
~~Imperial Solid Waste Site~~	~~Imperial, CA~~	~~County of Imperial Public Works~~	~~130 tons~~	~~87,000 cubic yards~~	~~2022~~
~~Calexico Solid Waste Site~~	~~Calexico, CA~~	~~County of Imperial Public Works~~	~~150 tons~~	~~1.9 million cubic yards~~	~~2142~~
		~~Total~~	~~1,415 tons~~	~~5.7 million cubic yards~~	
~~Source: California Integrated Waste Management Board. Solid Waste Information System. 2005.~~					

All subsequent tables have been renumbered.

Page 5.8-19

The following correction has been made in the first sentence below Table 5.8-20:

~~The three landfills summarized in Table 5.8-20 have more than 1,400 tons in permitted daily capacity available.~~ As previously stated, the City of El Centro utilizes the private Allied Landfill, which currently is a 42-acre landfill that opened in January 2000 and has a closure date of 2012. An additional 160 acres have been purchased, 100 acres, which will be used as a landfill and 60-acres, which will be used as a buffer. This additional acreage has a 30-year capacity and will be able to accept 1,000 tons of solid waste per day.

Page 5.9-1

Section 5.9.1, Existing Conditions, the following changes have been made:

McCabe Road - McCabe Road is classified as a ~~major collector~~ minor arterial that runs east/west south of the project area. It is constructed as a two lane undivided roadway with no bike lanes and parking is generally prohibited in the project area. The speed limit is posted at 55 mph.

Horne Road - Horne Road is classified as a ~~collector street~~ local County road that runs east/west north of the project. It is constructed as a two lane undivided roadway with no bike lanes and parking is generally permitted. The speed limit is posted at 35 mph in the project area.

Page 6-16

The following change has been made to Table 6-7:

Table 6-7: Horizon Year 2025 Roadway Segment Conditions

Roadway Segment	Lane/Class	LOS E Capacity	Existing No Project			Project Traffic	Long-Term (Existing + Horizon Year Including the Proposed Project)			Comparison	
			ADT	V/C	LOS		ADT	V/C	LOS	Δ V/C	Significant
State Route 86											
Between McCabe Road and Project Access (South of ~~Home~~ Horne Road)[1]	2/Arterial	17,500	7,631	0.436	C	193	22,400	1.280	F	0.844	Long-Term
Between Project Access and Danenberg Drive[2]	3/Arterial	27,750	7,631	0.275	A	1,093	22,400	0.807	D	0.532	No
Between Danenberg Drive and Wake Avenue[2]	3/Arterial	27,750	13,575	0.489	B	900	29,500	1.063	F	0.574	Long-Term
Between Wake Avenue and I-8 Eastbound Ramps[3]	4/Arterial	37,000	20,500	0.554	B	836	29,500	0.797	C	0.243	No

[1] Two Lane Arterial standards from El Centro General Plan Circulation (2004).
[2] Ratio of Four Lane Arterial standards from El Centro General Plan Circulation Element (2004) given three lane alignment with raised median.
[3] Four Lane Arterial standards from El Centro General Plan Circulation Element (2004).
Source: Katz, Okitsu & Associates. Willow Bend Traffic Impact Study, July 2006.

CEQA Findings and Findings of Fact
for the
Zone Change 05-05 and Tentative Subdivision Map
Willow Bend
State Clearinghouse Number: 2005101128

Prepared for:

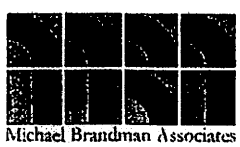
City of El Centro
Planning Department
1275 Main Street
El Centro, CA 92243

Contact: Oliver Alvarado, Planning Director

Prepared by:

Michael Brandman Associates
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Contact: Kara E. Palm, Project Manager



November 2, 2006

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Appendix A: Statement of Overriding Considerations

SECTION 1: INTRODUCTION

In compliance with the requirements of the California Environmental Quality Act (CEQA) and the CEQA Guidelines, the City of El Centro has conducted an environmental review of the proposed Zone Change 05-05 and Tentative Subdivision Map (Willow Bend) project. A Notice of Preparation was released for public review in October 2005. In August 2006, the Draft EIR was released. After receiving public comment on the Draft EIR, the City prepared a document entitled Responses to Comments on the Draft EIR (RTC). The RTC document includes the verbatim comments received on the Draft EIR, a list of those commenting, and the City's responses to the significant environmental points raised in the review and consultation process. In response to certain comments, the Draft EIR was modified, as set forth in the responses to comments. The Final EIR for the Project consists of the Draft EIR and the RTC document. The RTC provides responses to comments on environmental issues describing the disposition of the issues, explaining the EIR analysis, supporting the EIR conclusions, and/or providing information or corrections as appropriate. These Findings are based upon the information in the record of proceedings, including the Final EIR, staff reports, project applicant's materials, Mitigation Monitoring Program, and the testimony presented at public hearings.

The California Environmental Quality Act (CEQA; Pub. Res. Code §§ 21000 et seq.) provides that "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would *substantially lessen* the significant environmental effects of such projects[.]" (CEQA § 21002; emphasis added.) The procedures required by CEQA "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects." (CEQA § 21002; emphasis added.)

CEQA also provides that "in the event [that] specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects. (CEQA § 21002.) CEQA provides that a public agency has an obligation to balance a variety of public objectives, including economic, environmental, and social factors and in particular the goal of providing a decent home and satisfying living environment for every Californian. (CEQA § 21081; CEQA Guidelines, 14 Cal. Code of Regulations, § 15021(d).) CEQA requires decision-makers to balance the benefits of a proposed project against its significant unavoidable adverse environmental impacts, and, if the benefits of a proposed project outweigh the significant unavoidable adverse environmental impacts, the unavoidable adverse environmental impacts may be considered "acceptable" by adopting a "Statement of Overriding Considerations." (CEQA Guidelines § 15093.) The Statement of Overriding Considerations must set forth the project benefits or reasons why the Lead Agency is in favor of approving the project and must weigh these benefits against the project's adverse environmental impacts identified in the Final EIR that cannot be mitigated to a less-than-significant level.

CEQA's mandates and principles are implemented, in part, through the requirement that agencies adopt findings before approving projects for which EIRs are required. For each significant environmental effect identified in an EIR for a proposed project, the approving agency must issue a written finding reaching one or more of three permissible conclusions: (1) that "[c]hanges or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR," (2) [s]uch changes or alterations are within the responsibility and jurisdiction of another public agency or can and should be adopted by such other agency," or (3)[s]pecific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR." (CEQA Guidelines § 15091.) CEQA defines "feasible" to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors." (CEQA § 21061.1.) CEQA Guideline section 15364 adds another factor: "legal" considerations.

The concept of "feasibility" also encompasses the question of whether a particular alternative promotes the underlying goals and objectives of a project. "Feasibility under CEQA encompasses "desirability" to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.

CEQA requires that the lead agency exercise its independent judgment in reviewing the adequacy of an EIR and that the decision of a lead agency in certifying a Final EIR and approving a project not be predetermined. The City Council has conducted its own review and analysis, and is exercising its independent judgment when acting as herein provided.

CEQA requires decision-makers to adopt a mitigation monitoring and reporting program (MMRP) for those mitigation measures identified in the Final EIR that would mitigate or avoid each significant impact identified in the EIR and to incorporate the mitigation monitoring and reporting program, including all mitigation measures, as conditions of project approval.

CEQA requires that the responses to comments in the Final EIR demonstrate good faith and a well-reasoned analysis, and not be overly conclusory. In response to several of the comments received, portions of the Draft EIR have been revised. Although new material has been added to the Draft EIR through preparation of the Final EIR, this new material provides clarification to points and information already included in the Draft EIR and is not considered to be significant new information or a substantial change to the Draft EIR or to the project that would necessitate recirculation.

CEQA Guidelines Section 15003(c) and (i) note that state courts have held that the purpose of an EIR is to inform other governmental agencies and the public generally of the environmental impacts of a proposed project. CEQA does not require technical perfection or exhaustive treatment of issues in an

EIR, but rather adequacy, completeness, and a good-faith effort at full disclosure. CEQA provides that disagreement among experts regarding conclusions in the EIR is acceptable. Also, exhaustive treatment of issues is not required in an EIR.

Because the Willow Bend EIR identified significant effects that may occur as a result of the project, and in accordance with the provisions of CEQA and the CEQA Guidelines, the City Council of the City of El Centro hereby adopts these Findings. For each of the significant effects identified in Section 3, as set forth in greater detail in these Findings below, the City Council makes the finding under paragraph (1) of subdivision (a) of Public Resources Code Section 21081. For each of the significant effects identified in Section 4, as set forth in greater detail in these Findings below, the City Council makes the finding under paragraph (3) of subdivision (a) and under subdivision (b) of Public Resources Code Section 21081.

In accordance with the provisions of CEQA and the CEQA Guidelines, the City Council of the City of El Centro has independently reviewed the record of proceedings and based on the evidence in the record adopts these Findings.

SECTION 2: PROJECT DESCRIPTION

The proposed project is the development of a single-family residential community on approximately 38 acres. The project includes the subdivision of 38 acres of farmland to provide for 131 single-family residential lots, a 3.02-acre retention basin, and 1.67-acre park (Exhibit 3-3). Project site access is via SR-86 and two project access drives (Willow Bend Drive and Countryside Drive).

SECTION 3: MITIGATED PROJECT-LEVEL AND CUMULATIVE ADVERSE IMPACTS

The EIR identified significant project-level and cumulative adverse impacts of the proposed project and proposed mitigation measures to avoid or substantially lessen those impacts. Those impacts and mitigation measures are identified in the following sections. The El Centro City Council finds, based on the record and on the facts as set forth below, that the incorporation of the identified mitigation measures will mitigate most of the identified significant project-level and cumulative adverse impacts to a level that is considered less than significant. However, as identified in the Draft EIR, the conversion of agricultural land and the inconsistencies with the Imperial Valley Air Quality Attainment Plan and the State Implementation Plan for PM10 will result in significant and unavoidable agricultural and air quality impacts. Therefore, as outlined in CEQA Guideline 21081, the project will require a Statement of Overriding Considerations (see Attachment A).

3.1 - Air Quality

3.1.1 - Potentially Significant Impact

Onsite construction emissions generated during construction principally consist of exhaust emissions (NO_X, SO_X, CO, VOC, and PM_{10}) from heavy-duty construction equipment operation and fugitive dust (PM_{10}) from disturbed soil..

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

AQ 5.2-1 During construction of the proposed improvements, all construction equipment will be properly maintained at an offsite location and includes proper tuning and timing of engines. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction.

AQ 5.2-2 During construction of the proposed improvements, all construction equipment will be fueled with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use in off-road equipment).

AQ 5.2-3 To the maximum extent feasible, use diesel construction equipment meeting the CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines.

AQ-5.2.4 Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction site and provide temporary traffic control (i.e. flag person) during demolition debris transport and other construction related truck hauling activities.

AQ 5.2-5 During construction of the proposed improvements, construction equipment will not idle on site for more than 10 minutes.

AQ 5.2-6 During construction of the proposed improvements, the project applicant will provide onsite meals to construction workers by arranging a lunch wagon to visit the construction site during work breaks including the lunch break. This will improve air quality by reducing traffic created by construction workers.

AQ 5.2-7 During construction of the proposed improvements, the project applicant will provide onsite electrical hook ups for electric construction tools, such as saws, drills and compressors, to eliminate the need for diesel powered electric generators.

AQ 5.2-8 Prior to construction of the proposed improvements, the project proponent will provide a Dust Control Plan that will describe the application of standard best management practices to control dust during construction. Best management practices will include application of water on disturbed soils a minimum of two times per day, covering haul vehicles, replanting disturbed areas as soon as practical, restricting vehicle speeds on unpaved roads to 15 mph, sweeping street access points at the end of each day, and other measures, as deemed appropriate to the site, to control fugitive dust. The Fugitive Dust Control Plan shall be submitted to the City and the Imperial County Air Pollution Control District for approval and approved prior to construction.

AQ 5.2-9 During construction of the proposed improvements, only low volatility paints and coatings as defined in Imperial County APCD Rule 424 shall be used. All paints shall be applied using either high volume, low pressure (HVLP) spray equipment or by hand application.

3.2 - Biological Resources

3.2.1 - Potentially Significant Impact

Burrowing owls would be adversely impacted on a short-term basis during construction activities to underground the onsite drains.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

BR 5.3-1 Additional focused survey shall be conducted to more conclusively determine the number of owls occupying the project site and a 500-foot buffer. Focused surveys shall follow accepted burrowing owl protocol, which includes a nesting season survey. During the nesting season survey, four site visits are conducted between April 15 and July 15. Surveys shall be conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise.

BR 5.3-2 A burrowing owl preconstruction survey shall be completed no sooner than 30 days prior to commencement of construction.

BR 5.3-3 Burrowing owls inside the project site shall be actively relocated prior to construction activity in order to avoid direct impacts of burrow destruction. Once all burrows on the project site are confirmed to be absent of owls, they shall be systematically collapsed. Where possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

BR 5.3-4 No construction-related disturbance shall occur within 50 m., approx. 160 ft., of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m., approx. 250 ft., during the breeding season of February 1 through August 31.

BR 5.3-5 If feasible, 6.5 acres of foraging habitat for each pair of burrowing owl would be preserved in a conservation easement and managed to promote burrowing owl use of the site. This habitat shall be adjacent to the project site but at least 50 meters from the impact area. The displaced owls would be encouraged to occupy this conserved area by actively relocating them to natural or artificial burrows. One alternate natural or artificial burrow should be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. Conservation of agricultural lands to the west or south of the project site would be the only appropriate options under this mitigation measure.

BR 5.3-6 If Mitigation Measure BR 5.3-5 is not feasible, this mitigation measure is required. Off-site replacement of burrowing owl habitat shall be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable burrowing owl habitat. One alternate natural or artificial burrow shall be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. The off-site replacement of suitable burrowing owl habitat shall follow one of the following scenarios:

1. Replacement of occupied habitat with off-site occupied habitat: 9.75 acres per pair or single bird.
2. Replacement of occupied habitat with off-site suitable unoccupied habitat: 19.5 acres per pair or single bird.

3.2.2 - Potentially Significant Impact

In the long-term, due to increased recreational use of the berms by humans and pets, harassment of owls will occur. Also, the conversion of burrowing owl foraging, dispersing, and nesting habitat will be impacted

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

BR 5.3-7 An educational flyer shall be developed that informs new residences that off-road activity is not permitted on the surrounding berms. In addition, pets shall be on leashes if walked on berms. The flyer shall also make new residents aware of burrowing owls, their biology, how and why they are sensitive, and their benefits to insect and rodent control.

3.2.3 - Potentially Significant Impact

The proposed project contains suitable nesting bird habitat. If actively nesting birds are present during construction, they will be disturbed by construction activities.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

BR 5.3-8 The removal of vegetation, ground disturbance, or elimination of other potential nesting habitat should be conducted outside of avian nesting season (February through August). This is particularly true for construction during the undergroundment of the drains as burrowing owls were confirmed as present and are likely resident breeders. If construction occurs during the avian nesting season, a pre-construction nesting bird survey shall be conducted seven days prior to any ground disturbing activities. If birds are found to be nesting inside the impact area, construction will need to be postponed until a no-construction buffer, 250 feet for passerines and 500 feet for raptors, is established. Construction inside the buffer could commence once a qualified biologist determines that the nest is no longer active.

3.3 - Cultural Resources

3.3.1 - Potentially Significant Impact

The records search and field survey results revealed that there a low potential exists for impacts to prehistoric cultural resources. However, there is always the potential for undiscovered resources to be uncovered.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measure as identified in the final EIR and incorporated into the Project.

CR 5.4-3 Prior to any clearing and grubbing and/or earthmoving activities on the project area, a qualified Project Paleontologist retained by the Proponent and approved by the City shall review the approved development and construction plans. The paleontologist shall participate in a pre-construction project meeting with the development staff to ensure an understanding of the mitigation measures required during construction.

CR 5.4-4 Paleontologic monitoring of any shall be conducted by a qualified monitor, under direct guidance of a Project Paleontologist. Earthmoving in areas of the parcel where

previously undisturbed sediments will be buried but not otherwise disturbed will not be monitored. Monitoring shall begin once earthmoving reaches 8 feet below the original ground surface. Non-virgin soils need not be monitored.

CR 5.4-5 If too few fossil remains are found after 50 percent of earthmoving is complete, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction. If fossil remains are found during monitoring, up to 6,000 pounds of fossiliferous sediments will be recovered from the fossil site and processed to allow for the recovery of smaller fossil remains. The total weight of all processed samples from the fossil-bearing rock unit will not exceed 6,000 pounds at any one site.

CR 5.4-6 If fossil remains are found, the Project Paleontologist shall develop a storage agreement with a museum repository acceptable within the City to allow for the permanent storage and maintenance of any fossil remains recovered in the Project Site as a result of the mitigation program, and for the archiving of associated specimen data and corresponding geologic and geographic site data. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then shall be curated (assigned and labeled with museum repository fossil specimen numbers and corresponding fossil site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards) and catalogued. Associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into appropriate museum repository catalogs and computerized data bases) at the museum repository by a laboratory technician. The remains then will be accessioned into the museum repository fossil collection, where they will be permanently stored and maintained. The associated specimen and site data shall be made available for future study by qualified investigators.

CR 5.4-7 A final report of findings shall be prepared by the Project Paleontologist for submission to the City, and the museum repository following accessioning of the specimens into the museum repository fossil collection. The report shall describe parcel geology/stratigraphy, summarize field and laboratory methods used, include a faunal list and an inventory of curated/catalogued fossil specimens, evaluate the scientific importance of the specimens, and discuss the relationship of any newly recorded fossil site in the parcel to relevant fossil sites previously recorded from other areas.

3.4 - Geology and Soils

3.4.1 - Potentially Significant Impact

The project site is within the vicinity of numerous active faults and will likely experience moderate to strong ground motion from earthquakes in the region.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measure as identified in the final EIR and incorporated into the Project.

GS 5.5-1 Prior to the issuance of grading permits, LandMark Consultants, Inc., or other qualified engineering geologist approved by the City of El Centro shall review and approve all grading plans and earthwork operation plans in relation to the Recommendations set forth in Section 4 of the Geotechnical Study (Appendix F of this DEIR).

GS 5.5-2 LandMark Consultants, Inc. or other qualified engineering geologist approved by the City of El Centro shall be provided with a forty-eight hours advance notice in order to be present at the site during all earthwork activities related to the excavation, tree root removal, stripping, backfill, and compacting and filling of the site and to perform periodic compaction tests.

3.4.2 - Potentially Significant Impact

The results of the testing soils for expansive properties indicated that earthwork operations can be expected to encounter expansive soils with expansion indexes in the range of medium to high. Thus, there is the potential for soils at the site to have a high potential for expansion.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

GS 5.5-1 Prior to the issuance of grading permits, LandMark Consultants, Inc., or other qualified engineering geologist approved by the City of El Centro shall review and approve all grading plans and earthwork operation plans in relation to the Recommendations set forth in Section 4 of the Geotechnical Study (Appendix F of this DEIR).

GS 5.5-2 LandMark Consultants, Inc. or other qualified engineering geologist approved by the City of El Centro shall be provided with a forty-eight hours advance notice in order to be present at the site during all earthwork activities related to the excavation, tree root removal, stripping, backfill, and compacting and filling of the site and to perform periodic compaction tests.

GS 5.5-3 Prior to the issuance of grading permits, the project applicant shall include one of the following foundation systems and remediation schemes to reduce the potential for expansive soils to less than significant.

- Waffle-slabs supported on a system of drilled piers anchored below the zone of moisture change;
- Moisture conditioning subgrade soils to a minimum of 5% above optimum moisture (ASTM D1557) for the full range in depth of surface soils;
- Design of foundations that are resistant to shrink/swell forces of silt/clay soil;
- Excavation of existing materials and replacement by non-expansive soils;
- Reinforcement in footings and slabs. Flexural and shear stresses in slabs should be computed by determining the differential swell for the center lift and edge lift conditions using design procedures recommended by the Post-Tensioning Institute. The differential swell should be used to compute the maximum shear stresses and flexural stresses in floor slabs and flatwork. Use edge moisture variation distance (em) of six feet and three feet for the center lift and edge lift conditions, respectively; and
- Provide Post-tensioned, free floating slabs-on-grade.

GS 5.5-6 Provide positive free drainage away from the structure and make every effort possible to prevent subgrade saturation by measures such as:

- containing all landscaping in sealed planters, sealing all construction joints with an elastomeric compound, providing the building with eave gutters and downspouts; and
- routing all drainage impinging upon the site from off-site sources as well as drainage generated on the site away from the proposed residential structures.

3.4.3 - Potentially Significant Impact

There is groundwater at a level of eight feel below ground surface. Soils encountered below three feet have the potential to pump groundwater under heavy construction wheel loads because of the silty conditions in the near surface soils have the tendency to support layers of groundwater.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measure as identified in the final EIR and incorporated into the Project.

GS 5.5-4 Base line collectors (6-8 inches in diameter) along the north side of the project site shall be crushed in place and trench backfill compacted (85-90%). The 4-inch lateral pipeline drains shall be plugged at street crossings.

GS 5.5-5 Light earthmoving equipment (i.e., 613 and/or 623 Earthmovers) shall be used on the project site during construction activities to reduce the potential for groundwater pumping.

GS 5.5-6 Provide positive free drainage away from the structure and make every effort possible to prevent subgrade saturation by measures such as:

- containing all landscaping in sealed planters, sealing all construction joints with an elastomeric compound, providing the building with eave gutters and downspouts; and
- routing all drainage impinging upon the site from off-site sources as well as drainage generated on the site away from the proposed residential structures.

3.5 - Hazards and Hazardous Materials

3.5.1 - Potentially Significant Impact

Remnants of past activities and debris are located on the project site..

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on water quality that could be caused by construction activities.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

HM 5.6-1 Prior to any earth moving activities on the project site, debris consisting of a wood pallet, dry brush, Styrofoam, cardboard and automobile tires found at the northern portions of the project site shall be removed and properly disposed.

3.5.2 - Potentially Significant Impact

Pesticide residue (DDE) exists in the project site soils below current threshold (action) limits.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measure as identified in the final EIR and incorporated into the Project.

HM 5.6-2 Prior to the issuance of a grading permit, the project applicant shall coordinate with DTSC to review and approve the results of the pesticide scan. DTSC shall provide written verification that no further action is required in relation to the presence of DDE in near surface soils. If DTSC determines that the soils exceed the acceptable limits the soils shall be remediated and/or properly disposed of per DTSC requirements.

3.6 - Noise

3.6.1 - Potentially Significant Impact

Activities involved in construction of the project would generate noise levels in the range of 80 dBA to 87 dBA.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

N 5.7-1 Prior to the issuance of grading permits, the grading plans shall state that all gas and diesel power equipment shall be properly muffled and maintained. Construction activities should be limited to the hours and days permitted by the City of El Centro.

3.7 - Public Services

3.7.1 - Potentially Significant Impact

The project's construction would generate approximately 920 tons of construction debris. This would be significant short-term solid waste impact. .

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

PSU 5.8-1 At the time building permits are sought, the project applicant shall demonstrate to the satisfaction of the City of El Centro Public Works Department that a certified construction and demolition recycler has been retained and a Waste Management Plan has been prepared for the construction phase of the proposed project.

3.8 - Cumulative

3.8.1 - Potentially Significant Impact

Implementation of the proposed project, in conjunction with future developments as identified earlier in this section would contribute to the ongoing loss of open space in the region, resulting in a decline of habitat for burrowing owls and nesting birds.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measure as identified in the final EIR and incorporated into the Project.

Please see mitigation measures **BR 5.3-1** through **BR 5.3.**

3.8.2 - Potentially Significant Impact

Like the proposed project, cumulative projects may result in the disturbance of soils at a depth of 8 feet or greater below ground level, which, could contain paleontological resources.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

Please see mitigation measures **CR 5.4-1** through **CR 5.4-7**.

3.8.3 - Potentially Significant Impact

Onsite locations will exceed El Centro's acceptability criterion of 60 dB Leq within the outdoor activity areas.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

N 6-1 A 6-foot high sound wall should be constructed along the project site. The sound wall must be continuous and constructed of a dense material such as masonry blocks or stucco on both sides of a wood/steel frame.

N .6-2 Mechanical ventilation or air conditioning must be provided for all homes so that windows and doors may remain closed for the required acoustical insulation.

3.8.4 - Potentially Significant Impact

Seven of the eight study area intersections under the near-term conditions will experience a significant cumulative impact. The addition of project traffic will cumulatively contribute to the degradation of these intersections resulting in an operational LOS E or worse. These intersections are:

- State Route 86 and West McCabe Road (AM - LOS F, PM - LOS F)

- State Route 86 and Horne Road (PM - LOS F)
- State Route 86 and Willow Bend Drive (Project Access) (PM - LOS F)
- State Route 86 and Countryside Drive (Project Access) (PM - LOS F)
- State Route 86 and Interstate 8 Westbound Ramp (PM - LOS F)
- State Route 86 and Interstate 8 Eastbound Ramp (PM - LOS F)
- State Route 86 and Wake Avenue (PM - LOS E)

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

The following roadway improvements are recommended to improve the operation of the impacted locations. The City Engineer shall make the determination of whether the payment of proportionate share or installation of the improvements is required. This shall be completed at the time of project approval. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for all cumulatively impacted locations.

As these roadway network improvements effect intersections and roadways under Jurisdiction of the State of California Department of Transportation (Caltrans) along State Route 86, the following improvements are in accordance with the Memorandum of Understanding (MOU) regarding State Route 86 between Caltrans and the City of El Centro. These improvements adhere to the guidelines as established within the MOU and mitigate all intersections and roadway segments to a LOS D or better.

Intersections

TT 6-1 State Route 86 and Interstate 8 Westbound Ramp - The project applicant should contribute a fair share (4.9%) towards the construction of a westbound right-turn lane and a second northbound left-turn lane. LOS before/after mitigation: F/D.

TT 6-2 State Route 86 and Interstate 8 Eastbound Ramp - The project applicant should contribute a fair share (4.6 %) towards the construction of two eastbound right-turn lanes and a second southbound left-turn lane. LOS before/after mitigation: F/D.

TT 6-3 State Route 86 and Wake Avenue - The project applicant should contribute a fair share (4.7%) towards the construction of a second eastbound left-turn lane. LOS before/after mitigation: E/D.

TT 6-4 State Route 86 and Horne Road - The project applicant should contribute a fair share (10.6%) towards the signalization of the intersection. LOS before/after mitigation: F/B.

TT 6-5 State Route 86 and Willow Bend Drive - The project applicant should contribute a fair share (13.8%) towards the construction of a right turn in/right turn out island from the project driveway. LOS before/after mitigation: F/C.

TT 6-6 State Route 86 and Countryside Drive - The project applicant should contribute a fair share (9.0%) towards the signalization of the intersection. LOS before/after mitigation: F/A.

TT 6-7 State Route 86 and West McCabe Road - The project applicant should contribute a fair share (1.5%) towards the signalization of the intersection including the provision of dedicated eastbound and westbound left-turn pockets. LOS before/after mitigation: F/C.

3.8.5 - Potentially Significant Impact

Two of the five roadway segments under the near-term conditions will be significantly impacted by cumulative projects that include the proposed project. The addition of project traffic will cumulatively contribute to the degradation of these roadway segments resulting in an operational LOS E or worse. These roadway segments are:

- State Route 86 - McCabe Road to Project Access (South of Horne Road) (LOS E)
- State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps (LOS E)

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

TT 6.8 State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps - The project applicant should contribute a fair share (5.6 %) towards the widening of SR 86 between Wake Avenue and I-8 to six lanes. LOS before/after mitigation: E/B.

TT 6-9 State Route 86 - McCabe Road to Project Access - The project applicant should contribute a fair share (2.7%) towards the widening of SR 86 between McCabe Road and Project Access to four lanes, including the widening of SR 86 to four lanes along the project frontage. LOS before/after mitigation: E/A.

3.8.6 - Potentially Significant Impact

In the Horizon Year 2025, the proposed project will contribute to a significant cumulative roadway segment impact along SR 86 between Danenberg Drive and Wake Avenue.

Finding

Changes or alterations have been required in, or incorporated into, the project, which mitigate or avoid the significant effects on the environment.

Facts in Support of Finding

The project-level significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of the following mitigation measures as identified in the final EIR and incorporated into the Project.

TT 6-10 SR-86 between Danenberg Drive and Wake Avenue - The project applicant shall contribute a fair share (5.7%) towards the widening of the SR-86 between Danenberg Drive and Wake Avenue to four lanes.

It should be noted that the City Engineer shall make the determination whether the payment of the proportionate share or installation of the improvements is required. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for a cumulatively impacted locations.

SECTION 4: SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

4.1 - Agricultural Resources

4.1.1 - Significant Unavoidable Impact

Project implementation will result in the conversion of Farmland of Statewide Importance

4.1.2 - Finding

Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental impact report.

4.1.3 - Facts in Support of Finding

No feasible measures are available for the project applicant to reduce the loss of Farmland of Statewide Importance. Project implementation will result in the conversion of this agricultural land to urban uses, which would constitute a significant loss of Farmland of Statewide Importance. Potential impacts in this regard are significant and unavoidable under CEQA. No mitigation is available to reduce this significant impact to a level of less than significant.

The potential significant and unavoidable adverse impacts related to the loss of Farmland of Statewide Importance of the proposed Project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

4.2 - Air Quality

4.2.1 - Significant Unavoidable Impact

The proposed Project is not consistent with the Air Quality Attainment Plan and the State Implementation Plan for PM10.

4.2.2 - Finding

Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental impact report.

4.2.3 - Facts in Support of Finding

The Imperial County population projections for year 2010 used in the Air Quality Attainment Plan and State Implementation Plan for PM-10 for the City of El Centro assumes land use designations in the General Plan and includes build-out of the site. The project site under the current County General Plan land use designation would accommodate approximately 2 dwelling units per parcel or 76 units for the project site. The proposed project includes the development of 131 single-family residential dwelling units. Clearly, the proposed project would result in a higher density, and more vehicle trips

and vehicle miles traveled than what was anticipated in the Air Quality Attainment Plan and State Implementation Plan for PM-10. Because the project will result in more people and more traffic than what was considered in the plan, the project is not consistent with the Air Quality Attainment Plan and State Implementation Plan for PM-10, and therefore would create a significant impact in this regard. No mitigation is available to reduce this significant impact to less than significant.

The potential significant and unavoidable adverse air quality impacts of the proposed Project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

SECTION 5: FEASIBILITY OF PROJECT ALTERNATIVES

CEQA requires that an EIR include an analysis of a reasonable range of feasible alternatives to a proposed project capable of avoiding or substantially lessening any significant adverse environmental impact associated with the project. The discussion of alternatives is required to include the "No Project" alternative. CEQA requires further that the City identify an environmentally superior alternative. If the "No Project" alternative is the environmentally superior alternative, an environmentally superior alternative must be identified from among the other alternatives. (CEQA Guidelines, Section 15126.6.)

As set forth in these Findings, the Project, with the Mitigation Measures incorporated, will have remaining significant adverse environmental impacts. The City has, in addition to incorporating the recommended measures to mitigate the identified impacts, reviewed a range of potential alternatives to the proposed project. The Willow Bend EIR discussed the No Project/No Development Alternative, and the No Project/Development in Accordance with the Existing Zoning Alternative,. A third Alternative, an Alternative Site Alternative was considered and rejected because it was determined that it was not possible to eliminate a significant unavoidable impact.. An Environmentally Superior Alternative has been selected from among the two alternatives evaluated in this Draft EIR. An alternative that is environmentally superior will result in the fewest or least significant environmental impacts and will achieve the project objectives of the planning effort. The No Project/Development in Accordance with the Existing Zoning Alternative was determined to be the Environmentally Superior Alternative; however, this alternative would not meet the project objectives. Based on meeting the goal of accommodating growth projections in the City of El Centro within the City's Sphere-of-Influence the City Council rejects the No Project/No Development Alternative and the No Project/Development in Accordance with the Existing Zoning Alternative.

5.1 - No Project/No Development Alternative

Under the No Project/No Development Alternative (No Project Alternative), the entire project site would remain unchanged and no new development would occur onsite. In general, the Willow Bend project site would continue to exist as undeveloped land and the project site would not be annexed into the City of El Centro. Although this alternative is environmentally superior to the project, the City finds it to be less desirable than the proposed project, and rejects it because it fails to meet the project's objectives.

5.2 - No Project/Development in Accordance with the existing zoning Alternative

The No Project/Development in Accordance with Existing Zoning Alternative (Zoning Alternative) would result in the development of the project site under the existing zoning designation. Similar to the No Project Alternative, under this alternative scenario, the project would not be annexed into the

City of El Centro. Currently the project site is zoned by Imperial County as General Agriculture/Urban Overlay (A2U). Under this designation, agricultural land uses are allowed. The density permitted is one dwelling unit per 40 acre parcel. Therefore, under the current County zoning designation, the 38-acre project would preclude residential development but allow agricultural production and associated activities. . Although this alternative is environmentally superior to the project, the City finds it to be less desirable than the proposed project, and rejects it because it fails to meet the project's objectives.

5.3 - Environmentally Superior Alternative

The environmentally superior alternative is selected from among the preceding alternatives and the Willow Bend project. An alternative that is environmentally superior would result in the fewest or least significant impacts and will feasibly attain most of the objectives of the planning effort. As is usually the case, the No Project/No Development Alternative would result in fewer significant impacts than the Willow Bend subdivision project. CEQA, however, states that if the environmentally superior alternative is the "No Project" alternative, the EIR shall also identify an environmentally superior alternative from other alternatives. Thus, the No Project/Development in Accordance with the Existing Zoning Alternative would be considered Environmentally Superior Alternative. As previously stated, this Alternative does not meet the project objectives.;. In particular, the No Project/Development in Accordance with the Existing Zoning Alternative would not provide single-family housing to meet the growth projections of the City of El Centro within the City's Sphere-of-Influence; or provide public infrastructure improvements for the orderly expansion of urban development.

Appendix A: Statement of Overriding Considerations

STATEMENT OF OVERRIDING CONSIDERATIONS

The California Environmental Quality Act (CEQA) requires the lead agency to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. The City of El Centro proposes to approve the Willow Bend project although unavoidable adverse agricultural resources and air quality impacts have been identified in the EIR. Specifically, the significant and unavoidable impacts are associated with the loss of Farmland of Statewide Importance due to the conversion of the project site to urban uses and to inconsistency with the adopted Air Quality Attainment Plan and State Implementation Plan for PM10 . Even though these adverse impacts are not reduced to a level considered less than significant, the El Centro City Council finds that those impacts are outweighed by the benefits of the Willow Bend project. Further, the alternatives which were identified in the EIR would not meet either in part or in whole the project objectives, as summarized below, to the same extent as the proposed project:

- Supply single-family housing to meet the growth projections of the City of El Centro contiguous to similar development within the City's Sphere-of-Influence;
- Locate development to meet anticipated growth in areas of relatively lesser environmental sensitivity, accommodating growth while balancing environmental considerations;
- Provide public infrastructure improvements for the orderly expansion of urban development; and
- Locate housing adjacent to major highway arterials (SR-86) and with convenient access to Interstate 8 to promote efficient traffic flows and minimize traffic demands on local and collector streets.

Therefore, the El CEntro City Council, having reviewed and considered the information contained in the EIR and the public record, adopts the Statement of Overriding Considerations which has been balanced against the unavoidable adverse impacts in reaching a decision on this project.

Mitigation Monitoring and Reporting Program for Environmental Impact Report for City of El Centro Zone Change 05-05 and Tentative Subdivision Map (Willow Bend)

State Clearinghouse No. 2005101128

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October 30, 2006

Draft Environmental Impact Report for City of El Centro
Zone Change 05-05 and Tentative Subdivision Map (Willow Bend) Mitigation Monitoring and Reporting Program

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
				Req'd	Verified Date/Init	Req'd	Verified Date/Init	Monitor [1]	Report [2]
SECTION 5.1 - AGRICULTURAL RESOURCES									
Project implementation will result in the conversion of Farmland of Statewide Importance.	There are no feasible mitigation measures.								
SECTION 5.2 - AIR QUALITY									
Onsite construction emissions generated during construction principally consist of exhaust emissions (NO_X, SO_X, CO, VOC, and PM_{10}) from heavy-duty construction equipment operation and fugitive dust (PM_{10}) from disturbed soil.	**AQ 5.2-1.** During construction of the proposed improvements, all construction equipment will be properly maintained at an offsite location and includes proper tuning and timing of engines. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction.	During construction.	Applicant and City of El Centro						
	AQ 5.2-2. During construction of the proposed improvements, all construction equipment will be fueled with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use in off-road equipment).	During construction.	Applicant and City of El Centro						
	AQ 5.2-3. To the maximum extent feasible, use diesel construction equipment meeting the CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines.	During construction.	Applicant and City of El Centro						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
				Req'd	Verified Date/Init	Req'd	Verified Date/Init	Monitor [1]	Report [2]
	AQ-5.2.4. Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction site and provide temporary traffic control (i.e. flag person) during demolition debris transport and other construction related truck hauling activities.	Prior to issuance of a grading permit and during construction.	Applicant and City of El Centro						
	AQ 5.2-5. During construction of the proposed improvements, construction equipment will not idle on site for more than 10 minutes.	During construction.	Applicant and City of El Centro.						
	AQ 5.2-6. During construction of the proposed improvements, the project applicant will provide onsite meals to construction workers by arranging a lunch wagon to visit the construction site during work breaks including the lunch break. This will improve air quality by reducing traffic created by construction workers.	During construction.	Applicant and City of El Centro						
	AQ 5.2-7. During construction of the proposed improvements, the project applicant will provide onsite electrical hook ups for electric construction tools, such as saws, drills and compressors, to eliminate the need for diesel powered electric generators.	During construction.	Applicant and City of El Centro						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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	AQ 5.2-8. Prior to construction of the proposed improvements, the project proponent will provide a Dust Control Plan that will describe the application of standard best management practices to control dust during construction. Best management practices will include application of water on disturbed soils a minimum of two times per day, covering haul vehicles, replanting disturbed areas as soon as practical, restricting vehicle speeds on unpaved roads to 15 mph, sweeping street access points at the end of each day, and other measures, as deemed appropriate to the site, to control fugitive dust. The Fugitive Dust Control Plan shall be submitted to the City and the Imperial County Air Pollution Control District for approval and approved prior to construction.	Prior to issuance of a grading permit and during construction.	Applicant and City of El Centro						
	AQ 5.2-9. During construction of the proposed improvements, only low volatility paints and coatings as defined in Imperial County APCD Rule 424 shall be used. All paints shall be applied using either high volume, low pressure (HVLP) spray equipment or by hand application.	During construction.	Applicant and City of El Centro						
The proposed project is not consistent with the AQMP	No mitigation is available.								

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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SECTION 5.3 - BIOLOGICAL RESOURCES									
Burrowing owls would be adversely impacted on a short-term basis during construction activities to underground the onsite drains.	**BR 5.3-1.** Additional focused survey shall be conducted to more conclusively determine the number of owls occupying the project site and a 500-foot buffer. Focused surveys shall follow accepted burrowing owl protocol, which includes a nesting season survey. During the nesting season survey, four site visits are conducted between April 15 and July 15. Surveys shall be conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise.	Prior to issuance of a grading permit.	Applicant and City of El Centro						
	BR 5.3-2. A burrowing owl preconstruction survey shall be completed no sooner than 30 days prior to commencement of construction.	Prior to issuance of a grading permit.	Applicant and City of El Centro						
	BR 5.3-3. Burrowing owls inside the project site shall be actively relocated prior to construction activity in order to avoid direct impacts of burrow destruction. Once all burrows on the project site are confirmed to be absent of owls, they shall be systematically collapsed. Where possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags will be inserted into the tunnels during	Prior to issuance of a grading permit.	Applicant and City of El Centro						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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	excavation to maintain an escape route for any animals inside the burrow.								
	BR 5.3-4. No construction-related disturbance shall occur within 50 m., approx. 160 ft., of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m., approx. 250 ft., during the breeding season of February 1 through August 31.	During construction.	Applicant and City of El Centro						
	BR 5.3-5. If feasible, 6.5 acres of foraging habitat for each pair of burrowing owl would be preserved in a conservation easement and managed to promote burrowing owl use of the site. This habitat shall be adjacent to the project site but at least 50 meters from the impact area. The displaced owls would be encouraged to occupy this conserved area by actively relocating them to natural or artificial burrows. One alternate natural or artificial burrow should be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. Conservation of agricultural lands to the west or south of the project site would be the only appropriate options under this mitigation measure.	Prior to issuance of grading permit.	Applicant and City of El Centro						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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	BR 5.3-6. If Mitigation Measure BR 5.3-5 is not feasible, this mitigation measure is required. Off-site replacement of burrowing owl habitat shall be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable burrowing owl habitat. One alternate natural or artificial burrow shall be provided for each burrowing owl suitable burrow that will be excavated in the project impact zone, including the undergroundment of the adjacent drains. The off-site replacement of suitable burrowing owl habitat shall follow one of the following scenarios: • Replacement of occupied habitat with off-site occupied habitat: 9.75 acres per pair or single bird; or • Replacement of occupied habitat with off-site suitable unoccupied habitat: 19.5 acres per pair or single bird.	Prior to issuance of grading permit	Applicant and City of El Centro						
In the long-term, due to increased recreational use of the berms by humans and pets, harassment of owls will occur. Also, the conversion of burrowing owl foraging, dispersing, and nesting habitat will be impacted.	**BR 5.3-7.** An educational flyer shall be developed that informs new residences that off-road activity is not permitted on the surrounding berms. In addition, pets shall be on leashes if walked on berms. The flyer shall also make new residents aware of burrowing owls, their biology, how and why they are sensitive, and their benefits to insect and rodent control.	During construction and operation of the project.	Applicant and City of El Centro						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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The proposed project contains suitable nesting bird habitat. If actively nesting birds are present during construction, they will be disturbed by construction activities.	**BR 5.3-8.** The removal of vegetation, ground disturbance, or elimination of other potential nesting habitat should be conducted outside of avian nesting season (February through August). This is particularly true for construction during the undergroundment of the drains as burrowing owls were confirmed as present and are likely resident breeders. If construction occurs during the avian nesting season, a pre-construction nesting bird survey shall be conducted seven days prior to any ground disturbing activities. If birds are found to be nesting inside the impact area, construction will need to be postponed until a no-construction buffer, 250 feet for passerines and 500 feet for raptors, is established. Construction inside the buffer could commence once a qualified biologist determines that the nest is no longer active.	Prior to issuance of a grading permit and during construction.	Applicant and City of El Centro.						
SECTION 5.4 - CULTURAL RESOURCES									
Cultural Resources The records search and field survey results revealed that there a low potential exists for impacts to prehistoric cultural resources. However, there is always the potential for undiscovered resources to be uncovered.	**CR 5.4-1.** In the event that human remains are uncovered, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the Imperial County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the	During construction.	Applicant and City of El Centro						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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	remains to be Native American, then the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98, or								
	CR 5.4-2. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the recommendations of the most likely descendant or on the property in a location not subject to further subsurface disturbance: • The NAHC is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission. • The descendant identified fails to make a recommendation; or • The landowner or his authorized representative rejects the	During construction.	Applicant and City of El Centro						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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	recommendation of the descendant, and the mediation by the NAHC fails to provide measures acceptable to the landowner.								
Paleontological Resources There is a high probability that the project site contains significant paleontological resources, at a depth of eight feet or greater below ground surface.	**CR 5.4-3.** Prior to any clearing and grubbing and/or earthmoving activities on the project area, a qualified Project Paleontologist retained by the Proponent and approved by the City shall review the approved development and construction plans. The paleontologist shall participate in a pre-construction project meeting with the development staff to ensure an understanding of the mitigation measures required during construction.	Prior to issuance of grading permit.	Project Paleontologist, Applicant and City of El Centro.						
	CR 5.4-4. Paleontologic monitoring of any shall be conducted by a qualified monitor, under direct guidance of a Project Paleontologist. Earthmoving in areas of the parcel where previously undisturbed sediments will be buried but not otherwise disturbed will not be monitored. Monitoring shall begin once earthmoving reaches 8 feet below the original ground surface. Non-virgin soils need not be monitored.	During construction.	Project Paleontologist, Applicant and City of El Centro.						
	CR 5.4-5. If too few fossil remains are found after 50 percent of earthmoving is complete, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction. If fossil remains are found during monitoring, up	During construction.	Project Paleontologist and Applicant.						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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	to 6,000 pounds of fossiliferous sediments will be recovered from the fossil site and processed to allow for the recovery of smaller fossil remains. The total weight of all processed samples from the fossil-bearing rock unit will not exceed 6,000 pounds at any one site.								
	CR 5.4-6. If fossil remains are found, the Project Paleontologist shall develop a storage agreement with a museum repository acceptable within the City to allow for the permanent storage and maintenance of any fossil remains recovered in the Project Site as a result of the mitigation program, and for the archiving of associated specimen data and corresponding geologic and geographic site data. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then shall be curated (assigned and labeled with museum repository fossil specimen numbers and corresponding fossil site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards) and catalogued. Associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into	During construction.	Project Paleontologist and Applicant.						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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	appropriate museum repository catalogs and computerized data bases) at the museum repository by a laboratory technician. The remains then will be accessioned into the museum repository fossil collection, where they will be permanently stored and maintained. The associated specimen and site data shall be made available for future study by qualified investigators.								
	CR 5.4-7. A final report of findings shall be prepared by the Project Paleontologist for submission to the City, and the museum repository following accessioning of the specimens into the museum repository fossil collection. The report shall describe parcel geology/stratigraphy, summarize field and laboratory methods used, include a faunal list and an inventory of curated/catalogued fossil specimens, evaluate the scientific importance of the specimens, and discuss the relationship of any newly recorded fossil site in the parcel to relevant fossil sites previously recorded from other areas.	Post construction.	Project Paleontologist, Applicant and City of El Centro.						
SECTION 5.5 - GEOLOGY AND SOILS									
The project site is within the vicinity of numerous active faults and will likely experience moderate to strong ground	**GS 5.5-1.** Prior to the issuance of grading permits, LandMark Consultants, Inc., or other qualified engineering geologist approved by the City of El Centro shall	Prior to the issuance of grading permits.	Qualified engineering geologist, Applicant						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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motion from earthquakes in the region.	review and approve all grading plans and earthwork operation plans in relation to the Recommendations set forth in Section 4 of the Geotechnical Study (Appendix F of this DEIR).		and City of El Centro.						
	GS 5.5-2. LandMark Consultants, Inc. or other qualified engineering geologist approved by the City of El Centro shall be provided with a forty-eight hours advance notice in order to be present at the site during all earthwork activities related to the excavation, tree root removal, stripping, backfill, and compacting and filling of the site and to perform periodic compaction tests.	During all earthwork activities.	Qualified engineering geologist, Applicant and City of El Centro.						
The results of the testing soils for expansive properties indicated that earthwork operations can be expected to encounter expansive soils with expansion indexes in the range of medium to high. Thus, there is the potential for soils at the site to have a high potential for expansion.	Please refer to mitigation measures GS 5.5-1 and 5.5-2,								
	GS 5.5-3. Prior to the issuance of grading permits, the project applicant shall include one of the following foundation systems and remediation schemes to reduce the potential for expansive soils to less than significant. • Waffle-slabs supported on a system of	Prior to the issuance of grading permits.	Applicant and City of El Centro.						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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	drilled piers anchored below the zone of moisture change; • Moisture conditioning subgrade soils to a minimum of 5% above optimum moisture (ASTM D1557) for the full range in depth of surface soils; • Design of foundations that are resistant to shrink/swell forces of silt/clay soil; • Excavation of existing materials and replacement by non-expansive soils; • Reinforcement in footings and slabs. Flexural and shear stresses in slabs should be computed by determining the differential swell for the center lift and edge lift conditions using design procedures recommended by the Post-Tensioning Institute. The differential swell should be used to compute the maximum shear stresses and flexural stresses in floor slabs and flatwork. Use edge moisture variation distance (em) of six feet and three feet for the center lift and edge lift conditions, respectively; and • Provide Post-tensioned, free floating slabs-on-grade.								
	GS 5.5-6. Provide positive free drainage away from the structure and make every effort possible to prevent subgrade saturation by measures such as: • containing all landscaping in sealed	During Construction	Qualified Engineering geologist, applicant, and City of						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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	planters, sealing all construction joints with an elastomeric compound, providing the building with eave gutters and downspouts; and • routing all drainage impinging upon the site from off-site sources as well as drainage generated on the site away from the proposed residential structures.		El Centro						
There is groundwater at a level of eight feel below ground surface. Soils encountered below three feet have the potential to pump groundwater under heavy construction wheel loads because of the silty conditions in the near surface soils have the tendency to support layers of groundwater.	**GS 5.5-4.** Base line collectors (6-8 inches in diameter) along the north side of the project site shall be crushed in place and trench backfill compacted (85-90%). The 4-inch lateral pipeline drains shall be plugged at street crossings.	During all earthwork activities.	Applicant and City of El Centro						
	GS 5.5-5. Light earthmoving equipment (i.e., 613 and/or 623 Earthmovers) shall be used on the project site during construction activities to reduce the potential for groundwater pumping.	During all earthwork activities.	Applicant and City of El Centro						
SECTION 5.6 - HAZARDS AND HAZARDOUS MATERIALS									
Remnants of past activities and debris are located on the project site.	**HM 5.6-1.** Prior to any earth moving activities on the project site, debris consisting of a wood pallet, dry brush, Styrofoam, cardboard and automobile tires found at the northern portions of the project site shall be removed and properly disposed.	Prior to the issuance of a grading permit.	Applicant and City of El Centro						

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Pesticide residue (DDE) exists in the project site soils below current threshold (action) limits.	**HM 5.6-2.** Prior to the issuance of a grading permit, the project applicant shall coordinate with DTSC to review and approve the results of the pesticide scan. DTSC shall provide written verification that no further action is required in relation to the presence of DDE in near surface soils. If DTSC determines that the soils exceed the acceptable limits the soils shall be remediated and/or properly disposed of per DTSC requirements.	Prior to the issuance of a grading permit.	Applicant, the Department of Toxic Substance Control (DTSC), and City of El Centro.						
SECTION 5.7 - NOISE									
Activities involved in construction of the project would generate noise levels in the range of 80 dBA to 87 dBA.	**N 5.7-1.** Prior to the issuance of grading permits, the grading plans shall state that all gas and diesel power equipment shall be properly muffled and maintained. Construction activities should be limited to the hours and days permitted by the City of El Centro.	Prior to the issuance of grading permits and during construction.	Applicant and City of El Centro						
SECTION 5.8 - PUBLIC SERVICES AND UTILITIES									
Fire Protection and Emergency Medical Services The El Centro Fire Department (ECFD) has stated that the proposed project would increase demands for fire protection and emergency medical services and would have an adverse impact on response times and staffing ratios. The ECFD has stated that it cannot currently meet the	**PSU 5.8-1.** Prior to recordation of the final map, the applicant shall be required to enter into an agreement that will mitigate the operational impacts to fire services caused by the approval of the project. The description of the security for the agreement and the method of payment will be included in the agreement.	Prior to final map approval.	Applicant and City of El Centro.						

Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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existing needs of the community and implementation of the proposed project would exacerbate this condition.									
Police Services The El Centro Police Department (ECPD) has indicated that the proposed project would increase demands for police protection and would have an adverse impact on response times and staffing ratios. The ECPD has stated that this would be a significant impact and implementation of the proposed project would exacerbate this condition.	**PSU 5.8-2.** Prior to recordation of the final map, the applicant shall be required to enter into an agreement that will mitigate the operational impacts to police services caused by the approval of the project. The description of the security for the agreement and the method of payment will be included in the agreement.	Prior to final map approval.	Applicant and City of El Centro.						
Solid Waste The project's construction would generate approximately 1,004 tons of construction debris. This would be a significant short-term solid waste impact.	**PSU 5.8-3.** At the time building permits are sought, the project applicant shall demonstrate to the satisfaction of the City of El Centro Public Works Department that a certified construction and demolition recycler has been retained and a Waste Management Plan has been prepared for the construction phase of the proposed project.	Prior to the approval of building permits.	Applicant and City of El Centro.						
SECTION 5.9 - TRANSPORTATION AND TRAFFIC									
With the implementation of the proposed project all intersections and roadway segments will operate at an acceptable LOS.	No mitigation is required.								

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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SECTION 6 - CUMULATIVE IMPACTS									
Agricultural Resources The proposed project will result in the conversion of Farmlands of Statewide Importance. Similar projects will result in the conversion of designated farmlands and/or lands zoned for agricultural land uses. This is considered a significant and unavoidable cumulative impact.	No mitigation is available.								
There is substantial development in the project area and in the Salton Sea Air Basin. Much of this new development was not contemplated in the populations of the 1991 Attainment Plan and the 1993 PM_{10} Plan. These new development projects have the potential to increase the emissions of the basin. The project area is not attainment for ozone, CO, or PM_{10}. Operational emissions of ROG, NO_X (Ozone precursor pollutants) CO, and PM_{10} from the proposed project will incrementally contribute to a significant cumulative effect because the project emissions combined with emissions from all other projects in the Salton Sea Air Basin will be	No mitigation is available								

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cumulatively considerable air quality impacts with regard to these pollutants.									
Biological Resources Implementation of the proposed project, in conjunction with future developments as identified earlier in this section would contribute to the ongoing loss of open space in the region, resulting in a decline of habitat for burrowing owls and nesting birds. .	Please see mitigation measures BR 5.3-1 through BR 5.3-8 in Section 5.3, Biological Resources, of this EIR.	Prior to the issuance of grading permits and ongoing during construction	Applicant and City of El Centro						
Cultural Resources Like the proposed project, cumulative projects may result in the disturbance of soils at a depth of 8 feet or greater below ground level, which, could contain paleontological resources.	Please see mitigation measures CR 5.4-1 through CR 5.4-7, in Section 5.4, Cultural Resources, of this EIR.	Prior to the issuance of grading permits and ongoing during construction	Applicant, project paleontolo-gist, and the City of El Centro						
Noise Onsite locations will exceed El Centro's acceptability criterion of 60 dB Leq within the outdoor activity areas.	**N 6-1.** A 6-foot high sound wall should be constructed along the project site. The sound wall must be continuous and constructed of a dense material such as masonry blocks or stucco on both sides of a wood/steel frame.	Prior to the approval of building permits.	Applicant and City of El Centro.						
	N .6-2. Mechanical ventilation or air conditioning must be provided for all homes so that windows and doors may remain closed for the required acoustical insulation.	During construction.	Applicant.						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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Transportation and Traffic ***Near-Term Scenario*** *Intersections* Seven of the eight study area intersections under the near-term conditions will experience a significant cumulative impact. The addition of project traffic will cumulatively contribute to the degradation of these intersections resulting in an operational LOS E or worse. These intersections are: • State Route 86 and West McCabe Road (AM - LOS F, PM - LOS F) • State Route 86 and Horne Road (PM - LOS F) • State Route 86 and Willow Bend Drive (Project Access) (PM - LOS F) • State Route 86 and Countryside Drive (Project Access) (PM - LOS F) • State Route 86 and Interstate 8 Westbound Ramp (PM - LOS F) • State Route 86 and Interstate 8 Eastbound Ramp (PM - LOS F)	The following roadway improvements are recommended to improve the operation of the impacted locations. The City Engineer shall make the determination of whether the payment of proportionate share or installation of the improvements is required. This shall be completed at the time of project approval. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for all cumulatively impacted locations. As these roadway network improvements effect intersections and roadways under Jurisdiction of the State of California Department of Transportation (Caltrans) along State Route 86, the following improvements are in accordance with the Memorandum of Understanding (MOU) regarding State Route 86 between Caltrans and the City of El Centro. These improvements adhere to the guidelines as established within the MOU and mitigate all intersections and roadway segments to a LOS D or better.								

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
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• State Route 86 and Wake Avenue (PM - LOS E)									
	Intersections **TT 6-1.** State Route 86 and Interstate 8 Westbound Ramp - The project applicant should contribute a fair share (4.9%) towards the construction of a westbound right-turn lane and a second northbound left-turn lane. LOS before/after mitigation: F/D.	At the time of project approval.	Applicant and the City of El Centro.						
	TT 6-2. State Route 86 and Interstate 8 Eastbound Ramp - The project applicant should contribute a fair share (4.6 %) towards the construction of two eastbound right-turn lanes and a second southbound left-turn lane. LOS before/after mitigation: F/D.	At the time of project approval.	Applicant and the City of El Centro.						
	TT 6-3. State Route 86 and Wake Avenue - The project applicant should contribute a fair share (4.7%) towards the construction of a second eastbound left-turn lane. LOS before/after mitigation: E/D.	At the time of project approval.	Applicant and the City of El Centro.						
	TT 6-4. State Route 86 and Horne Road - The project applicant should contribute a fair share (10.6%) towards the signalization of the intersection. LOS before/after mitigation: F/B.	At the time of project approval.	Applicant and the City of El Centro.						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
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	TT 6-5. State Route 86 and Willow Bend Drive - The project applicant should contribute a fair share (13.8%) towards the construction of a right turn in/right turn out island from the project driveway. LOS before/after mitigation: F/C.	At the time of project approval.	Applicant and the City of El Centro.						
	TT 6-6. State Route 86 and Countryside Drive - The project applicant should contribute a fair share (9.0%) towards the signalization of the intersection. LOS before/after mitigation: F/A.	At the time of project approval.	Applicant and the City of El Centro.						
	TT 6-7. State Route 86 and West McCabe Road - The project applicant should contribute a fair share (1.5%) towards the signalization of the intersection including the provision of dedicated eastbound and westbound left-turn pockets. LOS before/after mitigation: F/C.	At the time of project approval.	Applicant and the City of El Centro.						
Roadway Segments Two of the five roadway segments under the near-term conditions will be significantly impacted by cumulative projects that include the proposed project. The addition of project traffic will cumulatively contribute to the degradation of these roadway segments resulting in an operational LOS E or worse. These roadway segments are:	**Roadway Segments** **TT 6.8.** State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps - The project applicant should contribute a fair share (5.6 %) towards the widening of SR 86 between Wake Avenue and I-8 to six lanes. LOS before/after mitigation: E/B.	At the time of project approval.	Applicant and the City of El Centro.						

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Impacts	Mitigation Measures	Schedule for Implementation	Monitoring Responsibilities	Compliance Monitoring and Reporting					
				Shown on Plans		Installed on Site		Frequency of:	
				Req'd	Verified Date/Init	Req'd	Verified Date/Init	Monitor[1]	Report[2]
• State Route 86 - McCabe Road to Project Access (South of Horne Road) (LOS E) • State Route 86 - Wake Avenue to Interstate 8 Eastbound Ramps (LOS E)									
	TT 6-9. *State Route 86 - McCabe Road to Project Access* - The project applicant should contribute a fair share (2.7%) towards the widening of SR 86 between McCabe Road and Project Access to four lanes, including the widening of SR 86 to four lanes along the project frontage. LOS before/after mitigation: E/A.	At the time of project approval.	Applicant and the City of El Centro.						
Horizon Year 2025 Scenario The proposed project will contribute to a significant cumulative roadway segment impact along SR 86 between Danenberg Drive and Wake Avenue.	**TT 6-10.** *SR-86 between Danenberg Drive and Wake Avenue* - The project applicant shall contribute a fair share (5.7%) towards the widening of the SR-86 between Danenberg Drive and Wake Avenue to four lanes. It should be noted that the City Engineer shall make the determination whether the payment of the proportionate share or installation of the improvements is required. Additionally, should the City of El Centro adopt a Transportation Impact Fee (TIF) program, payment into such a program may replace the fair share contribution for a cumulatively impacted locations.	At the time of project approval.	Applicant and the City of El Centro.						

EXHIBIT P

EIR Addendum

Addendum to the Final Environmental Impact Report for the Zone Change 05-05 and Tentative Subdivision Map Willow Bend El Centro, California

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RECON Number 9938
December 2, 2024

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ATTACHMENT

1: Willow Bend Project – Transportation Assessment (LLG Engineers)
2: Intersection Control Evaluation – SR-86 / Countryside Drive Intersection (LLG Engineers)

Acronyms and Abbreviations

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
Final EIR	City of El Centro Zone Change 05-05 and Tentative Subdivision Map Willow Bend Final Environmental Impact Report (SCH# 2005101128)
I-8	Interstate 8
ICAPCD	Imperial County Air Pollution Control District
ICE	Intersection Control Evaluation
IID	Imperial Irrigation District
LLG	Linscott, Law & Greenspan, Engineers
LLMD	Lighting and Landscape Maintenance District
NOP	Notice of Preparation
SR-86	State Route 86
TIF	Traffic Impact Fee
TIS	Traffic Impact Study
TM	Tentative Subdivision Map

1.0 Introduction

This document is an Addendum to the City of El Centro Zone Change 05-05 and Tentative Subdivision Map Willow Bend Final Environmental Impact Report (SCH# 2005101128; hereafter referred to as the Final EIR or 2007 Final EIR). The Addendum analyzes the environmental effects of the proposed changes to the Final EIR from 2007, which analyzed potential environmental impacts associated with the development of the Willow Bend project. The Addendum has been prepared in accordance with relevant provisions of the California Environmental Quality Act (CEQA) of 1970 (as amended) and the State CEQA Guidelines.

According to Section 15164 of the State CEQA Guidelines, an addendum to a previously certified EIR or Negative Declaration is the appropriate environmental document in instances when "only minor technical changes or additions are necessary" and when the new information does not involve new significant environmental effects beyond those identified in the previous EIR.

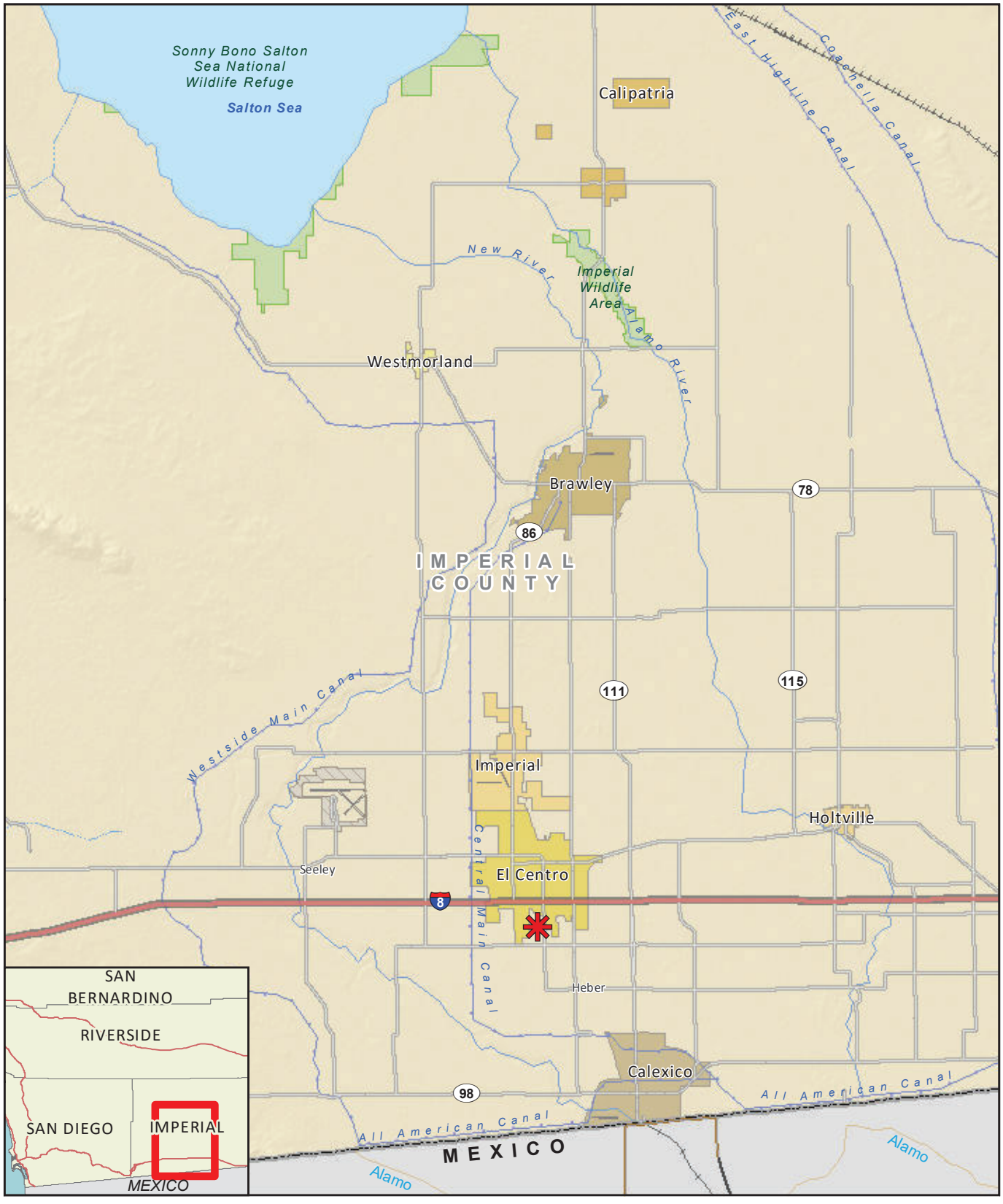
This Addendum describes the details of the updated Tentative Subdivision Map (TM) for the Willow Bend project in the City of El Centro and compares its impacts to those identified in the Final EIR. The analysis herein demonstrates that the proposed addendum involves only minor technical changes to the Final EIR that was adopted in February 2007 and would not result in any new or increased severity significant environmental effects beyond those identified in the Final EIR. As such, an addendum is the appropriate environmental document under CEQA.

2.0 Project Description

The City of El Centro proposes to amend the 2007 Willow Bend TM which was addressed in a Final EIR. The Final EIR is a comprehensive environmental document that reviewed potential environmental impacts associated with the development of the Willow Bend housing project. The currently approved Final EIR would allow for 131 single-family residences, a 1.67-acre park, and a 3.02-acre retention basin on a subdivision of 38 acres.

The project site is located north of McCabe, east of South Clark Road, and west of State Route 86 (SR-86) in the southern part of the city of El Centro (Figures 1-3). The proposed project site remains in agricultural production and is surrounded by residential development to the north and east, and agricultural land to the west and south. Access to the project site would be provided from SR-86 by two driveways, Willow Bend Drive and Countryside Drive. The proposed project would amend the approved TM (Figure 4) and update the original conditions of approval that were included in the Final EIR.

The addendum compares the impacts from the proposed project with the impacts presented in the 2007 Final EIR for the adopted project. The proposed project would allow for 120 units in comparison to 131 single-family residences approved in the Final EIR. The proposed 11-unit reduction in the number of residential units results in an 8% decrease from the original map. A comparison of Figure 4 (Approved TM) and Figure 5 (Proposed TM) shows that the 11-unit decrease allows for the accommodation of an on-site 1.37-acre park in the center of the site. The on-site retention basin under the revised proposal would be 1.452 acres compared to the 3.02 acres for the original map.



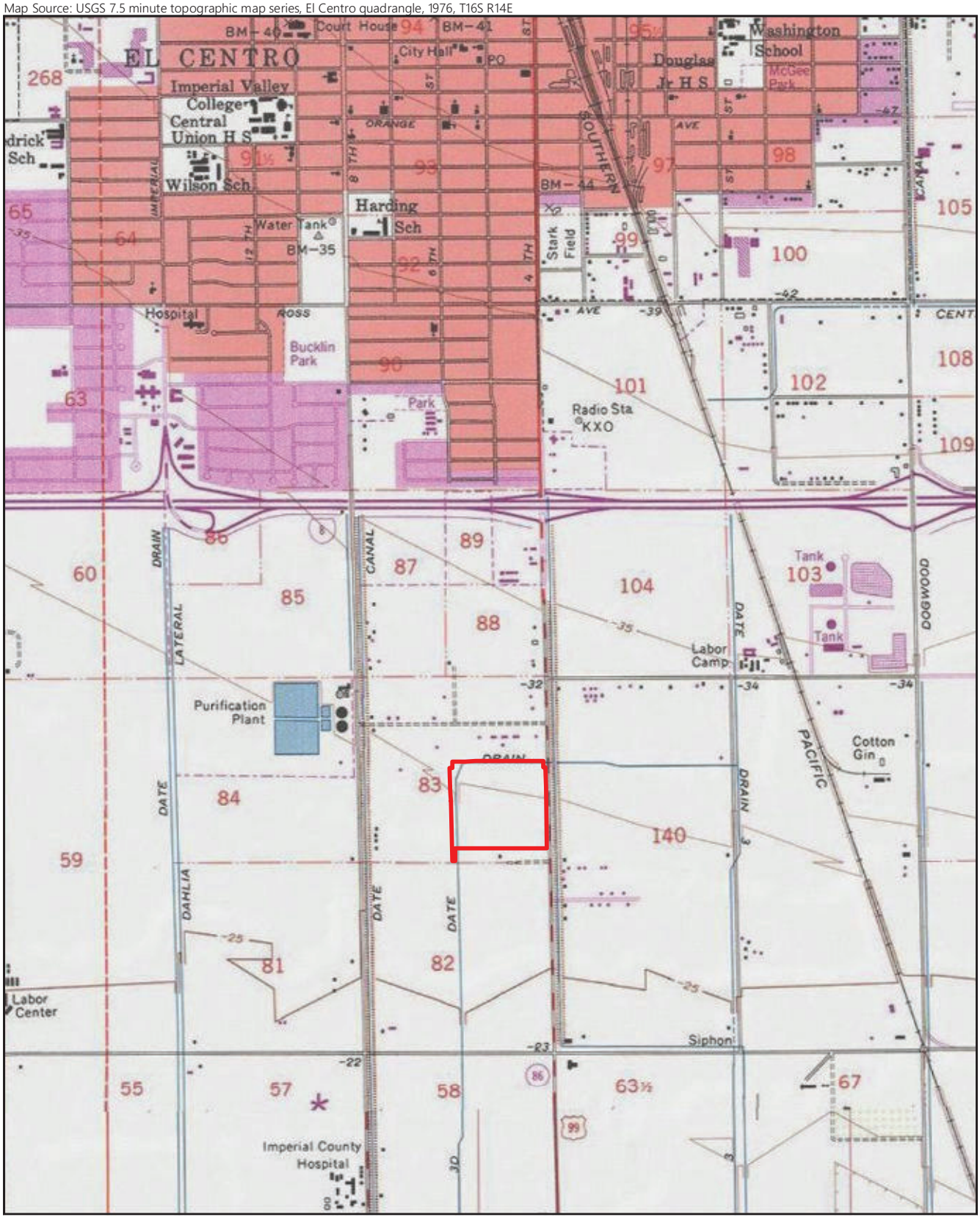
Project Location

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FIGURE 1
Regional Location

Map Source: USGS 7.5 minute topographic map series, El Centro quadrangle, 1976, T16S R14E



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FIGURE 2
Project Location on USGS Map

Image Source: NearMap (flown July 2022)



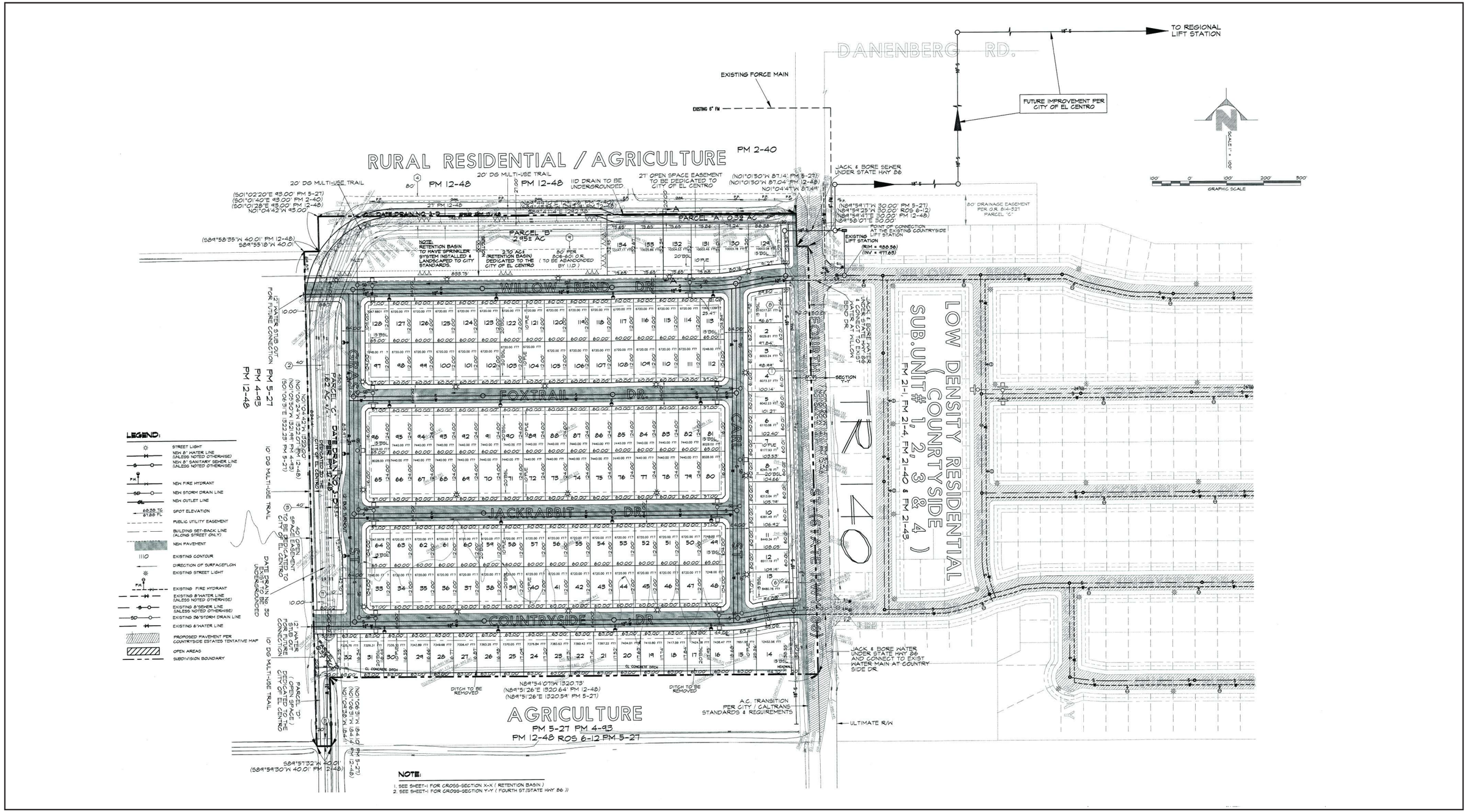
Project Boundary

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FIGURE 3
Project Location on Aerial Photograph

Map Source: Development Design & Engineering, Inc.

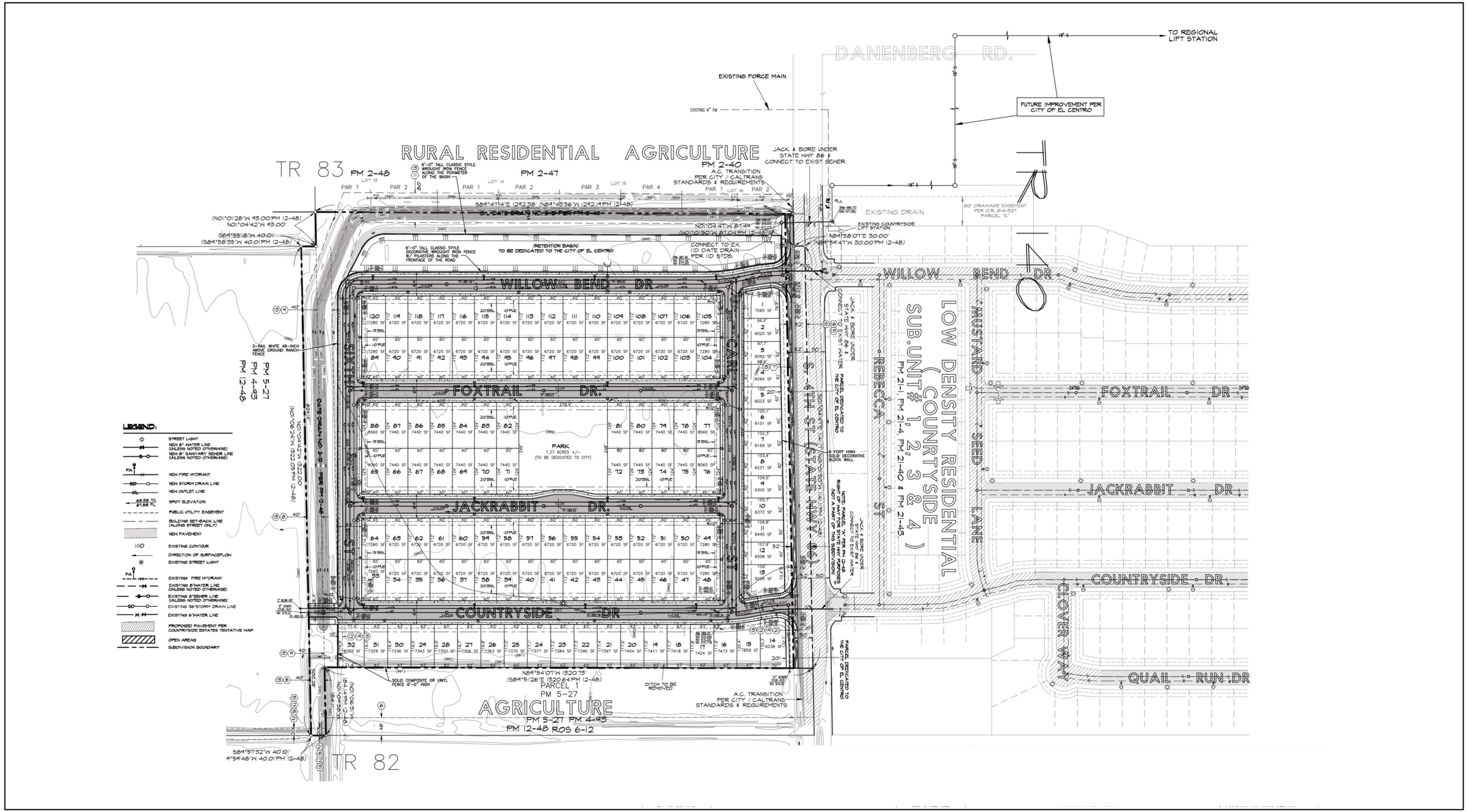


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FIGURE 4
Approved Tentative Subdivision Map

Map Source: LC Engineering Consultants, Inc.



0 Feet 200

FIGURE 5
Proposed Tentative Subdivision Map

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Unlike the original TM approval, the Date Drain No. 3 would be unaffected by project grading under the revised TM. Additionally, the addendum addresses the applicant's requested changes and updates to the original project conditions of approval as they apply to issue areas (e.g., traffic conditions of approval). The applicant-requested changes are described below.

List of Applicant-Requested Changes to Original Conditions of Approval

Proposed Amendments to Conditions

Condition 1: The project shall include the development of a maximum of 134 single-family residential lots with average minimum lot sizes of 7,200 square feet. The residences located on lots 129-134 shall be limited to a single story.

> Change to: The project shall include the development of a maximum of 120 single-family residential lots with an average minimum lot size of 6,000 square feet.

Condition 10: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (2.7%) or provide the appropriate Traffic Impact Fee (TIF), towards the widening of Highway 86 between McCabe Road and the project site to four lanes along the project frontage.

> Change to: Prior to the recording of the first final map, the applicant shall complete or provide security for the widening of Highway 86 (4th Street) to a four-lane right-of-way width along the project frontage prior to recording of the first final map.
>
> The widening, including any required deceleration and acceleration lanes north and south of the development frontage, shall be completed prior to the issuance of the 60th certificate of occupancy, as determined by the approved Caltrans [California Department of Transportation] ICE [Intersection Control Evaluation] Study or other Caltrans requirements.
>
> The No. 2 southbound lane shall merge into the No. 1 southbound lane such that the Countryside Drive and Highway 86 intersection transitions to a single southbound lane at the intersection.

Condition 12: Prior to the issuance of the first certificate of occupancy, the applicant shall signalize the Highway 86 and Countryside intersection.

> Change to: Prior to the issuance of the 1st certificate of occupancy, and contingent upon approval by Caltrans, the applicant shall complete improvements to the intersection at Highway 86 (4th Street) and Countryside Drive to provide full directional access to the development. Final intersection improvements shall be designed and constructed in accordance with the results of the Caltrans Intersection Control Evaluation (ICE) and shall be completed no later than the issuance of the 60th certificate of occupancy, or as determined by the approved Caltrans ICE Study.

Condition 16: Prior to the recordation of the final map, the applicant shall be required to enter into an agreement with the City for the payment of a fair share cost to mitigate the operation and maintenance impacts to fire and police services caused by the approval of the project. The

description of the security for the agreement and the method of payment shall be included in the agreement.

> Change to: The applicant agrees to pay standard Police and Fire Impact fees as part of building permit issuance unless deferred as approved by the City of El Centro.

Condition 17: Prior to the first final inspection, the existing Date Drain abutting the western boundary of the project site shall be pipelined, undergrounded and landscaped in accordance with the specifications of the Imperial Irrigation District (IID). In addition, the private delivery canal located along the southern boundary of the project site shall be removed.

> Change to: Access to the Date Drain by the public shall be secured with a four-foot-high, three-rail wood fence along the western project site boundary. Fencing shall be installed prior to the completion of Grass Street/6th Street. The applicant shall coordinate with the Imperial Irrigation District for maintenance access requirements.

Condition 18: Prior to the issuance of building permits, a trunk sewer line shall be provided along the eastern boundary of the project adjacent to Highway 86 (outside CalTrans' right-of-way) extending to the southern boundary, as per city standards.

> Change to: Prior to the issuance of the first certificate of occupancy, a trunk sewer line shall be installed on Carl Street to connect to the existing lift station at Highway 86 (4th Street) and Willow Bend Drive. The trunk sewer line may be constructed within the right-of-way within the development (Carl Street) or adjacent to Highway 86 (4th Street). The Countryside Drive sewer line shall be sized and placed to allow connection from the development at the west. The developer shall be reimbursed for any additional costs incurred due to upsizing by the development to the west.

Condition 19: A six (6') foot high solid decorative block/masonry or stucco wall shall be provided along the eastern boundary of lots 1-14 and 129, the western boundary of lots 32 and 134, and the northern boundary of lots 129-134.

> Change to: A six (6) foot high solid decorative block/masonry wall shall be provided along the western Highway 86 right-of-way line (eastern boundary of lots 1-14) and along the property lines abutting the park (eastern boundary of lots 81 and 70 and western boundary of lots 80 and 71). A vinyl or composite fencing shall be installed along the southern project boundary (southern boundary of lots 14-31 and western boundary of lot 31).

Condition 20: The proposed storm water retention basin for the project site shall be developed in accordance with the City's design standards for retention basins.

> Change to: The proposed stormwater retention basin for the project site shall be developed in accordance with the City's design standard for retention basins. This requires a wrought iron fence with pilasters along the perimeter of the basin abutting and visible from the public right-of-way.

Condition 21: Prior to the close of the sale of the thirteenth lot, the applicant shall establish a Lighting/Landscaping Maintenance Assessment District for the project in order to pay for the maintenance of any lighting, landscaping, and Park/Recreation facilities, including graffiti abatement, within the public right-of-way, IID easements, retention basin, park and multi-use trail.

> Change to: Prior to the issuance of the thirteenth certificate of occupancy, the applicant shall establish a Lighting and Landscape Maintenance District (LLMD) for the project. The LLMD shall pay for the maintenance of any lighting, landscaping, park, and recreation facilities, including graffiti abatement, within the public right-of-way, IID easement, retention basin and the park.

Condition 26: The applicant shall be responsible for any costs associated with right-of-way acquisition, if necessary. In the event the acquisition of right-of-way is needed, applicant shall enter into an agreement with the City prior to the approval of the final map to pay for the costs of acquiring off-site real property interests and to complete the improvements required herein at such time as the City acquires an interest in the real property that will permit the improvements to be made by the applicant.

> Change to: The applicant shall be responsible for any costs associated with right-of-way acquisition for the purposes of ingress or egress to the project site along Willow Bend Drive and Countryside Drive, if necessary to accommodate required off-site improvements.

Condition 28: Relocation and underground plans for canals and drains shall be designed to maintain existing flow rates and structure capacity to the satisfaction of the City and Imperial Irrigation District.

> Change to: The construction of Countryside Drive crossing over the IID Date Drain must be completed prior to the issuance of the 80th certificate of occupancy. The threshold for this condition may be extended prior to the issuance of the 100th certificate of occupancy if circumstances beyond the applicants control occur that delay this improvement, as approved by the City Engineer and the Community Development Director.
>
> The road crossing shall consist of two travel lanes, with no parking lanes, and shall include curb, gutter, and sidewalks on each side. City participation on all costs related to the IID drain construction and Countryside Drive improvements will be three hundred twenty-five thousand dollars, through a reimbursement agreement between City and applicant.

Condition 29: The project shall provide a 1.6 acre park in accordance with the City's specifications. In-lieu park fees shall be paid for any park area located within the IID easement.

> Change to: The applicant shall construct or provide security for a 1.3-acre improved park. The park shall include a multi-use grass field, park lighting, hard surface court, multi-use path, picnic, and playground area. The park is to be completed prior to 50% of the certificates of occupancy are issued. The developer shall provide park renderings and construction plans and cost estimates to the City of El Centro for review prior to filing of the first final map. Park development impact fees shall be waived by the City if park costs are higher than the subdivisions' park development impact fees to the satisfaction of the Community Development Director.

Condition 30: The project shall provide the following minimum building setbacks: front yard, twenty (20') feet; side yards, five (5') feet on one side and ten (10') feet on the other side; exterior side yard, fifteen (15') feet; and rear yard, five (5') feet for single story and twenty-five (25') feet for two story.

> Change to: The project shall provide the minimum building setbacks in accordance with the R1-Single Family Residential Zone development standards.

Condition 31: Prior to the first final inspection of each phase of development, all street dedications and off-site improvements (curb, gutter, sidewalk, and paving) shall be provided in accordance with the City's Subdivision Ordinance including parkways not less than 6.5 feet wide, measured from the face of the curb to the outside edge of the sidewalk.

> Change to: Prior to the issuance of the first certificate of occupancy of each phase of development, all street dedications and off-site improvements (curb, gutter, sidewalk, and paving) for each phase shall be provided in accordance with the City's Subdivision Ordinance.

Condition 33: Prior to the first final inspection, the applicant shall provide a minimum of two trees per lot within the parkway strip. Said trees shall be selected from the City's tree list and consist of a variety of trees. Street themes shall be provided.

> Change to: Prior to the issuance of the certificate of occupancy of each residence, the applicant shall provide a minimum of one tree within the parkway strip on Countryside Drive only and one tree within the front yard landscaped area per lot. Said trees shall be selected from the City's list and consist of a variety of trees. The remaining lots shall provide two trees in the front yard.

Condition 34: Prior to the issuance of each building permit, the applicant shall pay the appropriate development impact and sewer/water capacity fees.

> Change to: Prior to the issuance of each building permit, the applicant shall pay the appropriate development impact and sewer and water capacity fees unless deferred to prior to the issuance of a certificate of occupancy in compliance with Ordinance 21-03 and subject to the approval of the City Manager. Payment must clear prior to the issuance of a certificate of occupancy.

Condition 35: Fire hydrants, markers, and water mains shall be provided in accordance with the Fire Department's specifications. All fire hydrants shall be on a looped water system and shall be in service before any combustible construction begins.

> Change to: Fire hydrants markers and water mains shall be provided in accordance with the Fire Department's specifications. Fire hydrants shall be on a looped water system. Any combustible construction shall not begin until a fire hydrant is in service within 150 feet of construction activity. Applicant shall provide a phasing plan to the Engineering Division showing compliance with this condition prior to the issuance of the certificate of compliance.

Condition 38: Developer shall coordinate project flood protection improvements with current efforts of the Imperial Irrigation District and other public agencies to provide regional flood protection facilities, if applicable.

> Change to: The developer shall work directly with IID to obtain an encroachment permit for project related improvements on IID system facilities.

Condition 41: The project shall comply with applicable staff comments labeled Exhibit A of the Planning Commission staff report and all other applicable Federal, State and local codes, ordinances and resolutions.

> Change to: Applicable off-site improvements shall be completed or secured to the satisfaction of the City Engineer prior to the recordation of each final map.

Proposed New Conditions

Condition 43: Public landscaping improvements shall be installed along the northern side of Willow Bend Drive, West side of Carl Street, South of lot 13, North side of lot 1, and West and East side of Grass (6th) Street in the side yards of the noted locations and homes. Public landscaping improvements shall be included in the lighting and landscape maintenance district.

Condition 44: A school bus loading area shall be installed in front of the park area, unless otherwise determined by the school districts that the location would be unfeasible for a school bus loading area.

Proposed Conditions of Approval Requested to be Eliminated

Condition 3: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (4.9%), or provide the appropriate Traffic Impact Fee (TIF), towards the provision of a westbound right-turn lane and a second northbound left-turn lane at the westbound ramp of Highway 86 and Interstate 8.

Condition 4: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (4.6%), or provide the appropriate Traffic Impact Fee (TIF), towards the provision of a two eastbound right-turn lanes and a second southbound left-turn lane at the eastbound ramp of Highway 86 and Interstate 8.

Condition 5: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (4.7%), or provide the appropriate Traffic Impact Fee (TIF), towards the construction of a second eastbound left-turn lane at the intersection of Highway 86 and Wake Avenue.

Condition 6: Prior to the recordation of the final map, the applicant shall construct a raised median for full turning movement with southbound acceleration and deceleration lanes with a left turn in pocket and left turn at Highway 86 and Horne Road. (As per attached Exhibit A-1, subject to a credit for other traffic impact fees or reimbursement from other benefited projects in the area, at the City's option.

Condition 7: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (13.8%), or provide the appropriate Traffic Impact Fee (TIF), towards the construction of a right turn in/right turn out island from Willow Bend Drive at Highway 86.

Reasoning: This improvement has already been completed.

Condition 8: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (1.5%), or provide the appropriate Traffic Impact Fee (TIF), towards the signalization of the Highway 86 and west McCabe Road intersection as well as the provision of a dedicated eastbound and westbound left turn pockets.

Reasoning: This signal light has already been installed.

Condition 9: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (5.6%), or provide the appropriate Traffic Impact Fee (TIF), towards the widening of Highway 86 between Wake Avenue and Interstate 8 to six (6) lanes.

Reasoning: Work improvements have already been completed.

Condition 11: Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (4.6%), or provide the appropriate Traffic Impact Fee (TIF), towards the widening of Highway 86 between Danenberg Drive and Wake Avenue to four (4) lanes.

Reasoning: Condition can take place when other neighboring frontage properties are developed.

Condition 42: The project shall provide a 20-foot multi-use trail with a split rail fence at its center along the northern boundary and a 10-foot multi-use trail along the western boundary of the project site.

Reason: No longer part of the project.

Potential environmental impacts associated with development according to the General Plan were evaluated in the Final EIR, which is incorporated herein by reference and available at El Centro City Hall and on the City's website.

3.0 Zone Change 05-05 and Tentative Subdivision Map Willow Bend EIR

The City of El Centro prepared an EIR for the Willow Bend project in accordance with the requirements of CEQA and the State CEQA Guidelines. A Notice of Preparation (NOP) was filed with the California Office of Planning and Research and distributed to public agencies and interested parties for a 30-day public review period. The Draft EIR was circulated for a 45-day public review period that ran from August 9, 2006, to September 22, 2006. The Final EIR was certified in February 2007 by the City Council of the City of El Centro.

As noted previously, the EIR addresses the potential environmental effects associated with the development of the Willow Bend project, which includes annexation to the City of El Centro and residential subdivision of 131 single-family residences. The scope of the EIR includes environmental issues determined to be potentially significant based on the Initial Study and responses to the NOP. The following issues are addressed in detail in the EIR:

- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural and Tribal Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Noise
- Public Services and Utilities
- Transportation and Traffic

The Final EIR identifies significant and unavoidable impacts related to agriculture resources and air quality.

4.0 Environmental Impacts of Proposed Project

This section addresses each of the environmental issues discussed in the Final EIR to determine whether or not the proposed project has the potential to create new significant impacts or a substantial increase in the significance of a previously identified significant impact as compared to what was identified in the Final EIR.

4.1 Agriculture and Forestry Resources

2007 Final EIR

The Final EIR states that the project site is considered to contain Farmland of Statewide Importance. Table 5.1-3 of the Final EIR includes a soils summary for the acreage of the project site. The Final EIR concluded that the conversion of agricultural land to urban use would constitute a significant loss of Prime Farmland or Farmland of Statewide Importance, and potential impacts would be significant and unavoidable.

As noted in the Final EIR, the Imperial County Assessor's office indicated that no active Williamson Act contracts encumber the project site. Therefore, no impacts Williamson Act contract lands were identified. Additionally, the Final EIR identified the surrounding area to be composed of residential and agricultural uses. The proposed project would conflict with agricultural land use to the west and south of the site; however, the eventual conversion of the lands to urban uses was analyzed in the Final EIR and potential impacts were disclosed and mitigated where feasible. Therefore, impacts would be less than significant.

Proposed Project

Housing development under the proposed Willow Bend Project would continue to occur on land that is designated as Farmland of Statewide Importance, as shown in the Final EIR and California Important Farmland Finder. The project could contribute to the significant impact associated with the General Plan Update by converting sites containing designated farmlands to residential use. However, because the project does not include any land use designation changes beyond those included in the Final EIR, it would not result in any new significant impact identified in the Final EIR.

Because the City and Sphere of Influence (SOI) include no Williamson Act contracts or agriculturally zoned land, the Project would similarly have no conflict related to Williamson Act contracts. The project site is designated as a Low Density Residential land use in the Land Use Map in the City of El Centro General Plan 2040. Thus, it would not result in any new significant impact or increased severity of a previously identified significant impact.

4.2 Air Quality

Consistency with Applicable Air Quality Plan

2007 Final EIR

The Final EIR determined that the proposed project was not consistent with the Imperial County Air Quality Attainment Plan (Attainment Plan) and the State Implementation Plan for PM_{10} in the Imperial Valley due to the proposed project resulting in a higher density and generating more vehicle trips. Therefore, impacts would be considered significant and unavoidable.

Proposed Project

The incremental decrease in the number of units associated with the project (11 units) would not affect the conclusions presented in the Final EIR. Impacts would remain significant and unavoidable.

Cumulative Increase in Emissions

2007 Final EIR

Tables 5.2-3 and 5.2-4 in the Final EIR provide an analysis of both short-term construction emissions and long-term emissions, respectively. Analysis in the Final EIR found that without mitigation measures, all short-term construction emissions were considered to have significant impacts. Mitigation measures AQ 5.2-1 through AQ 5.2-9 were included in the Final EIR in respect to short-term construction emissions. These measures would reduce the project-related emissions to levels less than significant.

Long-term emissions as a result of the proposed project were found to be below the Imperial County Air Pollution Control District (ICAPCD) thresholds of significance. Therefore, long-term impacts as a result of the project were considered less than significant.

Proposed Project:

The proposed project would contribute to the significant and unavoidable air quality impacts identified in the Final EIR by accommodating additional housing throughout the City, but would not accommodate any housing development beyond that noted in the City's General Plan. Additionally, all development under the project would be subject to applicable ICAPCD requirements as well as mitigation measures AQ 5.2-1 through AQ 5.2-9 from the Final EIR. As such, both construction and operational emission impacts associated with development under the project would remain significant and unavoidable.

Odors Impacts

2007 Final EIR

The Final EIR notes that the project presented the potential for the generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site during construction. However, the emissions would rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. The Final EIR cites the ICAPCD *CEQA Air Quality Handbook*, which provides screening level distances for potential odor impacts. According to the handbook, if a project is proposed within one mile of a wastewater treatment plant, sanitary landfill, composting station, feedlot, asphalt batching plant, painting/coating operation, or rendering plant, a potential odor problem may result. The project site is approximated one-quarter mile north of a horse stable and the ICAPCD was contacted at the time of the Final EIR to request an any odor complaints were lodged in the project area. The ICAPCD indicated that no odor complaints were submitted within the last year at the time of the request. Due to this result, the Final EIR concluded that the project would not subject a substantial amount of people to objectionable odors.

Proposed Project

The proposed project does not include heavy industrial or agricultural uses that are typically associated with objectionable odors. The project would involve the use of diesel-powered equipment during construction which may be noticeable at adjacent properties; however, construction activities would be temporary, and the odors would dissipate quickly in an outdoor environment. There is no evidence that the project would require a major change to the 2007 Final EIR. Therefore, the project would not result in any new or increased severity significant odor impact beyond that identified in the Final EIR.

4.3 Biological Resources

2007 Final EIR

A field survey and literature review were conducted for the Final EIR in 2005 by Michael Brandman Associates. The Final EIR determined that there would be construction-related, temporary impacts to sensitive wildlife species including the burrowing owl and Cooper's hawk, when nesting. In regards to impacts to the burrowing owl, the field survey concluded that owls were utilizing the IID's drains in the survey area, and would be adversely impacted on a short-term basis during construction

activities to underground the drains. Construction activities would include potential direct fatalities to the owls, and result in displacement of owls and burrows.

Additionally, long-term indirect impacts would occur as a result of the residential development. The impacts would include increased recreational use of the berms, and the overall impact would include increased harassment of owls due to human activity and pets utilizing the berms. Development of the project site was determined to result in long-term permanent impacts to 38 acres of burrowing owl foraging, dispersing, and nesting habitat. Mitigation measures BR 5.3-1 through BR 5.3-8 were included in the Final EIR in respect to burrowing owls and nesting birds to reduce impacts to a level less than significant.

Proposed Project

As described in the 2007 Final EIR, the proposed project also has the potential to result in direct impacts to nesting birds (including the burrowing owl) within the project area if vegetation removal occurs during the typical bird breeding season. Direct impacts to nesting birds would be considered significant and require mitigation. As conditions have not changed on the site, the proposed project would be subject to the mitigation measures established in the Final EIR, BR 5.3-1 through BR 5.3-8. The project would not result in a new significant impact, nor would a substantial increase in the severity of impacts occur from that described in the 2007 Final EIR.

4.4 Cultural Resources

2007 Final EIR

The Final EIR included a cultural resource survey prepared by Michael Brandman Associates in February 2006. The analysis concluded that there was a low potential for impacts to prehistoric cultural resources. However, if in the event that prehistoric cultural resources are accidentally discovered, the potential impacts would be mitigated by the implementation of measures CR 5.4-1 and CR 5.4-2 and considered less than significant.

Proposed Project

The proposed project could contribute to potential significant impacts to historical resources as identified in the Final EIR. Since there is always the potential for undiscovered resources to be uncovered, the mitigation measures from the 2007 Final EIR would continue to apply. The impacts would remain potentially significant and mitigated.

4.5 Geology and Soils

2007 Final EIR

Section 5.5 of the Final EIR provides an analysis of the geology and soils impacts associated with the project. The Final EIR determined that the project site does not lie within a State of California Alquist-Priolo Earthquake Fault Zone; however, there is still potential for seismic activity that could produce moderate to strong ground motion from earthquakes in the region. Structures would be

required to incorporate earthquake-reducing design with the latest Uniform Building Code and California Building Code and the appropriate seismic design criteria. As discussed in Section 5.5.1, Existing Conditions of the Final EIR, the project site is not anticipated to be impacted by landslides, volcanic hazards, tsunamis, seiches, or flooding. In addition, the Final EIR found that the potential for liquefaction induced settlements to occur on the project site is low and impacts were considered to be less than significant.

The Final EIR also found that critically expansive soils were present around the project site; thus, there is the potential for soils to have high potential for expansion. Additionally, the EIR states that groundwater was encountered at a level of eight feet below ground surface during the geotechnical investigation. Soils encountered below three feet have the potential to pump groundwater under heavy construction wheel loads due to the silty conditions in the near surface soils. Therefore, light earthmoving equipment should be anticipated for use on the project site during construction activities to reduce the potential for groundwater pumping. The Final EIR included measures GS 5.5-1 through GS 5.5-6 to address these impacts. After implementation of the measures, geology and soils impacts would be reduced to less than significant.

Proposed Project

A site-specific geotechnical investigation was not conducted for the currently proposed project as conditions have not changed. There is no evidence that the project would require a major change to the 2007 Final EIR. The proposed project would be subject to all mitigation measures GS 5.5-1 through GS 5.5-6 from the Final EIR. The project would not result in a new significant impact, nor would a substantial increase in the severity of impacts occur from that described in the 2007 Final EIR.

4.6 Hazards and Hazardous Materials

2007 Final EIR

Section 5.6 of the Final EIR details the analysis of the hazards and hazardous materials associated with the project. A Phase I Environmental Site Assessment was prepared for the project site prior to the completion of the Final EIR.

a. Short-Term Impacts:

The Final EIR states that grading and construction activities may involve the limited transport, storage, usage, or disposal of hazardous materials such as the fueling and/or servicing of construction equipment. Such activity is subject to federal, state, and local health and safety requirements. It is likely that the construction phase of the project will generate hazardous waste such as paint, therefore the project would be subject to the Conditionally Exempt Small Quantity Generator Program. Contractors would be required to employ a licensed hazardous waste hauler to obtain and transport such waste. This requirement would ensure that no significant short-term impacts would occur.

b. Long-Term Impacts:

The Final EIR found that there was the potential for previously unknown hazardous materials to be encountered during project development from historical use of the project site. Long-term impacts were identified and mitigation measures HM 5.6-1 and HM 5.6-2 were included to reduce project-related hazardous material impacts to less than significant.

Proposed Project

If grading of the project site were to encounter any hazardous materials within the soil under the project site, the project would be required to comply with policies contained in the Final EIR, and regulations imposed by federal, state, and local agencies, including the U.S. Environmental Protection Agency, California Department of Health Services, Imperial County Waste Management Department, Regional Water Quality Control Board – Colorado River Basin Region, Salton Sea Air Basin Air Pollution Control District, and the City of El Centro Fire Department. Based on the foregoing analysis and information, there is no evidence that the project would require a major change to the 2007 Final EIR. The proposed project would follow the mitigation measures presented in the Final EIR. The project would not result in a new significant impact, nor would a substantial increase in the severity of impacts from that described in the Final EIR occur.

4.7 Noise

2007 Final EIR

Section 5.7 of the 2007 Final EIR analyzed noise impacts based on the noise assessment prepared for the proposed project by VRPA Technologies, Inc. in March 2006. The Final EIR identified short-term noise impacts during construction and included mitigation measure N 5.7-1 to ensure that noise level standards are met.

Proposed Project

The proposed project would involve construction and operational noise nearly identical to that identified in the 2007 Final EIR. The project would produce short-term noise impacts associated with construction due to noise generating vehicles and construction operations. Impacts would remain potentially significant, however; mitigation measure N 5.7-1 from the Final EIR would apply to development under the project. The proposed project would not create any new significant impact related to short-term construction noise, nor would there be a substantial increase in the severity of impacts from that described in the 2007 Final EIR.

The proposed project would contribute to traffic on the local roadways, however there is no evidence that the proposed project would not increase the severity of this already identified significant impact or result in any new significant impact related to traffic noise.

4.8 Public Services and Utilities

2007 Final EIR

The Final EIR addressed fire protection services, police protection services, public education, libraries, parks and recreational services and facilities, potable water services, wastewater, solid waste, energy, and telecommunications. Fire and police protection impacts were determined to be potentially significant due to the project having the potential to increase demands for both services which would have an adverse impact on response times and staffing ratios. The Final EIR included mitigation measures PSU 5.8-1 and 5.8-2 that required the applicant to enter into an agreement that will mitigate operational impacts to fire and police services caused by the approval of the project. Additionally, the Final EIR included mitigation measure T 5.8-1 which would mitigate the operational impacts to the Imperial Valley Telecommunications Authority. Potential impacts on schools, library services, parks and recreation, potable water, solid waste, energy, and telecommunications were deemed less than significant.

Proposed Project

The proposed project would include the development of 120 single-family homes and would not result in a need for any new or expanded public services. In addition, the project would not result in a need for a new or expanded fire, police, school, library, park or other public facility. The project would continue to be subject to mitigation measures PSU 5.8-1 and 5.8-2 from the Final EIR as they relate to fire and police services. Therefore, the project would not create any new significant impacts, nor would there be a substantial increase in the severity of impacts from that described in the 2007 Final EIR.

In regards to utilities, the proposed project would extend water service connections from IID, and would connect to the existing sewer line. Due to the proposed homesite lots being accounted for in the 2007 Final EIR, there is no evidence that the project would require a major change to the Final EIR. The proposed project would be subject to the mitigation in the Final EIR for telecommunications, T 5.8-1. The project would not create any new significant impacts, nor would there be a substantial increase in the severity of impacts from that described in the 2007 Final EIR.

4.9 Transportation and Traffic

2007 Final EIR

A Traffic Impact Study (TIS) was prepared for the Final EIR by Katz, Okitsu & Associates in July 2006. The TIS and Final EIR did not identify any significant impacts due to transportation and traffic issues; however, there were nine conditions of approval for nine different intersections and roadway segments near the project site when the Final EIR was adopted that would be implemented throughout phases of the project (TT 6-1 through TT 6-2).

Proposed Project

A Transportation Assessment for the proposed project was prepared by Linscott, Law & Greenspan, Engineers (LLG) on June 27, 2022. The assessment is included as Attachment 1. The assessment provided analysis to determine which of the original conditions of approval for the approved Willow Bend Project are still necessary given the current traffic situation surrounding the project site. The assessment reviewed 10 conditions of approval. Specifically, the analysis focused on whether the following 10 improvements are still necessary:

1. SR-86 between Interstate 8 (I-8) eastbound ramps and Wake Avenue – contribute a fair-share to widen to six lanes.

2. SR-86/I-8 westbound ramp – contribute a fair-share to construct a westbound right-turn lane and a second northbound left-turn lane.

3. SR-86/I-8 eastbound ramp – contribute a fair-share to construct two eastbound right-turn lanes and a second southbound left-turn lane.

4. SR-86/Wake Avenue – contribute a fair-share to construct a dedicated eastbound left-turn lane.

5. SR-86/Horne Road – construct a raised median for full turning movement with southbound acceleration and deceleration lanes with a left turn in pocket and left turn at SR-86 and Horne Road. Subject to a credit from other traffic impact fees or reimbursement from other benefited projects in the area, at the City's option.

6. SR-86/Willow Bend Drive – contribute a fair-share to construct a right-in/right-out island from the project driveway.

7. SR-86/Countryside Drive – signalize the intersection.

8. SR-86/McCabe Road – contribute a fair-share to signalize the intersection and construct dedicated eastbound and westbound left-turn pockets.

9. SR-86 between Project Access and McCabe Road – contribute a fair-share to widen to four lanes including along the Project frontage.

10. SR-86 between Wake Avenue and Danenberg Drive – contribute a fair-share to widen to four lanes.

The LLG report concluded that only a few of the original conditions of approval are deemed necessary to be implemented. Their report concluded the following:

1. SR-86 between I-8 eastbound ramps and Wake Avenue – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the widening of SR-86 between I-8 and Wake Avenue to six lanes.

Based on the analysis for this street segment, acceptable levels of service are calculated under near-term conditions. Therefore, the condition to widen this street segment to six lanes can be removed.

2. SR-86/I-8 westbound ramp – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the provision of a westbound right-turn lane and a second northbound left-turn lane at the westbound ramp of SR-86 and I-8.

   It should be noted that this intersection already has a westbound right-turn lane. Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the remaining condition to construct a second northbound left-turn lane can be removed.

3. SR-86/I-8 eastbound ramp – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the provision of two eastbound right-turn lanes and a second southbound left-turn lane at the eastbound ramp of SR-86 and I-8.

   Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to construct two eastbound right-turn lanes and a second southbound left-turn lane can be removed.

4. SR-86/Wake Avenue – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the provision of a dedicated eastbound left-turn lane at the intersection of SR-86 and Wake Avenue.

   Based on the analysis for this intersection, an unacceptable level of service is calculated during the PM peak hour under near-term conditions. However, the City will be conducting a roadway maintenance project at the end of 2022 and will stripe a dedicated eastbound left-turn lane as part of that work. Therefore, this condition can be removed.

5. SR-86/Horne Road – Prior to the recordation of the final map, the applicant shall construct a raised median for full turning movement with southbound acceleration and deceleration lanes with a left turn in pocket and left turn at SR-86 and Horne Road. Subject to a credit for other traffic impact fees or reimbursement from other benefited projects in the area, at the City's option.

   Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to construct a raised median and reconfigure the lane geometry at this intersection can be removed.

6. SR-86/Willow Bend Drive – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the construction of a right turn in/right turn out island from Willow Bend Drive at SR-86.

It should be noted that this intersection currently has an island that allows for a southbound left-turn movement to enter Willow Bend Drive on the east leg. Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Since this intersection already has an island that only allows right-in/right-out at the project driveway, the conditions for this intersection can be removed. However, it is recommended that a northbound left-turn pocket is constructed to allow for an inbound access at this driveway from the south.

7. SR-86/Countryside Drive – Prior to the issuance of the first certificate of occupancy, the applicant shall signalize the SR-86 and Countryside Drive intersection.

   Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to signalize this intersection can be removed. An ICE was completed for the SR-86/Countryside Drive intersection based on Year 2045 (Horizon Year) forecast traffic volumes in conjunction with traffic generated by the proposed project. The ICE is included as Attachment 2. The ICE determined that both an All-Way Stop Control configuration and a roundabout configuration would operate at acceptable levels of service in the Year 2045 (Horizon Year) scenario. Caltrans will determine which of these two configurations will be selected for the SR-86/Countryside Drive intersection.

8. SR-86/McCabe Road – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the signalization of the SR-86 and west McCabe Road intersection as well as the provision of a dedicated eastbound and westbound left-turn pockets.

   It should be noted that this intersection is already signalized. Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to provide dedicated eastbound and westbound left-turn pockets can be removed.

9. SR-86 between Project Access and McCabe Road – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the widening of SR-86 between the project site and McCabe Road to four lanes along the project frontage.

   Based on the analysis for this street segment, acceptable levels of service are calculated under near-term conditions. Therefore, the condition to widen this street segment to four lanes can be removed between the Project Access at Countryside Drive and McCabe Road. However, the condition to widen should still be implemented between Willow Bend Drive and Countryside Drive fronting the Project site.

10. SR-86 between Wake Avenue and Danenberg Drive – Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the widening of SR 86 between Wake Avenue and Danenberg Drive to four lanes.

Based on the analysis for this street segment, acceptable levels of service are calculated under near-term conditions. Therefore, the condition to widen this street segment to four lanes can be removed.

As described above, the SR-86/Wake Avenue location was calculated to operate at unacceptable levels of services; however, the City will be conducting a roadway maintenance project at the end of 2022 and will stripe a dedicated eastbound left-turn lane as a part of their work. Once completed, the original condition for this location can be removed. Also, with implementation of the adjustments to improvements described above to improvements 6, 7, and 9, the project would not create any new significant impact, nor would a substantial increase in the severity of impacts occur from that described in the 2007 Final EIR.

5.0 Conclusion

The proposed revised project is consistent with the Willow Bend Final EIR that the City of El Centro adopted in 2007 and would not result in any new significant impacts or increased severity significant impacts beyond those identified in the El Centro General Plan Update Final EIR. Therefore, this Addendum is the appropriate environmental document under CEQA.

6.0 Sources Consulted

El Centro, City of
2021 El Centro General Plan Update Draft Program Environmental Impact Report. March.
2021 El Centro General Plan Update Final Program Environmental Impact Report. June.
2021 El Centro General Plan Update. June.
2021 Draft El Centro Housing Element Update. September.

ATTACHMENTS

ATTACHMENT 1

Willow Bend Project – Transportation Assessment

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June 27, 2022

Mr. Angel Hernandez
City of El Centro
1275 Main Street
El Centro, CA 92243

LLG Reference: 3-22-3559

Subject: **Willow Bend Project – Transportation Assessment**
City of El Centro

Dear Angel:

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this letter report to conduct an analysis to determine which of the 2006 conditions of approval for the Willow Bend Project are still necessary, given the current transportation situation. Specifically, this analysis focuses on whether the following ten (10) improvements are still necessary.

1. SR 86 between I-8 eastbound ramps and Wake Avenue – contribute a fair-share to widen to six lanes.
2. SR 86 / I-8 westbound ramp – contribute a fair-share to construct a westbound right-turn lane and a second northbound left-turn lane.
3. SR 86 / I-8 eastbound ramp – contribute a fair-share to construct two eastbound right-turn lanes and a second southbound left-turn lane.
4. SR 86 / Wake Avenue – contribute a fair-share to construct a dedicated eastbound left-turn lane.
5. SR 86 / Horne Road – construct a raised median for full turning movement with southbound acceleration and deceleration lanes with a left turn in pocket and left turn at SR 86 and Horne Road. Subject to a credit from other traffic impact fees or reimbursement from other benefited projects in the area, at the City's option.
6. SR 86 / Willow Bend Drive – contribute a fair-share to construct a right-in/right-out island from the Project driveway.
7. SR 86 / Countryside Drive – signalize the intersection.
8. SR 86 / McCabe Road – contribute a fair-share to signalize the intersection and construct dedicated eastbound and westbound left-turn pockets.

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9. SR 86 between Project Access and McCabe Road – contribute a fair-share to widen to four lanes including along the Project frontage.
10. SR 86 between Wake Avenue and Danenberg Drive – contribute a fair-share to widen to four lanes.

2.0 PROJECT DESCRIPTION

The 2006 conditions of approval originated from the *Willow Bend Traffic Impact Study (dated March 2006)* prepared by KOA. The Project proposed to construct 126 single-family homes on a vacant site located on the west side of State Route 86 (SR 86), south of Intersection 8 (I-8) between Horne Road and McCabe Road. The project was calculated to generate 1,286 daily trips with 98 AM peak hour trips and 132 PM peak hour trips but was not built.

The Project plans to construct 134 single-family homes which is the basis of this analysis to determine which portion of the conditions of approval are necessary. The latest Project trips are discussed in the *Trip Generation / Trip Distribution* section.

Access to the Project site would be provided from SR86 by two driveways, Willow Bend Drive and Countryside Drive.

Figure 1 shows the Project vicinity and ***Figure 2*** illustrates, in more detail, the site location. ***Figure 3*** shows the Project site plan.

3.0 TRAFFIC VOLUMES / EXISTING CONDITIONS

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

SR-86 (4th Street) north / south facility and is classified as a 4-Lane Arterial in the *City of El Centro Circulation Element*. It is currently constructed as a four-lane divided roadway, providing two travel lanes per direction between the I-8 ramps and Wake Avenue. Between Wake Avenue and Countryside Drive, the roadway is constructed as a three-lane divided roadway, providing one southbound travel lane and two northbound travel lanes. From Countryside Drive to McCabe Road, it is constructed as a two-lane undivided roadway. Sidewalks are provided on both sides of the roadway between the I-8 ramps and Wake Avenue. Sidewalks are provided on the east side between Wake Avenue and Danenberg Drive and between Willow Bend Drive and Countryside Drive. Curbside parking is not permitted. Bike lanes are not provided. The posted speed limit is 40 mph.

Wake Avenue is classified as a 2-lane Arterial in the *City of El Centro Circulation Element*. It is currently constructed as a four-lane undivided roadway with a two-way

left turn lane, providing two travel lanes per direction, west of SR-86 (4th Street). East of SR-86 (4th Street), Wake Avenue is constructed as a four-lane undivided roadway. This facility runs east-west. Sidewalks are provided on both sides of the roadway except for the south side, east of 6th Street. Curbside parking is not permitted. Bike lanes are not provided. The posted speed limit is 40 mph.

Horne Road is an unclassified roadway in the *City of El Centro Circulation Element*. It is currently constructed as a two-lane undivided roadway. This facility runs east-west. Sidewalks are not provided. Curbside parking is not permitted. Bike lanes are not provided. There is no posted speed limit.

Willow Bend Drive is an unclassified roadway in the *City of El Centro Circulation Element*. It is currently constructed as a two-lane undivided roadway. This facility runs east-west. Sidewalks are provided on both sides of the roadway. Curbside parking is permitted. Bike lanes are not provided. There is no posted speed limit.

Countryside Drive is classified as a 2-lane Arterial in the *City of El Centro Circulation Element*. It is currently constructed as a two-lane undivided roadway. This facility runs east-west. Sidewalks are provided on both sides of the roadway. Curbside parking is permitted. Bike lanes are not provided. There is no posted speed limit.

McCabe Road is classified as a 4-Lane Arterial in the *City of El Centro Circulation Element*. It is currently constructed as a two-lane undivided roadway. This facility runs east-west. Sidewalks are not provided. Curbside parking is not permitted. Bike lanes are not provided. There is no posted speed limit.

Figure 4 shows an existing conditions diagram.

3.2 Existing Traffic Volumes

The study area intersection peak hour volume counts were conducted on Thursday, March 7, 2022 with the exception of the SR 86 / Wake Avenue intersection, which was counted on Tuesday, December 14, 2021 for a traffic study recently prepared by LLG *(Wake Avenue Affordable Housing)*. The study area street segment ADT volumes were obtained from the Wake Avenue Affordable Housing traffic study as well.

Figure 5 shows the Existing traffic volumes and ***Attachment 1*** contains the Existing count sheets.

4.0 TRIP GENERATION / TRIP DISTRIBUTION

4.1 Trip Generation

Trip generation rates were obtained from the *ITE Trip Generation Manual, 11th Edition*. It should be noted that the original 2006 Project proposed 126 single-family homes and referred to the 7th Edition. The current study will analyze 134 single-family homes and is the basis of the analysis.

Table 1 summarizes the Project trip generation calculations. As shown in *Table 1*, the Project is calculated to generate 1,264 daily trips with 94 AM peak hour trips (24 inbound/ 70 outbound trips) and 126 PM peak hour trips (79 inbound/ 47 outbound trips).

4.2 Trip Distribution / Assignment

The Project traffic was distributed along SR 86 based on the site location, access to the I-8, existing traffic patterns in the area, anticipated traffic patterns to and from the site and a review of the previously submitted traffic study for the Willow Bend Project.

Figure 6 shows the Project traffic distribution. ***Figure 7*** shows the Project traffic volumes. ***Figure 8*** shows the Existing + Project traffic volumes.

5.0 NEAR-TERM ANALYSIS

5.1 Existing Operations

INTERSECTIONS

Table 2 summarizes the peak hour intersection operations under Existing conditions in the study area. As shown in *Table 2*, the study area intersections are calculated to currently operate at LOS D or better during the AM and PM peak hours.

Attachment 2 contains the Existing intersection analysis worksheets.

STREET SEGMENTS

The street segment analysis prepared in this report reflects the roadway classification and LOS table contained in the Mobility Element adopted in Year 2021. ***Table 3*** summarizes the daily street segment operations under Existing conditions in the study area. As shown in *Table 3*, the study area street segments are calculated to currently operate at LOS B or better.

5.2 Existing + Project Operations

INTERSECTIONS

Table 2 summarizes the peak hour intersection operations under Existing + Project conditions in the study area. As shown in *Table 2*, the study area intersections are

calculated to continue to operate at LOS D or better during the AM and PM peak hours.

Attachment 3 contains the Existing + Project intersection analysis worksheets.

STREET SEGMENTS

Table 3 summarizes the daily street segment operations under Existing + Project conditions in the study area. As shown in *Table 3*, the study area street segments are calculated to continue to operate at LOS B or better.

5.3 Existing + Cumulative + Project Operations

INTERSECTIONS

Based on research and discussions with City staff, there are several cumulative projects within the project study area which would generate a relatively substantial amount of traffic between the date traffic counts were conducted and the Project's opening year. LLG accounted for cumulative trips by utilizing the latest available Caltrans historical traffic volume data and calculating an appropriate growth factor. Based on the growth rate calculations, an average yearly growth rate of 1.02% was obtained. To be conservative, a growth rate of 2% for three years was applied. In addition, LLG manually added project trips from the recently prepared Wake Avenue Affordable Housing study. *Attachment 1* contains the growth rate calculations. ***Attachment 4*** contains the list of cumulative projects.

Table 2 summarizes the peak hour intersection operations with the addition of cumulative projects and proposed Project traffic volumes (Existing + Cumulative + Project). As shown in *Table 2*, the study area intersections are calculated to operate at LOS D or better during the AM and PM peak hours with the exception of the following intersection:

- SR 86 / Wake Avenue – LOS E during the PM peak hour

STREET SEGMENTS

Table 3 summarizes the daily street segment operations with the addition of cumulative projects and proposed Project traffic volumes (Existing + Cumulative + Project). As shown in *Table 3*, the study area street segments are calculated to operate at LOS C or better.

Figure 9 shows the Cumulative projects traffic volumes. ***Figure 10*** shows the Existing + Cumulative + Project traffic volumes. *Attachment 4* contains the Existing + Cumulative + Project intersection analysis worksheets.

6.0 SUMMARY OF FINDINGS

The purpose of this letter report was to determine which of the 2006 conditions of approval for the Willow Bend Project are still necessary. The following conditions of approval were reviewed.

1. **SR 86 between I-8 eastbound ramps and Wake Avenue –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the widening of SR 86 between I-8 and Wake Avenue to six lanes*.

   Based on the analysis for this street segment, acceptable levels of service are calculated under near-term conditions. Therefore, the condition to widen this street segment to six lanes can be removed.

2. **SR 86 / I-8 westbound ramp –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the provision of a westbound right-turn lane and a second northbound left-turn lane at the westbound ramp of SR 86 and I-8*.

   It should be noted that this intersection already has a westbound right-turn lane. Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the remaining condition to construct a second northbound left-turn lane can be removed.

3. **SR 86 / I-8 eastbound ramp –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the provision of two eastbound right-turn lanes and a second southbound left-turn lane at the eastbound ramp of SR 86 and I-8*.

   Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to construct two eastbound right-turn lanes and a second southbound left-turn lane can be removed.

4. **SR 86 / Wake Avenue –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the provision of a dedicated eastbound left-turn lane at the intersection of SR 86 and Wake Avenue*.

   Based on the analysis for this intersection, an unacceptable level of service is calculated during the PM peak hour under near-term conditions. However, the City will be conducting a roadway maintenance project at the end of 2022 and

will stripe a dedicated eastbound left-turn lane as part of that work. Therefore, this condition can be removed.

5. **SR 86 / Horne Road –** *Prior to the recordation of the final map, the applicant shall construct a raised median for full turning movement with southbound acceleration and deceleration lanes with a left turn in pocket and left turn at SR 86 and Horne Road. Subject to a credit for other traffic impact fees or reimbursement from other benefited projects in the area, at the City's option*.

   Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to construct a raised median and reconfigure the lane geometry at this intersection can be removed.

6. **SR 86 / Willow Bend Drive –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the construction of a right turn in/right turn out island from Willow Bend Drive at SR 86*.

   It should be noted that this intersection currently has an island that allow for a southbound left-turn movement to enter Willow Bend Drive on the east leg. Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Since this intersection already has an island that only allows right-in/right-out at the Project driveway, the conditions for this intersection can be removed. However, it is recommended that a northbound left-turn pocket is constructed to allow for an inbound access at this driveway from the south.

7. **SR 86 / Countryside Drive –** *Prior to the issuance of the first certificate of occupancy, the applicant shall signalize the SR 86 and Countryside Drive intersection.*

   Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to signalize this intersection can be removed. However, it is recommended that a northbound left-turn pocket be provided to allow for an inbound access at this driveway from the south outside of the thru lanes.

8. **SR 86 / McCabe Road –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the signalization of the SR 86 and west McCabe Road intersection as well as the provision of a dedicated eastbound and westbound left turn pockets*.

It should be noted that this intersection is already signalized. Based on the analysis for this intersection, acceptable levels of service are calculated during the AM and PM peak hours under near-term conditions. Therefore, the condition to provide dedicated eastbound and westbound left-turn pockets can be removed.

9. **SR 86 between Project Access and McCabe Road –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the widening of SR 86 between the Project site and McCabe Road to four lanes along the project frontage*.

   Based on the analysis for this street segment, acceptable levels of service are calculated under near-term conditions. Therefore, the condition to widen this street segment to four lanes can be removed between the Project Access at Countryside Drive and McCabe Road. However, the condition to widen should still be implemented between Willow Bend Drive and Countryside Drive fronting the Project site.

10. **SR 86 between Wake Avenue and Danenberg Drive –** *Prior to the recordation of the final map, the applicant shall pay the City a fair-share payment or provide the appropriate Traffic Impact Fee (TIF), towards the widening of SR 86 between Wake Avenue and Danenberg Drive to four lanes*.

    Based on the analysis for this street segment, acceptable levels of service are calculated under near-term conditions. Therefore, the condition to widen this street segment to four lanes can be removed.

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7.0 CONCLUSIONS

Based on the preceding analysis of the near-term scenarios for the Willow Bend Project, it was determined that only a portion of the 2006 conditions of approval is deemed necessary to be implemented. The following location is calculated to operate at unacceptable levels of service and would therefore require the previously mentioned improvement.

- SR 86 / Wake Avenue

As shown in *Table 2*, implementing the condition of approval at the above-listed location would enhance the operations to an acceptable level. ***Attachment 5*** contains the Existing + Cumulative + Project with mitigation intersection analysis worksheets.

Please let us know if you have any questions. Thank you.

Sincerely,

Linscott, Law & Greenspan, Engineers

John Boarman, P.E.
Principal

Renald Espiritu
Transportation Engineer II

cc: File

FIGURES

Figure 1: Project Vicinity Map
Figure 2: Project Area Map
Figure 3: Project Site Plan
Figure 4: Existing Conditions Diagram
Figure 5: Existing Traffic Volumes
Figure 6: Project Trip Distribution
Figure 7: Project Traffic Volumes
Figure 8: Existing + Project Traffic Volumes
Figure 9: Cumulative Projects Traffic Volumes
Figure 10: Existing + Cumulative + Projects Traffic Volumes

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TABLES

Table 1: Project Trip Generation
Table 2: Near-Term Intersection Operations
Table 3: Near-Term Street Segment Operations

ATTACHMENT

Attachment 1: Intersection and street segment count sheets; growth rate calculations
Attachment 2: Existing intersection analysis worksheets
Attachment 3: Existing + Project intersection analysis worksheets
Attachment 4: Cumulative projects information and Existing + Cumulative + Project intersection analysis worksheets
Attachment 5: Existing + Cumulative + Project with mitigation intersection analysis worksheets

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TABLE 1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour					PM Peak Hour				
		Rate [a]	Volume	Rate [a]	In:Out Split [a]	Volume			Rate [a]	In:Out Split [a]	Volume		
						In	Out	Total			In	Out	Total
Single-Family Detached Housing	134 DU	9.43 / DU [b]	1,264	0.70 / DU [b]	26:74	24	70	94	0.94 / DU [b]	63:37	79	47	126

Footnotes:
a. Rates are based on the trip rates provided in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*.
b. Rates for Single-Family Detached Housing (Land Use 210) was used.

General Notes:
1. DU – dwelling units

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TABLE 2
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Existing + Cumulative + Project		Existing + Cumulative + Project with Improvements	
			Delay[a]	LOS[b]	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 86 / I-8 WB Ramps	Signal	AM	25.2	C	26.1	C	32.7	C	–	–
		PM	22.5	C	23.6	C	29.3	C	–	–
2. SR 86 / I-8 EB Ramps	Signal	AM	20.9	C	21.3	C	25.1	C	–	–
		PM	20.8	C	21.8	C	25.9	C	–	–
3. SR 86 / Wake Ave	Signal	AM	40.5	D	40.6	D	46.6	D	–	–
		PM	50.1	D	51.0	D	62.0	E	53.6	D
4. SR 86 / Horne Rd	TWSC [c]	AM	14.8	B	15.7	C	16.8	C	–	–
		PM	17.6	C	20.1	C	22.4	C	–	–
5. SR 86 / Willow Bend Dr	TWSC	AM	9.4	A	10.9	B	11.1	B	–	–
		PM	9.5	A	11.5	B	11.8	B	–	–
6. SR 86 / Countryside Dr	TWSC	AM	13.9	B	15.8	C	16.9	C	–	–
		PM	11.7	B	20.2	C	22.1	C	–	–

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TABLE 2
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Existing + Cumulative + Project		Existing + Cumulative + Project with Improvements	
			Delay[a]	LOS[b]	Delay	LOS	Delay	LOS	Delay	LOS
7. SR 86 / McCabe Rd	Signal	AM PM	47.6 43.8	D D	48.3 44.5	D D	52.3 47.9	D D	– –	– –

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

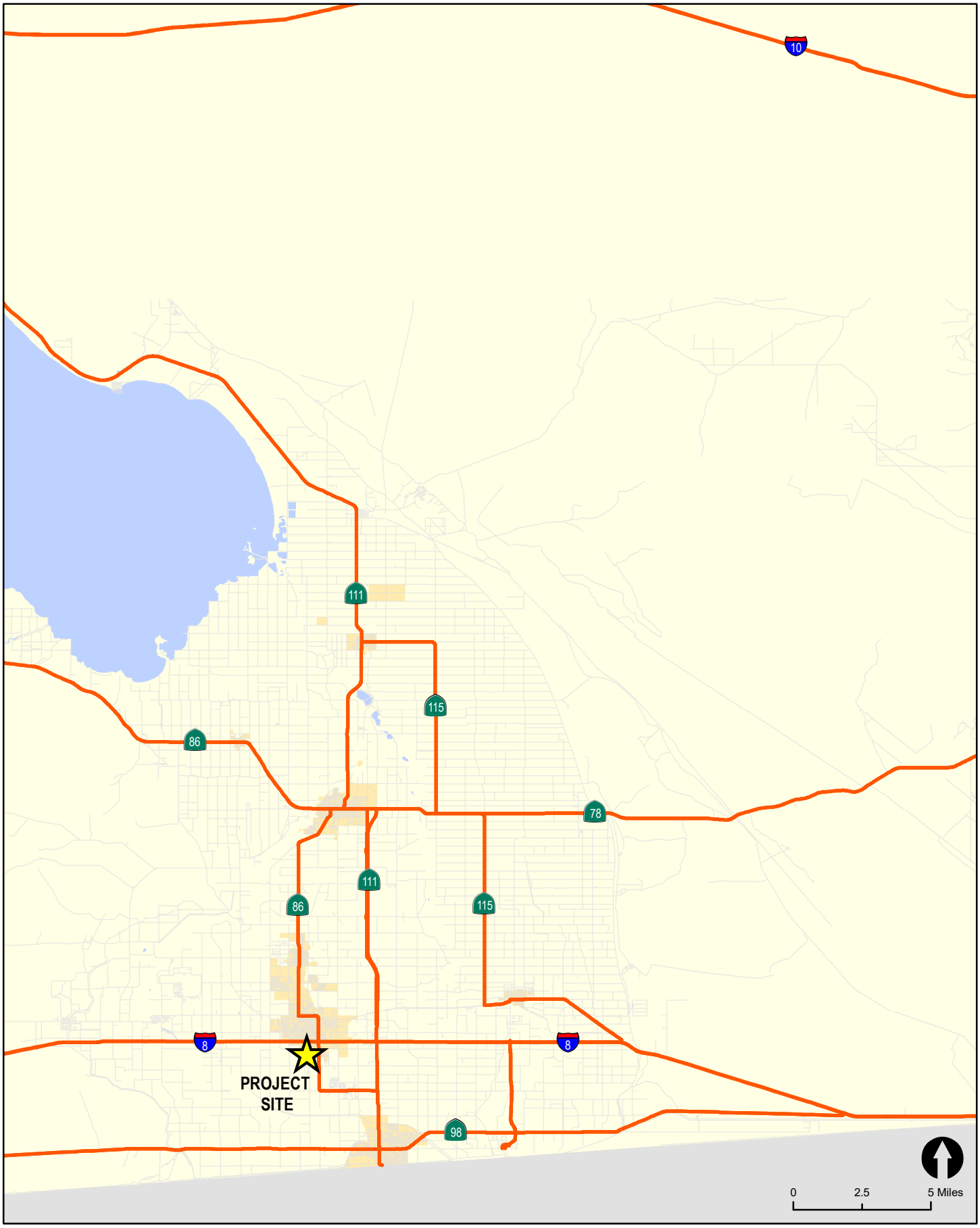
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TABLE 3
NEAR-TERM STREET SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Existing			Existing + Project			Existing + Cumulative + Project		
			ADT [b]	LOS [c]	V/C [d]	ADT	LOS	V/C	Volume	LOS	V/C
SR 86											
I-8 EB Ramps to Wake Ave	4-Ln Divided Arterial	36,000	23,970	B	0.666	24,792	B	0.689	26,869	C	0.746
Wake Ave to Danenberg Dr	3-Ln Divided Arterial [e]	27,000	14,090	A	0.522	14,975	A	0.555	16,227	A	0.601
Project Drwy to McCabe Rd	2-ln Arterial	18,000	9,960	A	0.553	10,150	A	0.564	10,880	A	0.604

Footnotes:

a. Capacities based on City of El Centro Roadway Classification & LOS table contained in the Mobility Element adopted in Year 2021.
b. Average Daily Traffic
c. Level of Service
d. Volume to Capacity ratio
e. This segment has three lanes, one in the southbound direction and two lanes in the northbound direction and a raised median. 75% of a 4-Lane Divided Arterial (with left-turn lane) capacity is assumed.



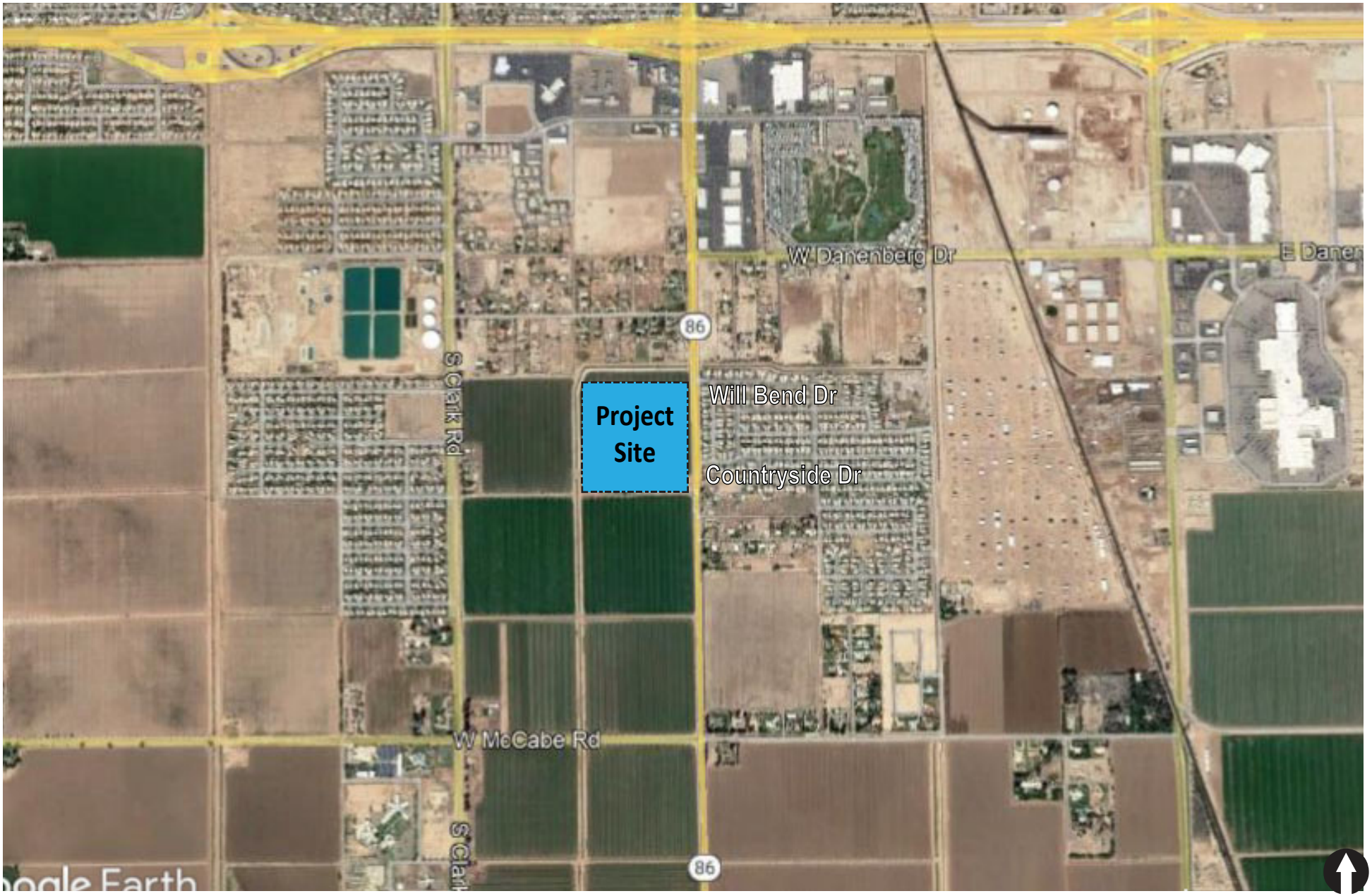
LINSCOTT LAW & GREENSPAN engineers

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Figure 1

Project Vicinity Map

Willow Bend Project



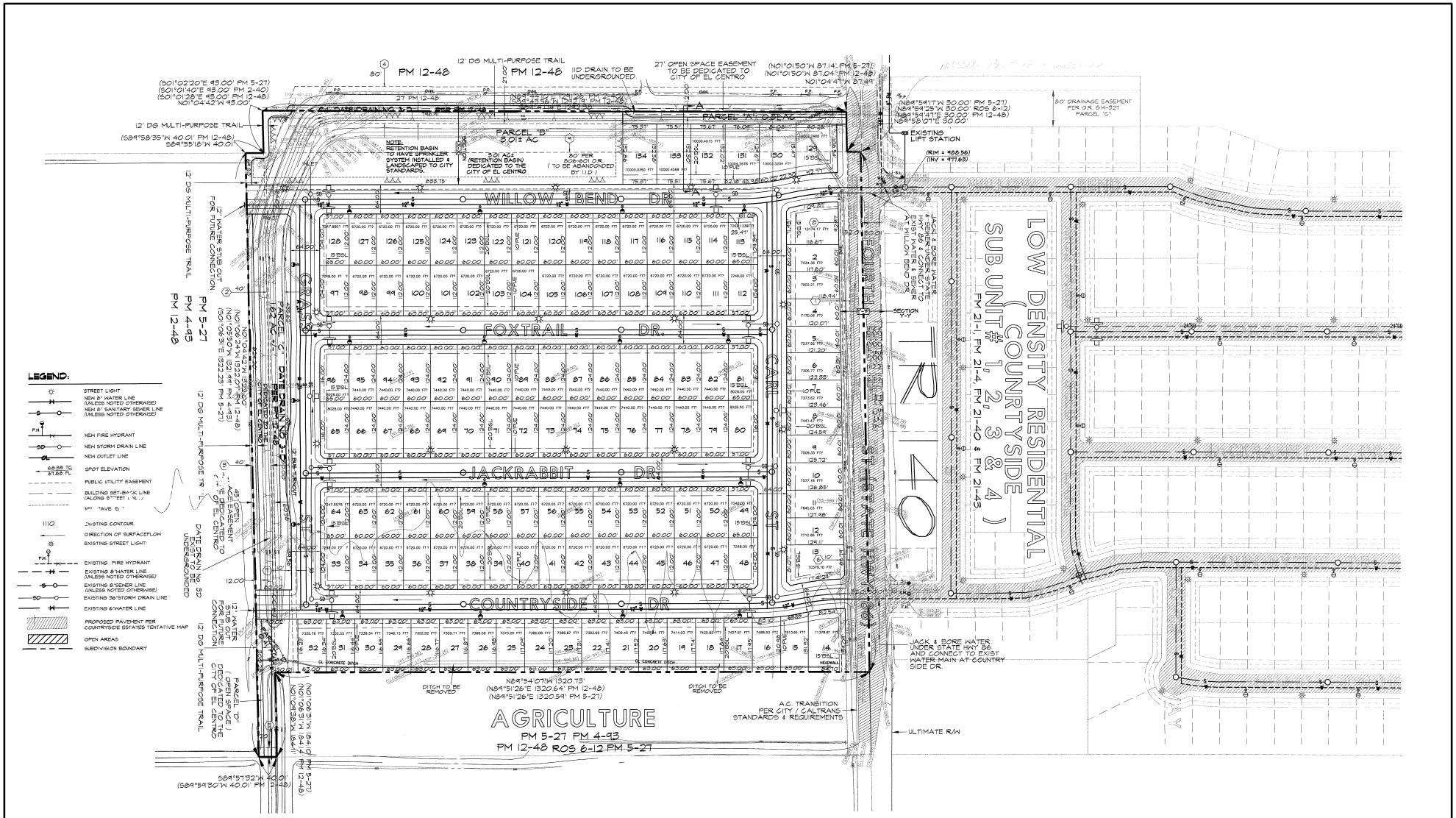
LINSCOTT LAW & GREENSPAN engineers

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Figure 2

Project Area Map

Willow Bend Project



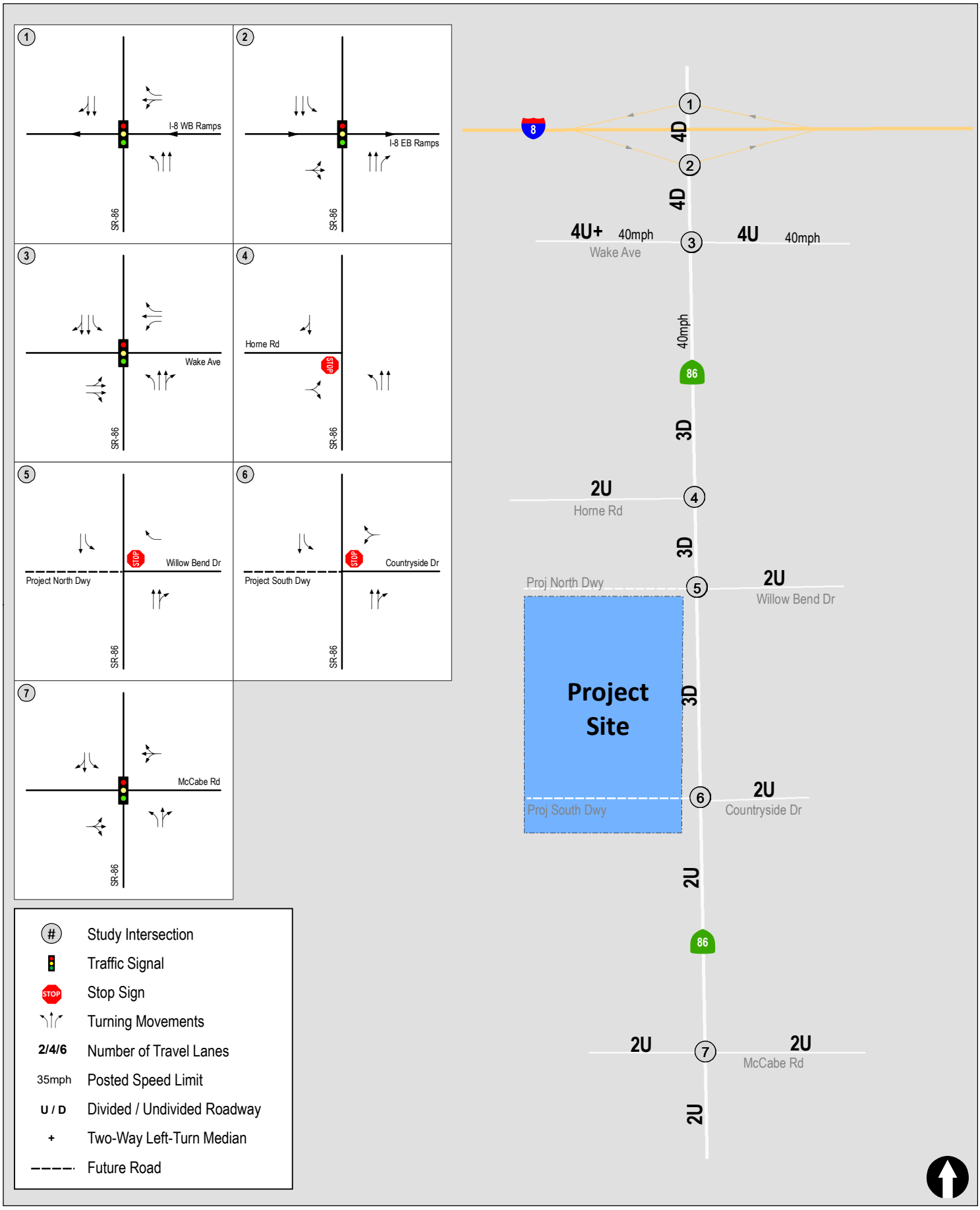
LINSCOTT LAW & GREENSPAN
engineers

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Figure 3

Site Plan

Willow Bend Project



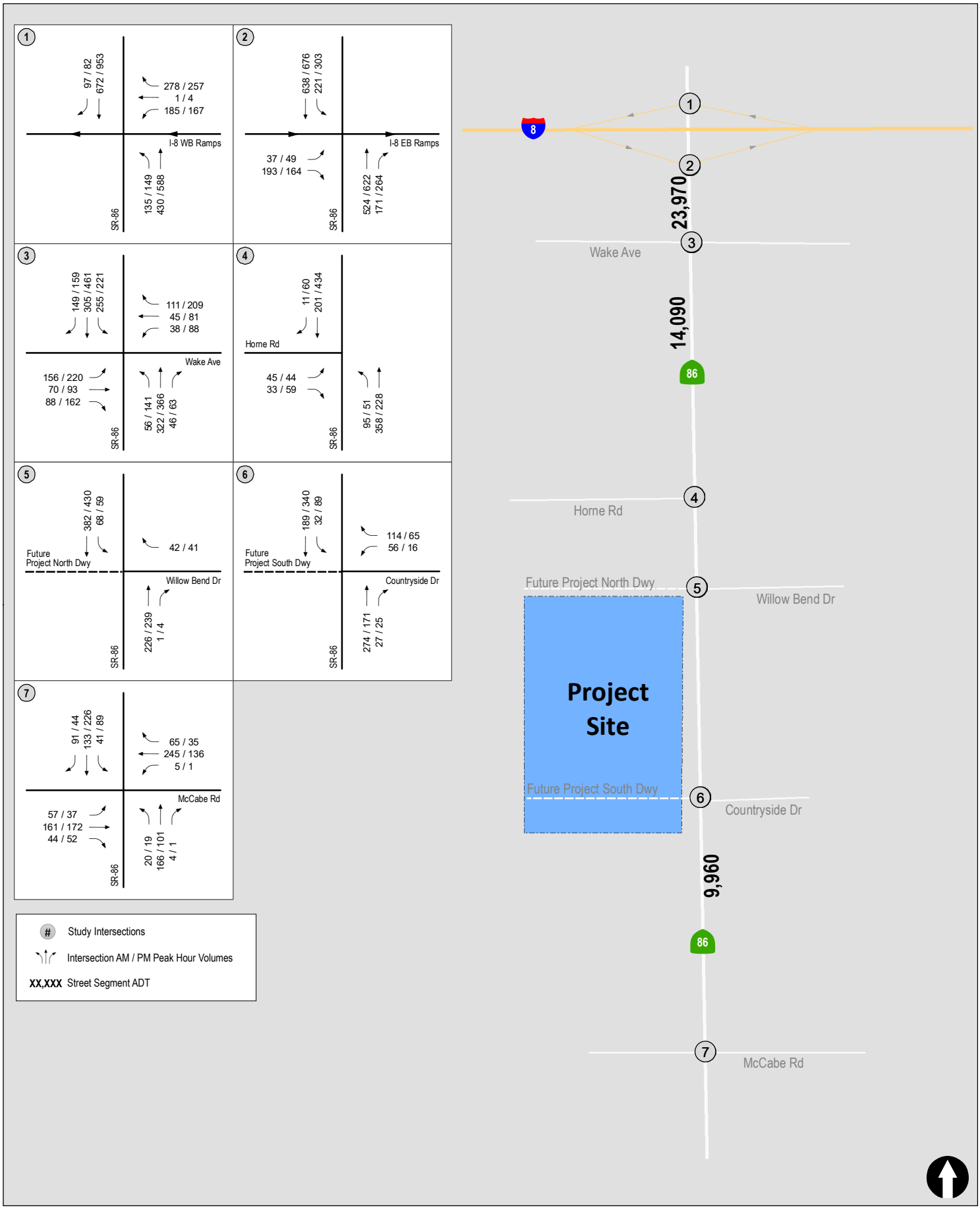
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Figure 4

Existing Conditions Diagram

Willow Bend Project



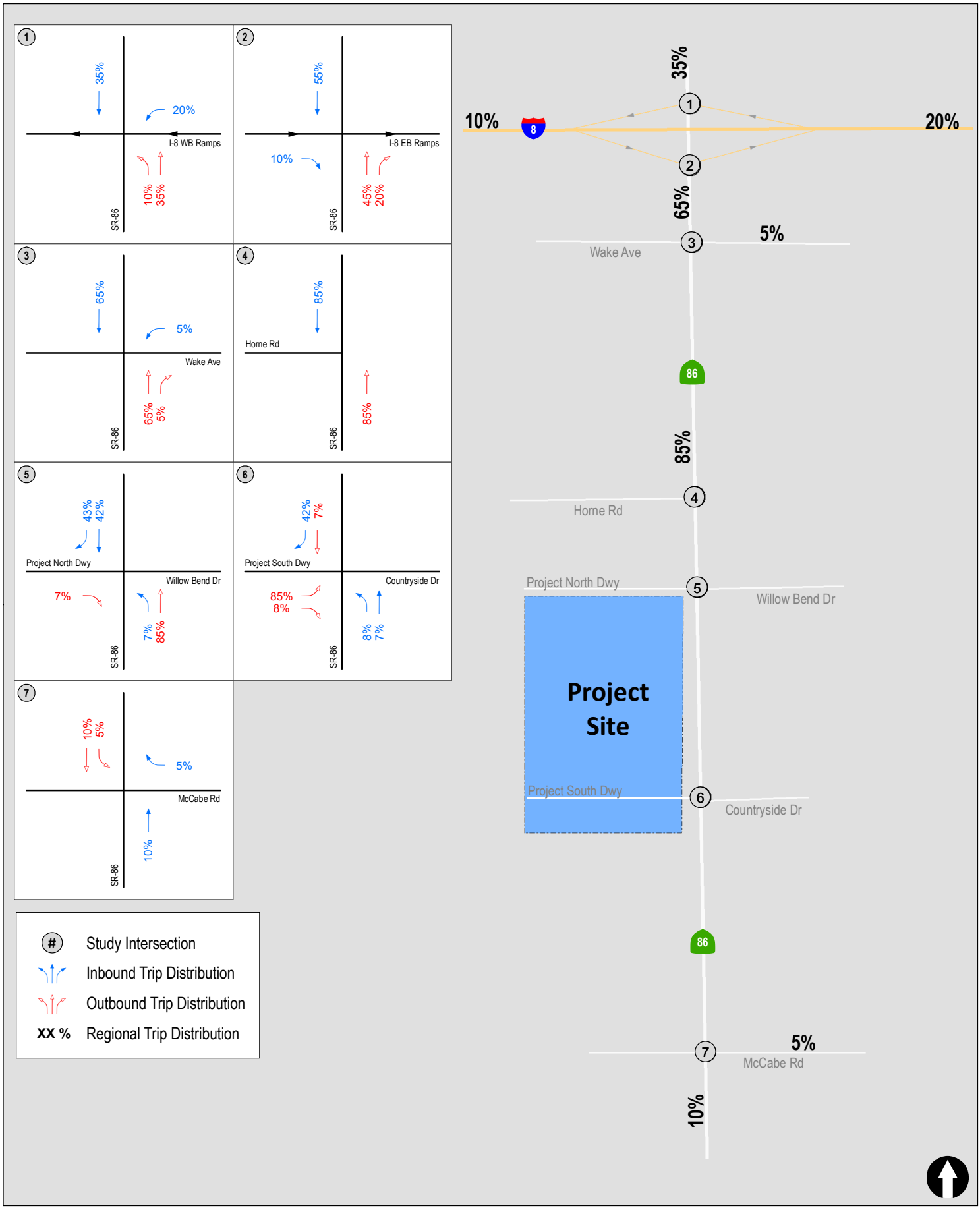
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Figure 5

Existing Traffic Volumes

Willow Bend Project



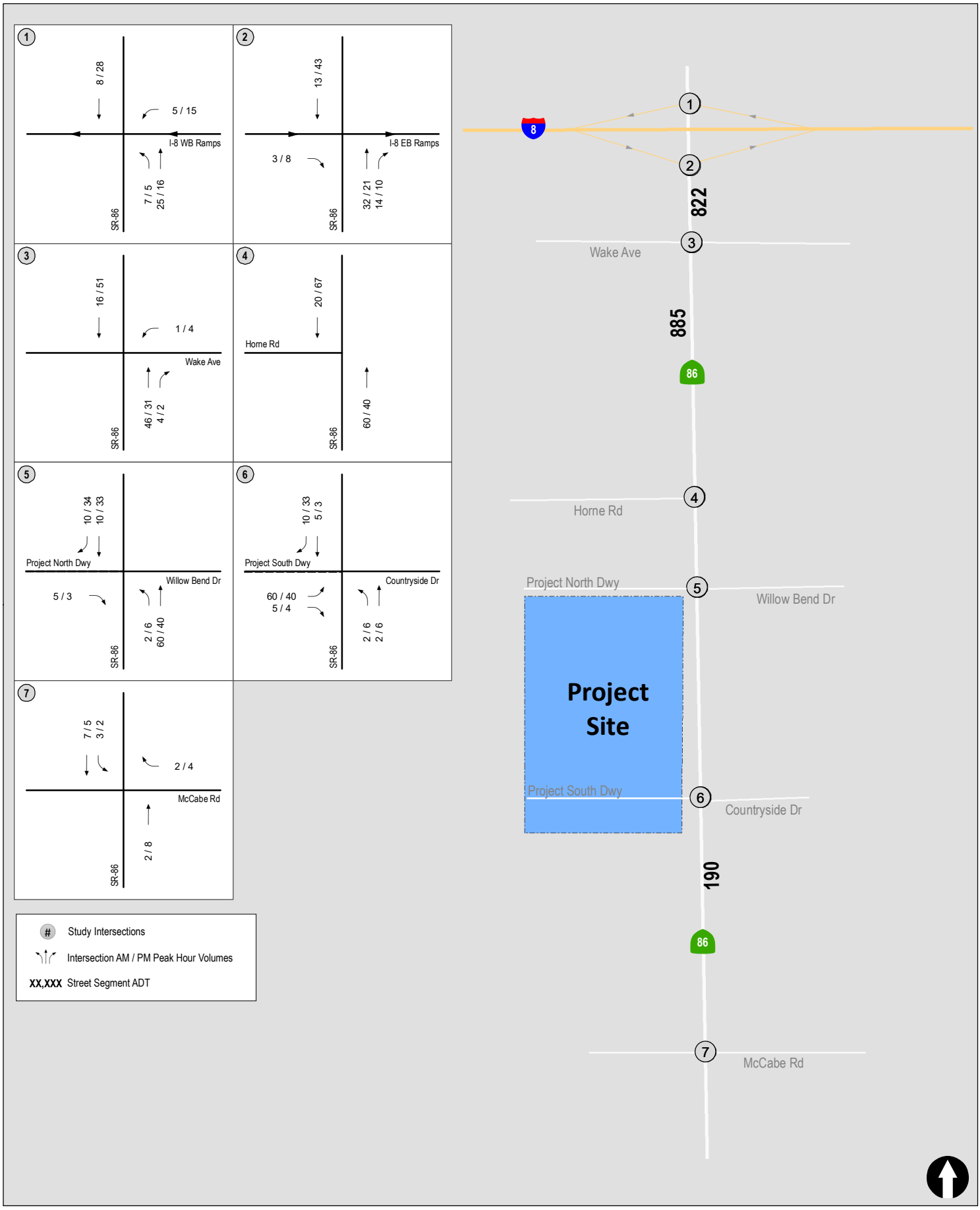
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Figure 6

Project Trip Distribution

Willow Bend Project



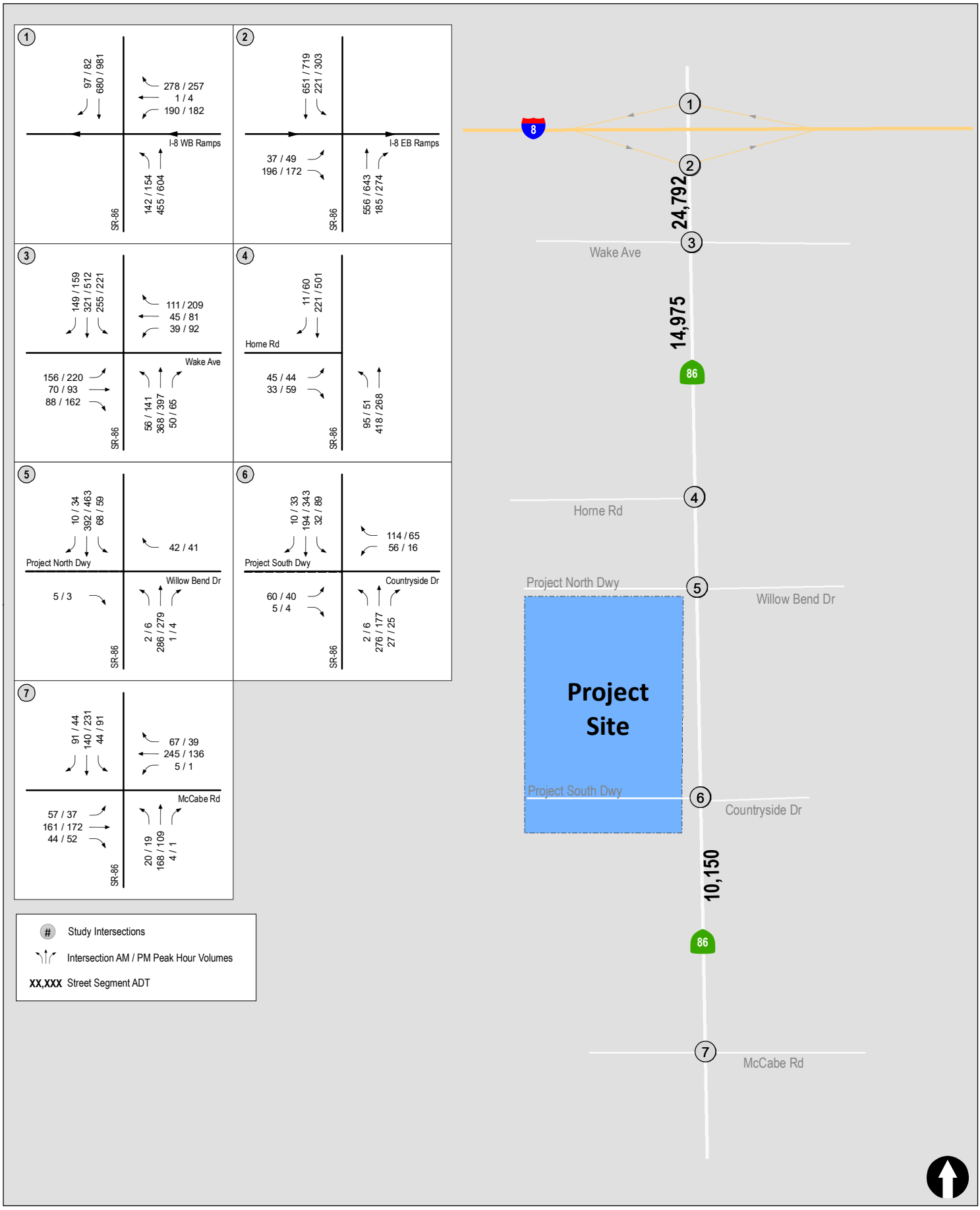
LINSCOTT LAW & GREENSPAN engineers

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Date: 6/15/2022
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Figure 7

Project Traffic Volumes

Willow Bend Project



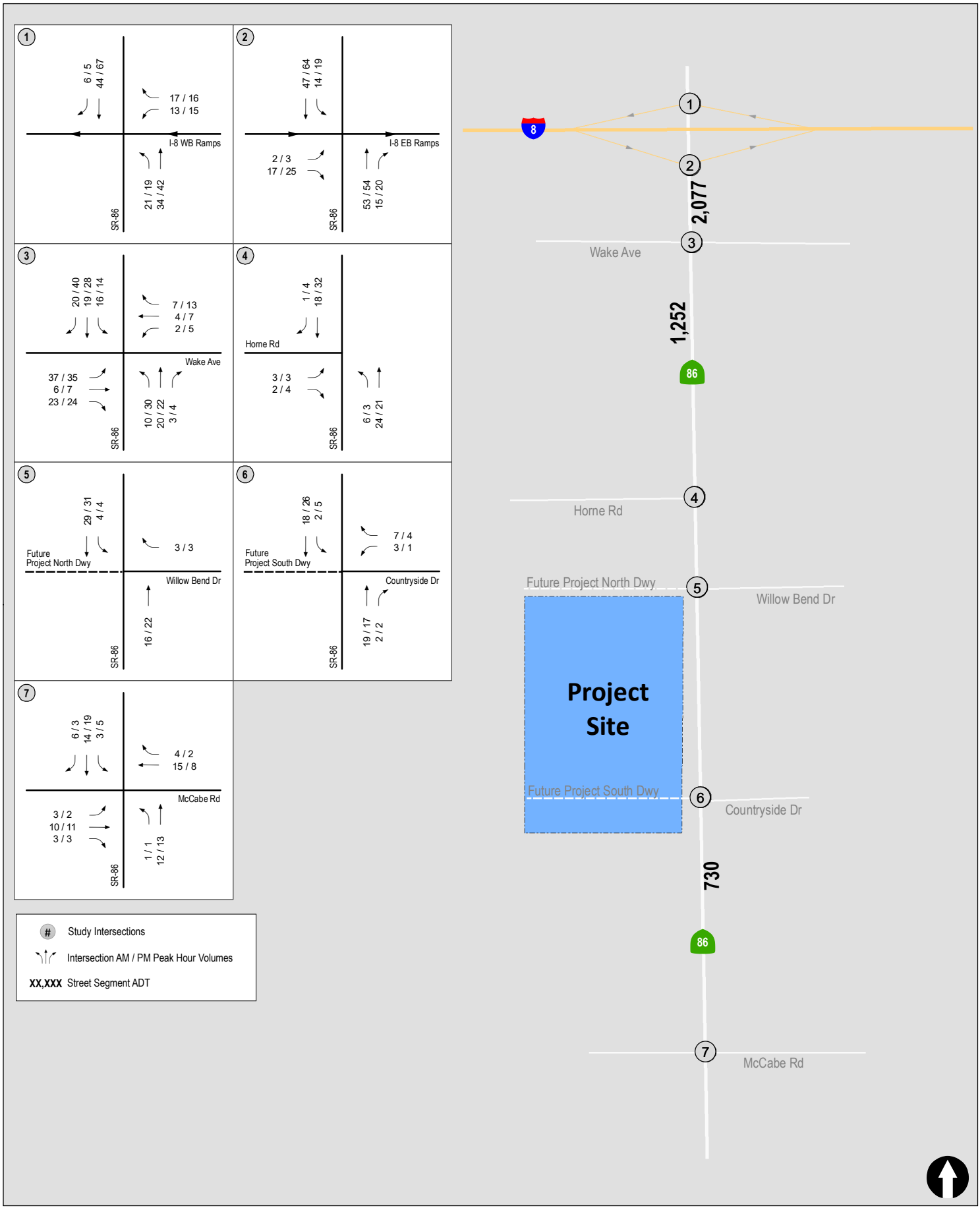
LINSCOTT LAW & GREENSPAN engineers

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Time: 8:10 AM

Figure 8

Existing + Project Traffic Volumes

Willow Bend Project



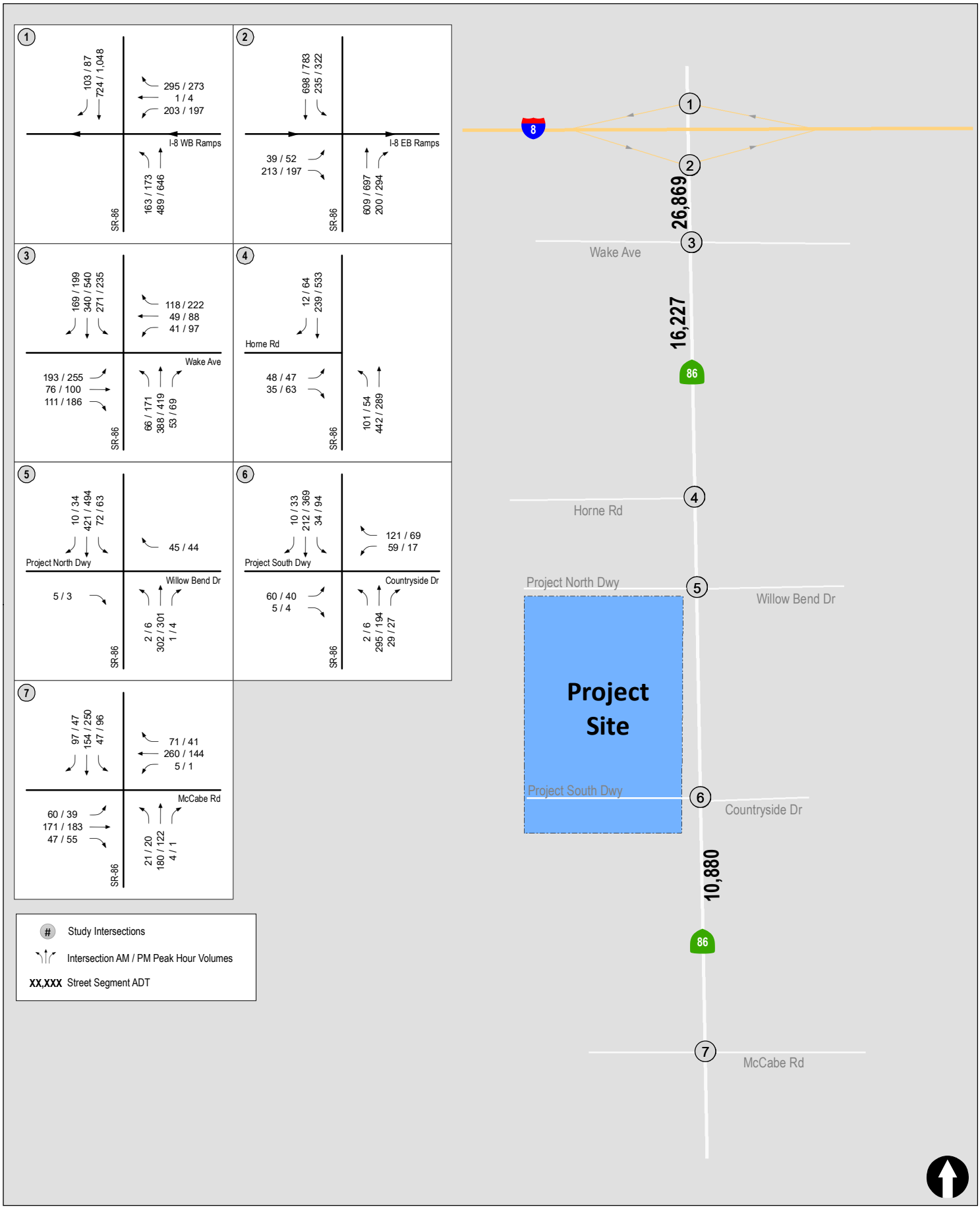
LINSCOTT LAW & GREENSPAN engineers

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Figure 9

Cumulative Projects Traffic Volumes

Willow Bend Project



LINSCOTT LAW & GREENSPAN engineers

N:\3559\Figures
Date: 6/15/2022
Time: 9:42 AM

Figure 10

Existing + Cumulative + Project Traffic Volumes

Willow Bend Project

ATTACHMENT 1

INTERSECTION AND STREET SEGMENT COUNT SHEETS; GROWTH RATE CALCULATIONS

Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#01	File Name:	ITM-22-022-01
Intersection:	SR-86 & I-8 Westbound Ramps	Project:	LLG Ref. 3-22-3559
Date of Count:	Thursday, March 07, 2022		El Centro

AM	SR-86 Southbound			I-8 Off Ramp Westbound			SR-86 Northbound			I-8 On Ramp Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	92	24	24	1	56	19	69	0	0	0	0	285
7:15	0	113	22	21	0	55	29	97	0	0	0	0	337
7:30	0	156	29	33	1	62	45	99	0	0	0	0	425
7:45	0	204	25	75	0	111	45	129	0	0	0	0	589
8:00	0	165	24	37	0	54	26	89	0	0	0	0	395
8:15	0	147	19	40	0	51	19	113	0	0	0	0	389
8:30	0	142	19	43	1	59	29	110	0	0	0	0	403
8:45	0	138	11	45	0	55	22	129	0	0	0	0	400
Total	0	1157	173	318	3	503	234	835	0	0	0	0	3223
Approach%	-	87.0	13.0	38.6	0.4	61.0	21.9	78.1	-	-	-	-	
Total%	-	35.9	5.4	9.9	0.1	15.6	7.3	25.9	-	-	-	-	

AM Intersection Peak Hour: **07:30 to 08:30**

Volume	-	672	97	185	1	278	135	430	-	-	-	-	1,798
Approach%	-	87.4	12.6	39.9	0.2	59.9	23.9	76.1	-	-	-	-	
Total%	-	37.4	5.4	10.3	0.1	15.5	7.5	23.9	-	-	-	-	
PHF			0.84			0.62			0.81			#DIV/0!	0.76

PM	SR-86 Southbound			I-8 Off Ramp Westbound			SR-86 Northbound			I-8 On Ramp Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	222	16	62	2	68	30	156	1	0	0	0	557
16:15	0	195	20	51	1	72	16	122	18	0	0	0	495
16:30	0	244	29	30	1	65	26	144	0	0	0	0	539
16:45	0	200	18	50	2	59	29	120	0	0	0	0	478
17:00	0	212	17	37	1	65	59	187	0	0	0	0	578
17:15	0	297	18	50	0	68	35	137	0	0	0	0	605
17:30	0	227	19	51	1	64	34	107	0	0	0	0	503
17:45	0	192	19	30	0	80	33	142	0	0	0	0	496
Total	0	1789	156	361	8	541	262	1115	19	0	0	0	4251
Approach%	-	92.0	8.0	39.7	0.9	59.5	18.8	79.9	1.4	-	-	-	
Total%	-	42.1	3.7	8.5	0.2	12.7	6.2	26.2	0.4	-	-	-	

PM Intersection Peak Hour: **16:30 to 17:30**

Volume	-	953	82	167	4	257	149	588	-	-	-	-	2,200
Approach%	-	92.1	7.9	39.0	0.9	60.0	20.2	79.8	-	-	-	-	
Total%	-	43.3	3.7	7.6	0.2	11.7	6.8	26.7	-	-	-	-	
PHF			0.82			0.91			0.75			#DIV/0!	0.91

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

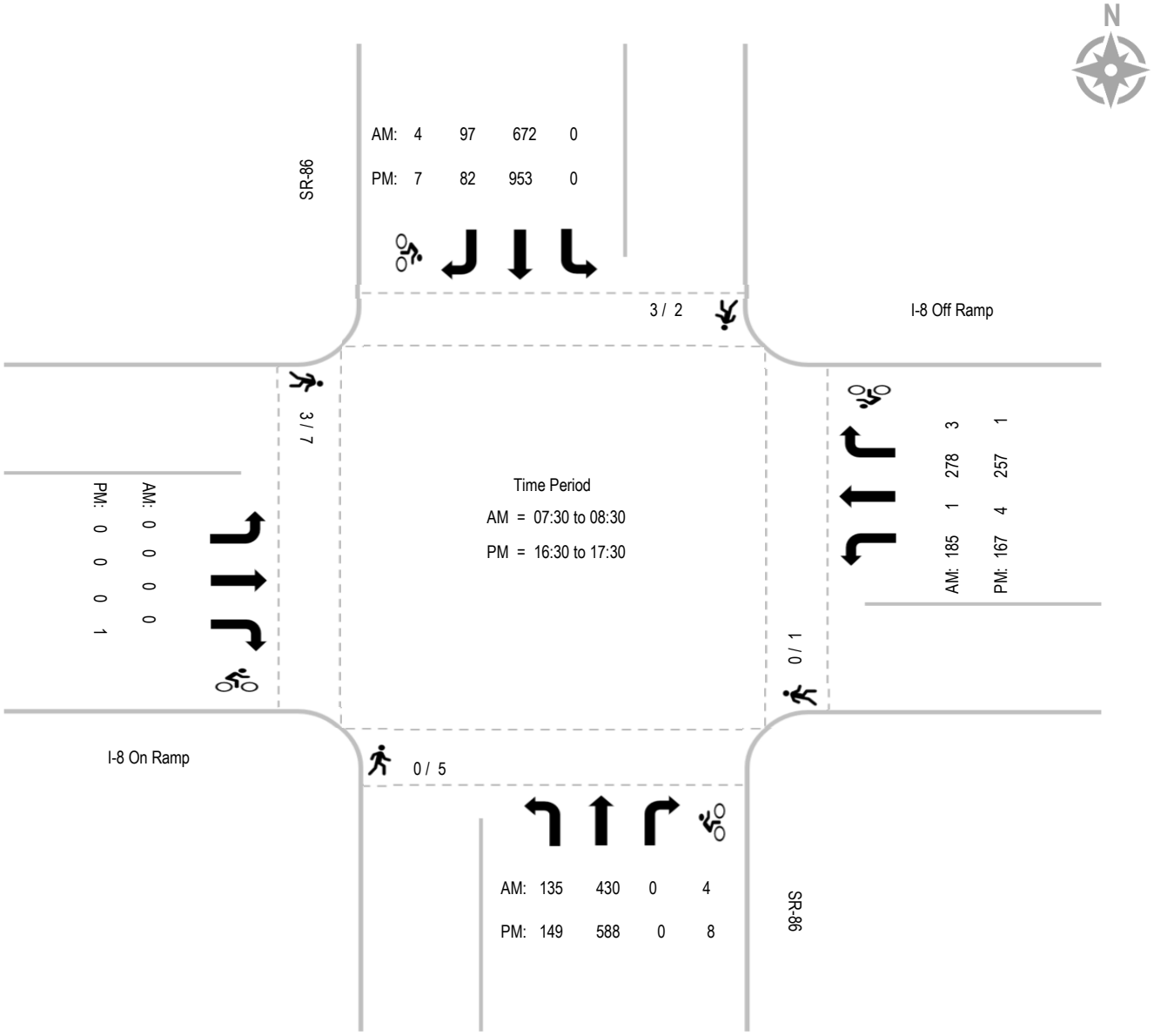
Location:	#01	File Name:	ITM-22-022-01
Intersection:	SR-86 & I-8 Westbound Ramps	Project:	LLG Ref. 3-22-3559
Date of Count:	Thursday, March 07, 2022		El Centro

AM	SR-86 Southbound				I-8 Off Ramp Westbound				SR-86 Northbound				I-8 On Ramp Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	0	0	5
7:30	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	2
7:45	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	1
8:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
Ped Total	3				0				0				3				6	
Bike Total		0	4	0		2	0	1		0	3	1		0	0	0		11

PM	SR-86 Southbound				I-8 Off Ramp Westbound				SR-86 Northbound				I-8 On Ramp Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	3	1
16:15	1	0	0	0	0	0	0	0	0	0	1	0	5	0	1	0	6	2
16:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
17:15	1	0	1	0	1	0	0	0	3	0	3	0	0	0	0	0	5	4
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	2	0	0	1	0	0	0	0	3	0	0	0	0	0	0	6
Ped Total	2				1				5				7				15	
Bike Total		0	7	0		1	0	0		0	8	0		0	1	0		17

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location:	#01	File Name: ITM-22-022-01
	Intersection:	SR-86 & I-8 Westbound Ramps	Project: LLG Ref. 3-22-3559
	Date of Count:	Thursday, March 07, 2022	El Centro



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#02	File Name:	ITM-22-022-02
Intersection:	SR-86 & I-8 Eastbound Ramps	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

AM	SR-86 Southbound			I-8 Eastbound On Ramp Westbound			SR-86 Northbound			I-8 Eastbound Off Ramp Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	43	74	0	0	0	0	0	84	25	9	0	16	251
7:15	46	87	0	0	0	0	0	121	39	8	0	22	323
7:30	64	138	0	0	0	0	0	127	43	8	0	36	416
7:45	65	187	0	0	0	0	0	144	49	11	0	80	536
8:00	52	179	0	0	0	0	0	134	38	14	0	47	464
8:15	40	134	0	0	0	0	0	119	41	4	0	30	368
8:30	55	137	0	0	0	0	0	101	38	7	0	32	370
8:45	52	135	0	0	0	0	0	138	27	11	0	34	397
Total	417	1071	0	0	0	0	0	968	300	72	0	297	3125
Approach%	28.0	72.0	-	-	-	-	-	76.3	23.7	19.5	-	80.5	
Total%	13.3	34.3	-	-	-	-	-	31.0	9.6	2.3	-	9.5	

AM Intersection Peak Hour: **07:30 to 08:30**

Volume	221	638	-	-	-	-	-	524	171	37	-	193	1,784
Approach%	25.7	74.3	-	-	-	-	-	75.4	24.6	16.1	-	83.9	
Total%	12.4	35.8	-	-	-	-	-	29.4	9.6	2.1	-	10.8	
PHF			0.85			#DIV/0!			0.90			0.63	0.83

PM	SR-86 Southbound			I-8 Eastbound On Ramp Westbound			SR-86 Northbound			I-8 Eastbound Off Ramp Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	86	190	0	0	0	0	0	124	43	15	0	61	519
16:15	57	159	0	0	0	0	0	147	58	14	0	47	482
16:30	76	170	0	0	0	0	0	147	49	11	0	45	498
16:45	71	142	0	0	0	0	0	125	43	20	0	56	457
17:00	66	175	0	0	0	0	0	217	90	16	0	34	598
17:15	98	179	0	0	0	0	0	108	72	10	0	42	509
17:30	74	149	0	0	0	0	0	148	60	15	0	55	501
17:45	65	173	0	0	0	0	0	149	42	8	0	33	470
Total	593	1337	0	0	0	0	0	1165	457	109	0	373	4034
Approach%	30.7	69.3	-	-	-	-	-	71.8	28.2	22.6	-	77.4	
Total%	14.7	33.1	-	-	-	-	-	28.9	11.3	2.7	-	9.2	

PM Intersection Peak Hour: **17:00 to 18:00**

Volume	303	676	-	-	-	-	-	622	264	49	-	164	2,078
Approach%	30.9	69.1	-	-	-	-	-	70.2	29.8	23.0	-	77.0	
Total%	14.6	32.5	-	-	-	-	-	29.9	12.7	2.4	-	7.9	
PHF			0.88			#DIV/0!			0.72			0.76	0.87

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#02	File Name:	ITM-22-022-02
Intersection:	SR-86 & I-8 Eastbound Ramps	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

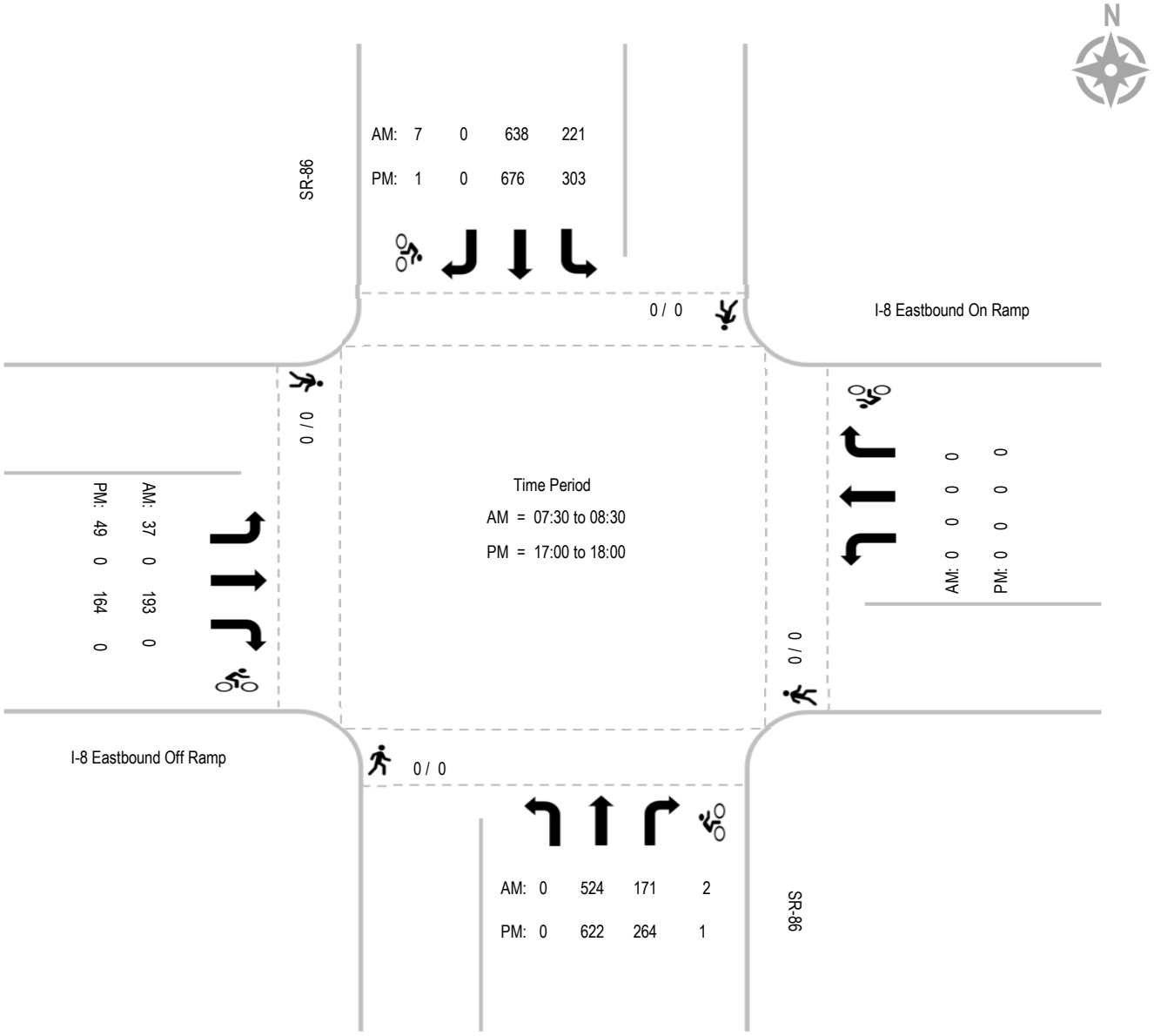
AM	SR-86 Southbound				I-8 Eastbound On Ramp Westbound				SR-86 Northbound				I-8 Eastbound Off Ramp Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
7:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	7	0		0	0	0		0	2	0		0	0	0		9

PM	SR-86 Southbound				I-8 Eastbound On Ramp Westbound				SR-86 Northbound				I-8 Eastbound Off Ramp Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	1	0		0	0	0		0	1	0		0	0	0		2

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers

Location:	#02	File Name:	ITM-22-022-02
Intersection:	SR-86 & I-8 Eastbound Ramps	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#07	File Name:	ITM-21-085-04
Intersection:	4th Street (SR-86) and Wake Avenue	Project:	LLG Ref. 3-21-XXXX
Date of Count:	Tuesday, December 14, 2021		El Centro

AM	4th Street (SR-86) Southbound			Wake Avenue Westbound			4th Street (SR-86) Northbound			Wake Avenue Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	31	33	21	9	5	20	9	43	9	24	5	9	218
7:15	55	33	24	6	8	18	8	61	8	37	20	12	290
7:30	46	50	24	9	9	28	10	107	7	54	11	17	372
7:45	63	120	47	4	16	18	18	90	14	40	17	34	481
8:00	67	78	46	11	13	35	12	62	10	34	20	22	410
8:15	79	57	32	14	7	30	16	63	15	28	22	15	378
8:30	72	52	45	8	16	35	13	48	19	25	13	13	359
8:45	77	59	28	11	15	49	16	44	20	19	21	16	375
Total	490	482	267	72	89	233	102	518	102	261	129	138	2883
Approach%	39.5	38.9	21.5	18.3	22.6	59.1	14.1	71.7	14.1	49.4	24.4	26.1	
Total%	17.0	16.7	9.3	2.5	3.1	8.1	3.5	18.0	3.5	9.1	4.5	4.8	

AM Intersection Peak Hour: **07:30 to 08:30**

Volume	255	305	149	38	45	111	56	322	46	156	70	88	1,641
Approach%	36.0	43.0	21.0	19.6	23.2	57.2	13.2	75.9	10.8	49.7	22.3	28.0	
Total%	15.5	18.6	9.1	2.3	2.7	6.8	3.4	19.6	2.8	9.5	4.3	5.4	
PHF			0.77			0.82			0.85			0.86	0.85

PM	4th Street (SR-86) Southbound			Wake Avenue Westbound			4th Street (SR-86) Northbound			Wake Avenue Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	71	110	47	18	13	46	38	92	13	31	24	34	537
16:15	58	131	44	22	20	59	32	67	24	64	26	39	586
16:30	55	113	39	21	15	45	27	83	11	53	17	35	514
16:45	49	120	38	19	23	46	31	81	16	27	23	48	521
17:00	59	97	38	26	23	59	51	135	12	76	27	40	643
17:15	56	121	26	7	17	36	34	86	18	48	16	52	517
17:30	61	99	39	24	19	46	37	83	7	49	23	35	522
17:45	58	99	28	16	14	25	22	65	14	45	16	37	439
Total	467	890	299	153	144	362	272	692	115	393	172	320	4279
Approach%	28.2	53.7	18.1	23.2	21.9	54.9	25.2	64.1	10.7	44.4	19.4	36.2	
Total%	10.9	20.8	7.0	3.6	3.4	8.5	6.4	16.2	2.7	9.2	4.0	7.5	

PM Intersection Peak Hour: **16:15 to 17:15**

Volume	221	461	159	88	81	209	141	366	63	220	93	162	2,264
Approach%	26.3	54.8	18.9	23.3	21.4	55.3	24.7	64.2	11.1	46.3	19.6	34.1	
Total%	9.8	20.4	7.0	3.9	3.6	9.2	6.2	16.2	2.8	9.7	4.1	7.2	
PHF			0.90			0.88			0.72			0.83	0.88

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

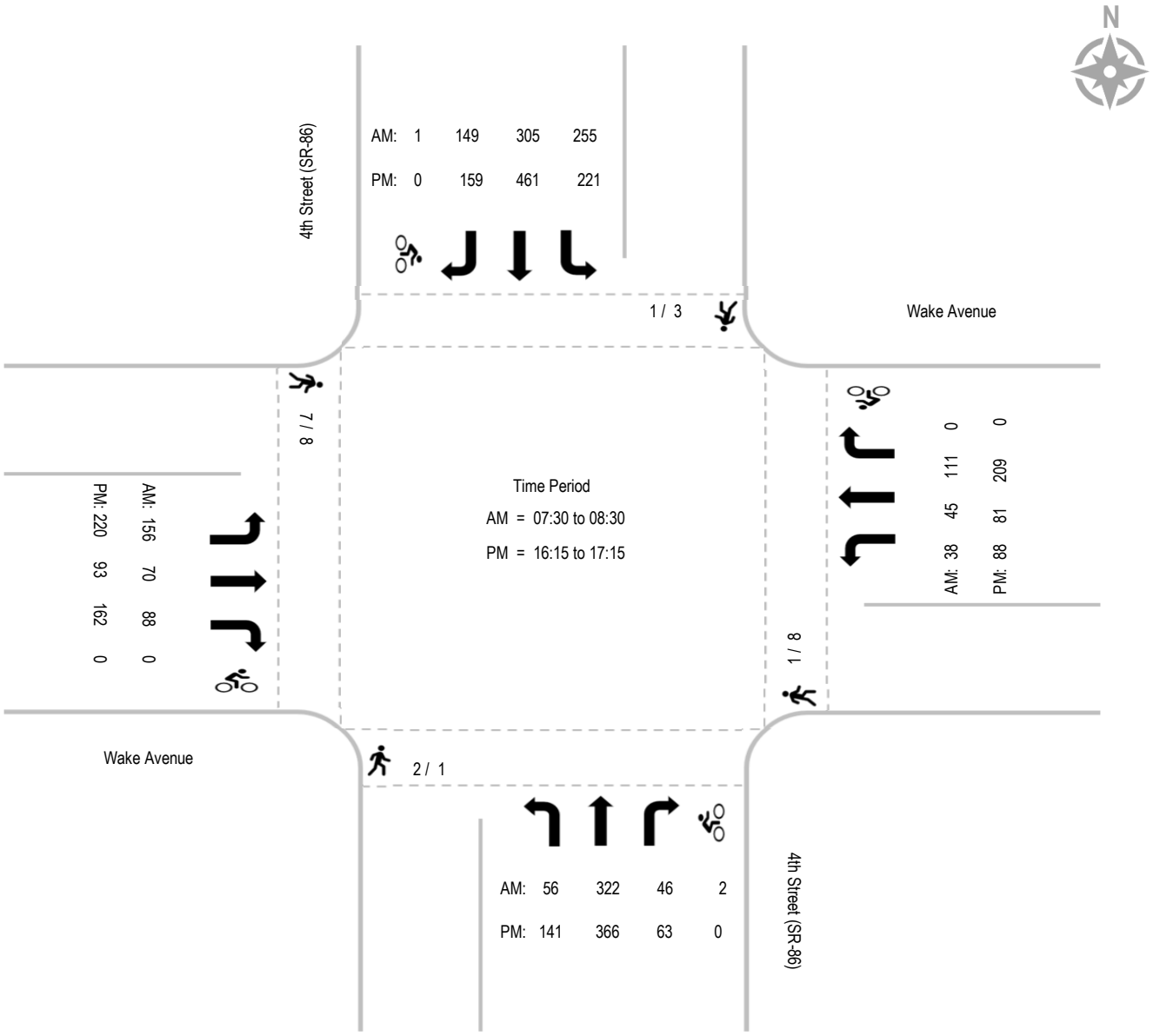
Location:	#07	File Name:	ITM-21-085-04
Intersection:	4th Street (SR-86) and Wake Avenue	Project:	LLG Ref. 3-21-XXXX
Date of Count:	Tuesday, December 14, 2021		El Centro

AM	4th Street (SR-86) Southbound				Wake Avenue Westbound				4th Street (SR-86) Northbound				Wake Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
8:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
8:15	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0	6	0
8:30	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	1				1				2				7				11	
Bike Total		1	0	0		0	0	0		0	2	0		0	0	0		3

PM	4th Street (SR-86) Southbound				Wake Avenue Westbound				4th Street (SR-86) Northbound				Wake Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0	0	6	0
16:30	2	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	5	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0
17:30	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
17:45	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
Ped Total	3				8				1				8				20	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location:	#07	File Name: ITM-21-085-04
	Intersection:	4th Street (SR-86) and Wake Avenue	Project: LLG Ref. 3-21-XXXX
	Date of Count:	Tuesday, December 14, 2021	El Centro



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#03	File Name:	ITM-22-022-03
Intersection:	SR-86 & Home Road	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

AM	SR-86 Southbound			- Westbound			SR-86 Northbound			Home Road Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	24	3	0	0	0	9	60	0	7	0	6	109
7:15	0	29	3	0	0	0	21	78	0	10	0	4	145
7:30	0	51	0	0	0	0	40	106	0	11	0	8	216
7:45	0	34	4	0	0	0	33	113	0	21	0	8	213
8:00	0	64	5	0	0	0	10	71	0	6	0	12	168
8:15	0	52	2	0	0	0	12	68	0	7	0	5	146
8:30	0	32	3	0	0	0	4	64	0	9	0	10	122
8:45	0	52	9	0	0	0	11	65	0	8	0	6	151
Total	0	338	29	0	0	0	140	625	0	79	0	59	1270
Approach%	-	92.1	7.9	-	-	-	18.3	81.7	-	57.2	-	42.8	
Total%	-	26.6	2.3	-	-	-	11.0	49.2	-	6.2	-	4.6	

AM Intersection Peak Hour: **07:30 to 08:30**

Volume	-	201	11	-	-	-	95	358	-	45	-	33	743
Approach%	-	94.8	5.2	-	-	-	21.0	79.0	-	57.7	-	42.3	
Total%	-	27.1	1.5	-	-	-	12.8	48.2	-	6.1	-	4.4	
PHF			0.77			#DIV/0!			0.78			0.67	0.86

PM	SR-86 Southbound			- Westbound			SR-86 Northbound			Home Road Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	122	9	0	0	0	5	56	0	12	0	15	219
16:15	0	95	15	0	0	0	15	56	0	11	0	14	206
16:30	0	97	5	0	0	0	3	62	0	6	0	13	186
16:45	0	85	12	0	0	0	13	57	0	7	0	15	189
17:00	0	136	26	0	0	0	8	60	0	11	0	11	252
17:15	0	111	13	0	0	0	12	66	0	8	0	19	229
17:30	0	97	12	0	0	0	10	48	0	16	0	15	198
17:45	0	90	9	0	0	0	21	54	0	9	0	14	197
Total	0	833	101	0	0	0	87	459	0	80	0	116	1676
Approach%	-	89.2	10.8	-	-	-	15.9	84.1	-	40.8	-	59.2	
Total%	-	49.7	6.0	-	-	-	5.2	27.4	-	4.8	-	6.9	

PM Intersection Peak Hour: **17:00 to 18:00**

Volume	-	434	60	-	-	-	51	228	-	44	-	59	876
Approach%	-	87.9	12.1	-	-	-	18.3	81.7	-	42.7	-	57.3	
Total%	-	49.5	6.8	-	-	-	5.8	26.0	-	5.0	-	6.7	
PHF			0.76			#DIV/0!			0.89			0.83	0.87

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#03	File Name:	ITM-22-022-03
Intersection:	SR-86 & Home Road	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

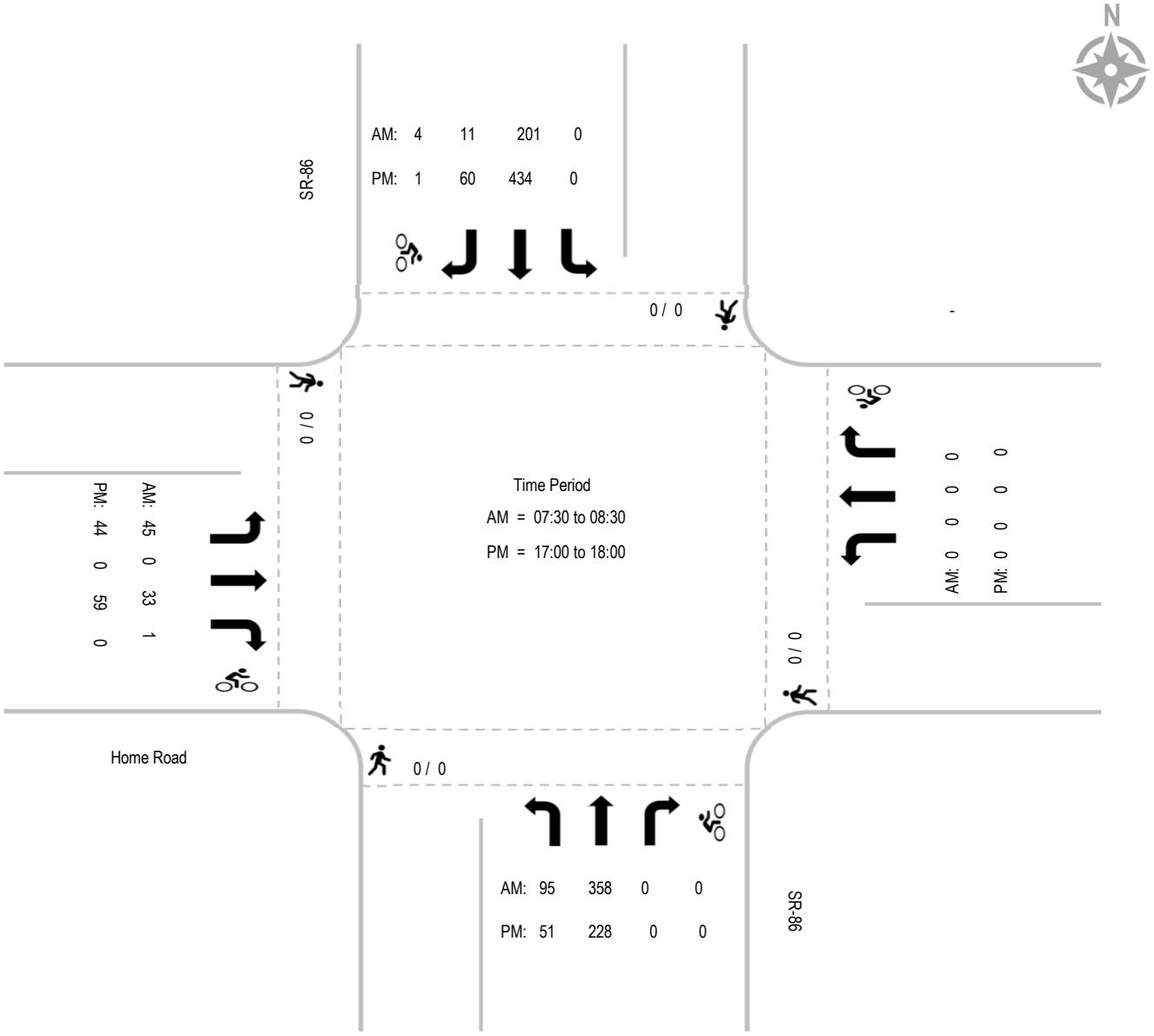
AM	SR-86 Southbound				- Westbound				SR-86 Northbound				Home Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Ped Total	0				0				0				0				0	
Bike Total		0	3	1		0	0	0		0	0	0		1	0	0		5

PM	SR-86 Southbound				- Westbound				SR-86 Northbound				Home Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	1	0		0	0	0		0	0	0		0	0	0		1

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers

Location:	#03	File Name:	ITM-22-022-03
Intersection:	SR-86 & Home Road	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#04	File Name:	ITM-22-022-04
Intersection:	SR-86 & Willow Bend Drive	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

AM	SR-86 Southbound			Willow Bend Drive Westbound			SR-86 Northbound			- Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	15	121	0	0	0	10	0	51	0	0	0	0	197
7:15	20	87	0	0	0	15	0	57	0	0	0	0	179
7:30	19	87	0	0	0	6	0	59	1	0	0	0	172
7:45	14	87	0	0	0	11	0	59	0	0	0	0	171
8:00	13	59	0	0	0	13	0	69	3	0	0	0	157
8:15	5	56	0	0	0	6	0	72	1	0	0	0	140
8:30	4	35	0	0	0	8	0	65	1	0	0	0	113
8:45	6	56	0	0	0	11	0	66	1	0	0	0	140
Total	96	588	0	0	0	80	0	498	7	0	0	0	1269
Approach%	14.0	86.0	-	-	-	100.0	-	98.6	1.4	-	-	-	
Total%	7.6	46.3	-	-	-	6.3	-	39.2	0.6	-	-	-	

AM Intersection Peak Hour: **07:00 to 08:00**

Volume	68	382	-	-	-	42	-	226	1	-	-	-	719
Approach%	15.1	84.9	-	-	-	100.0	-	99.6	0.4	-	-	-	
Total%	9.5	53.1	-	-	-	5.8	-	31.4	0.1	-	-	-	
PHF			0.83			0.70			0.95			#DIV/0!	0.91

PM	SR-86 Southbound			Willow Bend Drive Westbound			SR-86 Northbound			- Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	15	119	0	0	0	10	0	50	0	0	0	0	194
16:15	20	88	0	0	0	16	0	57	0	0	0	0	181
16:30	20	87	0	0	0	6	0	59	1	0	0	0	173
16:45	14	87	0	0	0	11	0	59	0	0	0	0	171
17:00	16	128	0	0	0	11	0	57	0	0	0	0	212
17:15	17	113	0	0	0	11	0	67	1	0	0	0	209
17:30	11	101	0	0	0	7	0	51	2	0	0	0	172
17:45	15	88	0	0	0	12	0	64	1	0	0	0	180
Total	128	811	0	0	0	84	0	464	5	0	0	0	1492
Approach%	13.6	86.4	-	-	-	100.0	-	98.9	1.1	-	-	-	
Total%	8.6	54.4	-	-	-	5.6	-	31.1	0.3	-	-	-	

PM Intersection Peak Hour: **17:00 to 18:00**

Volume	59	430	-	-	-	41	-	239	4	-	-	-	773
Approach%	12.1	87.9	-	-	-	100.0	-	98.4	1.6	-	-	-	
Total%	7.6	55.6	-	-	-	5.3	-	30.9	0.5	-	-	-	
PHF			0.85			0.85			0.89			#DIV/0!	0.92

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

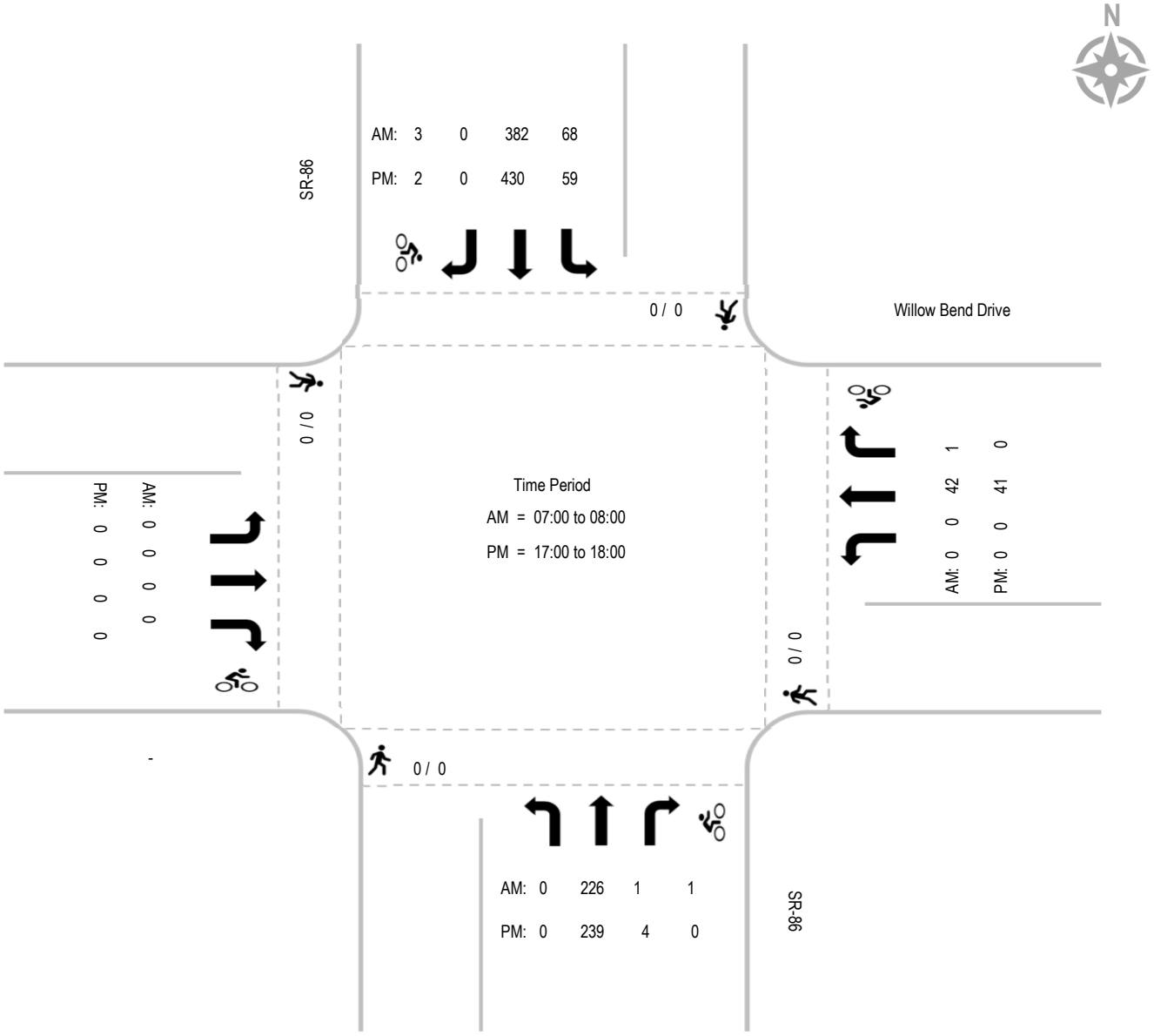
Location:	#04	File Name:	ITM-22-022-04
Intersection:	SR-86 & Willow Bend Drive	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

AM	SR-86 Southbound				Willow Bend Drive Westbound				SR-86 Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Ped Total	0				0				0				0				0	
Bike Total		1	2	0		0	0	1		0	1	0		0	0	0		5

PM	SR-86 Southbound				Willow Bend Drive Westbound				SR-86 Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Ped Total	0				0				0				0				0	
Bike Total		0	2	0		0	0	0		0	0	0		0	0	0		2

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #04	File Name:	ITM-22-022-04
	Intersection: SR-86 & Willow Bend Drive	Project:	LLG Ref. 3-22-3559
	Date of Count: Tuesday, March 05, 2022		El Centro



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#05	File Name:	ITM-22-022-05
Intersection:	SR-86 & Countryside Drive	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

AM	SR-86 Southbound			Countryside Drive Westbound			SR-86 Northbound			- Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	8	16	0	10	0	13	0	48	6	0	0	0	101
7:15	4	26	0	14	0	36	0	44	2	0	0	0	126
7:30	6	50	0	26	0	50	0	67	2	0	0	0	201
7:45	6	42	0	19	0	42	0	76	3	0	0	0	188
8:00	13	52	0	0	0	8	0	70	16	0	0	0	159
8:15	7	45	0	11	0	14	0	61	6	0	0	0	144
8:30	10	28	0	1	0	8	0	53	1	0	0	0	101
8:45	9	44	0	2	0	20	0	57	1	0	0	0	133
Total	63	303	0	83	0	191	0	476	37	0	0	0	1153
Approach%	17.2	82.8	-	30.3	-	69.7	-	92.8	7.2	-	-	-	
Total%	5.5	26.3	-	7.2	-	16.6	-	41.3	3.2	-	-	-	

AM Intersection Peak Hour: **07:30 to 08:30**

Volume	32	189	-	56	-	114	-	274	27	-	-	-	692
Approach%	14.5	85.5	-	32.9	-	67.1	-	91.0	9.0	-	-	-	
Total%	4.6	27.3	-	8.1	-	16.5	-	39.6	3.9	-	-	-	
PHF			0.85			0.56			0.88			#DIV/0!	0.86

PM	SR-86 Southbound			Countryside Drive Westbound			SR-86 Northbound			- Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	30	92	0	6	0	10	0	41	7	0	0	0	186
16:15	17	71	0	5	0	13	0	41	2	0	0	0	149
16:30	19	70	0	1	0	15	0	49	4	0	0	0	158
16:45	20	66	0	6	0	17	0	36	4	0	0	0	149
17:00	17	112	0	3	0	9	0	42	4	0	0	0	187
17:15	27	86	0	9	0	20	0	50	11	0	0	0	203
17:30	22	78	0	1	0	13	0	37	7	0	0	0	158
17:45	23	64	0	3	0	23	0	42	3	0	0	0	158
Total	175	639	0	34	0	120	0	338	42	0	0	0	1348
Approach%	21.5	78.5	-	22.1	-	77.9	-	88.9	11.1	-	-	-	
Total%	13.0	47.4	-	2.5	-	8.9	-	25.1	3.1	-	-	-	

PM Intersection Peak Hour: **17:00 to 18:00**

Volume	89	340	-	16	-	65	-	171	25	-	-	-	706
Approach%	20.7	79.3	-	19.8	-	80.2	-	87.2	12.8	-	-	-	
Total%	12.6	48.2	-	2.3	-	9.2	-	24.2	3.5	-	-	-	
PHF			0.83			0.70			0.80			#DIV/0!	0.87

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

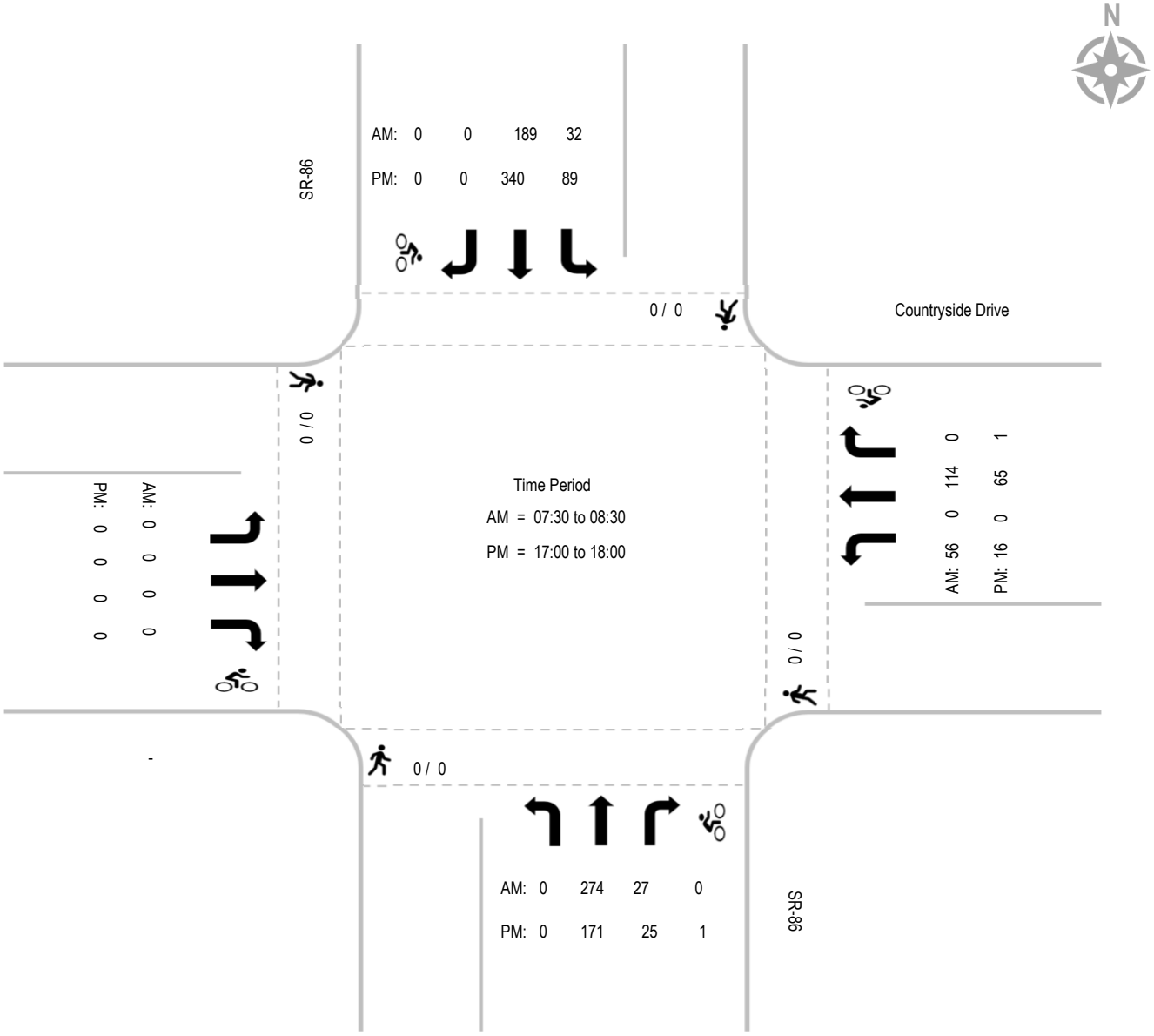
Location:	#05	File Name:	ITM-22-022-05
Intersection:	SR-86 & Countryside Drive	Project:	LLG Ref. 3-22-3559
Date of Count:	Tuesday, March 05, 2022		El Centro

AM	SR-86 Southbound				Countryside Drive Westbound				SR-86 Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	SR-86 Southbound				Countryside Drive Westbound				SR-86 Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	1		0	0	1		0	0	0		2

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #05	File Name:	ITM-22-022-05
	Intersection: SR-86 & Countryside Drive	Project:	LLG Ref. 3-22-3559
	Date of Count: Tuesday, March 05, 2022		El Centro



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#06	File Name:	ITM-22-022-06
Intersection:	SR-86 & McCabe Road	Project:	LLG Ref. 3-22-3559
Date of Count:	Thursday, March 07, 2022		El Centro

AM	SR-86 Southbound			McCabe Road Westbound			SR-86 Northbound			McCabe Road Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	13	12	10	3	32	8	4	27	0	13	12	7	141
7:15	6	19	12	1	52	17	2	45	1	6	26	10	197
7:30	8	32	30	1	91	21	5	36	0	7	33	15	279
7:45	14	50	35	2	58	15	4	56	0	16	38	8	296
8:00	13	32	14	1	44	12	9	29	3	28	64	11	260
8:15	9	22	11	0	24	11	5	35	0	25	26	7	175
8:30	6	23	5	1	23	12	8	25	0	11	19	6	139
8:45	9	20	6	2	21	17	6	26	0	3	15	4	129
Total	78	210	123	11	345	113	43	279	4	109	233	68	1616
Approach%	19.0	51.1	29.9	2.3	73.6	24.1	13.2	85.6	1.2	26.6	56.8	16.6	
Total%	4.8	13.0	7.6	0.7	21.3	7.0	2.7	17.3	0.2	6.7	14.4	4.2	

AM Intersection Peak Hour: **07:15 to 08:15**

Volume	41	133	91	5	245	65	20	166	4	57	161	44	1,032
Approach%	15.5	50.2	34.3	1.6	77.8	20.6	10.5	87.4	2.1	21.8	61.5	16.8	
Total%	4.0	12.9	8.8	0.5	23.7	6.3	1.9	16.1	0.4	5.5	15.6	4.3	
PHF			0.67			0.70			0.79			0.64	0.87

PM	SR-86 Southbound			McCabe Road Westbound			SR-86 Northbound			McCabe Road Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	16	42	9	0	31	12	8	29	1	12	48	15	223
16:15	21	31	8	0	27	11	9	31	2	6	30	8	184
16:30	16	59	11	0	36	10	5	36	1	8	40	8	230
16:45	22	50	12	0	29	7	5	26	0	8	27	12	198
17:00	23	58	14	1	43	13	2	25	0	15	71	23	288
17:15	28	59	7	0	28	5	7	14	0	6	34	9	197
17:30	19	48	2	0	26	17	7	15	0	6	48	14	202
17:45	23	34	4	0	27	18	3	21	0	8	36	15	189
Total	168	381	67	1	247	93	46	197	4	69	334	104	1711
Approach%	27.3	61.9	10.9	0.3	72.4	27.3	18.6	79.8	1.6	13.6	65.9	20.5	
Total%	9.8	22.3	3.9	0.1	14.4	5.4	2.7	11.5	0.2	4.0	19.5	6.1	

PM Intersection Peak Hour: **16:30 to 17:30**

Volume	89	226	44	1	136	35	19	101	1	37	172	52	913
Approach%	24.8	63.0	12.3	0.6	79.1	20.3	15.7	83.5	0.8	14.2	65.9	19.9	
Total%	9.7	24.8	4.8	0.1	14.9	3.8	2.1	11.1	0.1	4.1	18.8	5.7	
PHF			0.94			0.75			0.72			0.60	0.77

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

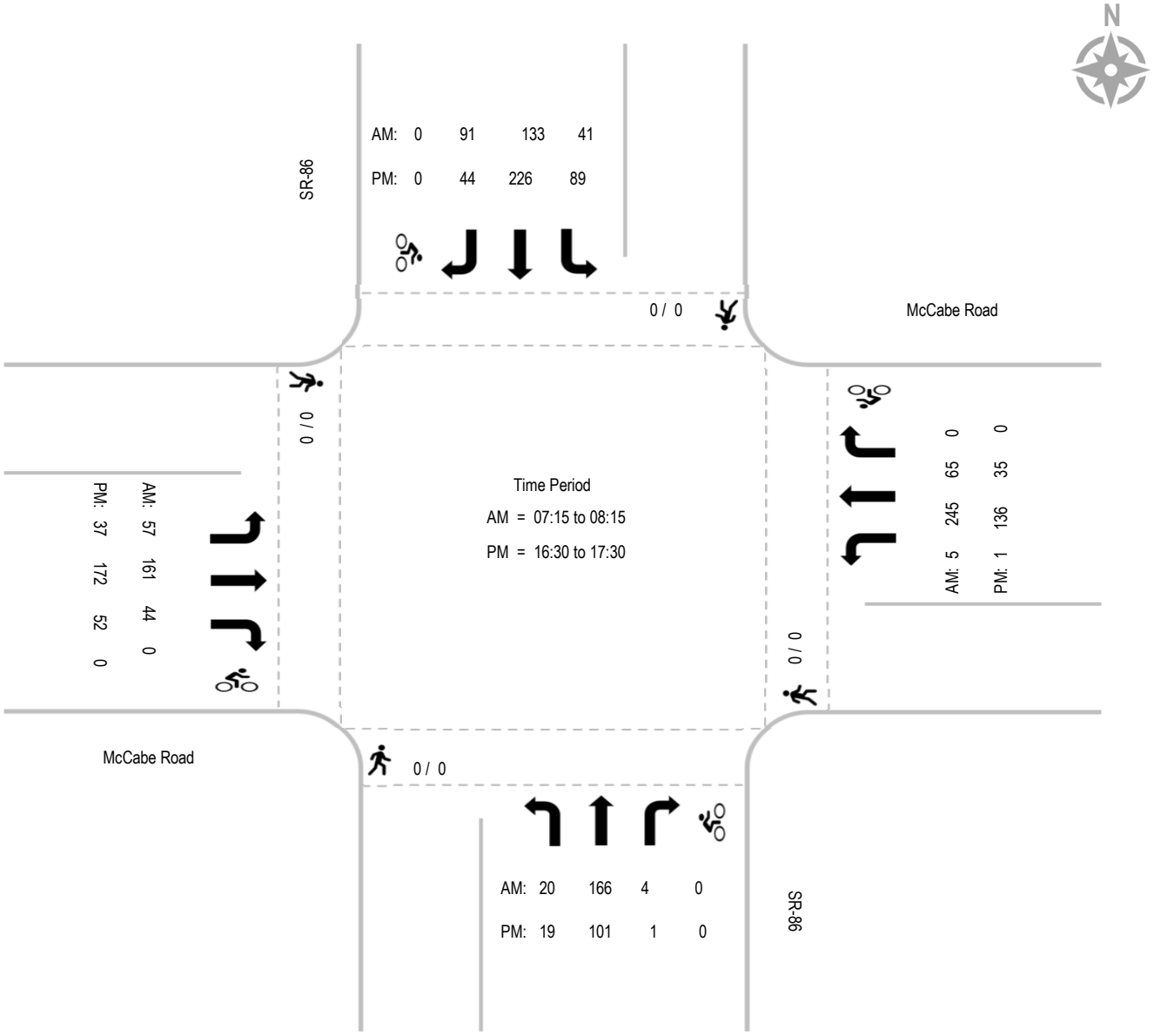
Location:	#06	File Name:	ITM-22-022-06
Intersection:	SR-86 & McCabe Road	Project:	LLG Ref. 3-22-3559
Date of Count:	Thursday, March 07, 2022		El Centro

AM	SR-86 Southbound				McCabe Road Westbound				SR-86 Northbound				McCabe Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	SR-86 Southbound				McCabe Road Westbound				SR-86 Northbound				McCabe Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #06	File Name:	ITM-22-022-06
	Intersection: SR-86 & McCabe Road	Project:	LLG Ref. 3-22-3559
	Date of Count: Thursday, March 07, 2022		El Centro



Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **4th Ave-SR-86, between I-8 Eastbound Ramps and Wake Ave**

Date: **Tuesday, December 14, 2021** Total Daily Volume: **23972** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
141	84	73	112	210	476	678	1238	1311	1329	1505	1720	1800	1825	1802	1852	1851	1829	1300	952	723	569	363	229
40	32	15	14	32	78	128	209	364	341	365	439	437	459	454	444	447	542	373	278	207	186	117	78
37	11	20	35	42	96	155	257	323	293	394	402	447	464	448	452	503	452	332	224	182	140	93	48
39	22	22	32	57	148	175	345	313	317	388	483	460	454	463	510	470	442	308	209	164	118	97	41
25	19	16	31	79	154	220	427	311	378	358	396	456	448	437	446	431	393	287	241	170	125	56	62

Date: **Tuesday, December 14, 2021** Total Daily Volume: **11620** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
71	47	31	57	120	303	366	626	596	630	716	858	859	890	873	829	807	931	627	472	347	288	165	111
10	17	7	7	21	63	71	105	159	161	182	229	232	232	225	212	191	311	180	120	104	99	56	42
19	8	7	21	18	61	88	139	154	139	186	212	207	230	195	195	211	219	157	121	80	68	41	20
25	8	9	15	35	92	102	221	148	155	183	233	220	217	232	225	227	224	146	103	79	70	47	15
17	14	8	14	46	87	105	161	135	175	165	184	200	211	221	197	178	177	144	128	84	51	21	34

Date: **Tuesday, December 14, 2021** Total Daily Volume: **12352** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
70	37	42	55	90	173	312	612	715	699	789	862	941	935	929	1023	1044	898	673	480	376	281	198	118
30	15	8	7	11	15	57	104	205	180	183	210	205	227	229	232	256	231	193	158	103	87	61	36
18	3	13	14	24	35	67	118	169	154	208	190	240	234	253	257	292	233	175	103	102	72	52	28
14	14	13	17	22	56	73	124	165	162	205	250	240	237	231	285	243	218	162	106	85	48	50	26
8	5	8	17	33	67	115	266	176	203	193	212	256	237	216	249	253	216	143	113	86	74	35	28

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **SR-86, between Wake Ave and Danenberg Dr**

Date: **Tuesday, December 14, 2021** Total Daily Volume: **14094** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
71	35	40	47	117	263	353	639	640	725	818	980	1087	1080	1088	1158	1183	1181	841	612	465	350	204	117
14	10	9	8	19	43	65	105	187	169	179	251	272	281	270	281	292	334	242	172	141	112	57	32
27	7	9	9	23	48	89	123	153	177	223	232	272	267	291	279	296	316	220	157	103	84	52	32
19	11	12	13	29	86	97	188	143	170	211	261	291	260	269	304	280	270	184	122	115	76	54	18
11	7	10	17	46	86	102	223	157	209	205	236	252	272	258	294	315	261	195	161	106	78	41	35

Date: **Tuesday, December 14, 2021** Total Daily Volume: **6455** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
24	21	16	26	73	177	210	396	354	345	381	431	458	503	480	480	463	473	357	284	204	152	96	51
5	5	4	4	12	34	44	65	99	90	87	116	138	136	112	123	125	157	100	65	58	55	27	9
7	6	5	6	10	35	51	80	89	88	90	99	104	126	134	117	109	124	90	88	45	34	20	15
8	4	3	7	16	53	49	125	76	80	114	109	110	114	110	120	101	97	85	58	54	32	30	10
4	6	4	9	35	55	66	126	90	87	90	107	106	127	124	120	128	95	82	73	47	31	19	17

Date: **Tuesday, December 14, 2021** Total Daily Volume: **7639** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
47	14	24	21	44	86	143	243	286	380	437	549	629	577	608	678	720	708	484	328	261	198	108	66
9	5	5	4	7	9	21	40	88	79	92	135	134	145	158	158	167	177	142	107	83	57	30	23
20	1	4	3	13	13	38	43	64	89	133	133	168	141	157	162	187	192	130	69	58	50	32	17
11	7	9	6	13	33	48	63	67	90	97	152	181	146	159	184	179	173	99	64	61	44	24	8
7	1	6	8	11	31	36	97	67	122	115	129	146	145	134	174	187	166	113	88	59	47	22	18

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **SR-86, between Danenberg Dr and McCabe Rd**

Date: **Tuesday, December 14, 2021** Total Daily Volume: **9957** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
54	29	37	44	107	229	319	604	536	494	570	592	701	688	714	794	827	790	568	423	350	248	149	90
12	8	10	7	17	41	55	107	170	129	131	142	174	173	152	184	204	233	168	124	110	72	42	27
20	4	7	11	21	43	77	116	127	121	153	155	172	170	187	192	210	215	141	110	79	61	38	21
13	8	10	10	25	79	84	172	109	113	148	166	180	159	183	205	204	179	119	80	73	69	39	13
9	9	10	16	44	66	103	209	130	131	138	129	175	186	192	213	209	163	140	109	88	46	30	29

Date: **Tuesday, December 14, 2021** Total Daily Volume: **4738** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
18	17	15	24	69	161	204	414	316	251	291	278	307	350	311	342	324	298	244	188	129	92	60	35
5	5	4	3	12	31	37	70	97	65	63	72	77	94	63	79	83	74	72	54	35	30	14	8
3	3	4	7	10	32	47	79	72	67	70	73	64	81	86	74	79	91	58	53	35	23	15	7
6	2	3	5	14	51	44	124	65	57	87	72	73	81	72	87	74	66	53	35	29	29	17	6
4	7	4	9	33	47	76	141	82	62	71	61	93	94	90	102	88	67	61	46	30	10	14	14

Date: **Tuesday, December 14, 2021** Total Daily Volume: **5219** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
36	12	22	20	38	68	115	190	220	243	279	314	394	338	403	452	503	492	324	235	221	156	89	55
7	3	6	4	5	10	18	37	73	64	68	70	97	79	89	105	121	159	96	70	75	42	28	19
17	1	3	4	11	11	30	37	55	54	83	82	108	89	101	118	131	124	83	57	44	38	23	14
7	6	7	5	11	28	40	48	44	56	61	94	107	78	111	118	130	113	66	45	44	40	22	7
5	2	6	7	11	19	27	68	48	69	67	68	82	92	102	111	121	96	79	63	58	36	16	15

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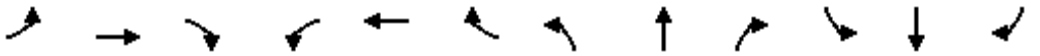
Changes in Traffic Volumes on SR 86

Segment			Difference	
			Amount	Percent
SR 86 North of McCabe Road				
2015-2016	7,700	7,800	100	**1.30%**
2016-2017	7,800	7,900	100	**1.28%**
2017-2018	7,900	7,900	0	**0.00%**
2018-2019	7,900	8,100	200	**2.53%**
2019-2020	8,100	8,100	0	**0.00%**

Average Growth				**1.02%**

ATTACHMENT 2

EXISTING INTERSECTION ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	185	1	278	135	430	0	0	672	97
Future Volume (veh/h)	0	0	0	185	1	278	135	430	0	0	672	97
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				243	1	366	178	566	0	0	884	128
Peak Hour Factor				0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				547	2	475	218	1921	0	0	1084	157
Arrive On Green				0.31	0.31	0.31	0.12	0.54	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1774	7	1540	1781	3647	0	0	3188	448
Grp Volume(v), veh/h				244	0	366	178	566	0	0	508	504
Grp Sat Flow(s),veh/h/ln				1782	0	1540	1781	1777	0	0	1777	1765
Q Serve(g_s), s				7.6	0.0	15.0	6.8	6.0	0.0	0.0	18.0	18.0
Cycle Q Clear(g_c), s				7.6	0.0	15.0	6.8	6.0	0.0	0.0	18.0	18.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.25
Lane Grp Cap(c), veh/h				549	0	475	218	1921	0	0	623	619
V/C Ratio(X)				0.44	0.00	0.77	0.82	0.29	0.00	0.00	0.82	0.82
Avail Cap(c_a), veh/h				950	0	821	228	1921	0	0	623	619
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.2	0.0	21.8	29.7	8.7	0.0	0.0	20.5	20.5
Incr Delay (d2), s/veh				0.6	0.0	2.7	18.0	0.4	0.0	0.0	11.2	11.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.0	0.0	5.4	3.8	2.0	0.0	0.0	8.5	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.8	0.0	24.5	47.7	9.1	0.0	0.0	31.7	31.8
LnGrp LOS				B	A	C	D	A	A	A	C	C
Approach Vol, veh/h					610			744			1012	
Approach Delay, s/veh					22.6			18.3			31.8	
Approach LOS					C			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	42.9		13.2	29.7		26.5						
Change Period (Y+Rc), s	5.4		* 4.7	5.4		5.1						
Max Green Setting (Gmax), s	37.5		* 8.9	23.9		37.0						
Max Q Clear Time (g_c+I1), s	8.0		8.8	20.0		17.0						
Green Ext Time (p_c), s	9.2		0.0	3.1		2.8						

Intersection Summary		
HCM 6th Ctrl Delay		25.2
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	0	193	0	0	0	0	524	171	221	638	0
Future Volume (veh/h)	37	0	193	0	0	0	0	524	171	221	638	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	45	0	233				0	631	206	266	769	0
Peak Hour Factor	0.83	0.83	0.83				0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	46	0	237				0	1290	550	319	2229	0
Arrive On Green	0.18	0.00	0.18				0.00	0.36	0.36	0.18	0.63	0.00
Sat Flow, veh/h	252	0	1306				0	3647	1516	1781	3647	0
Grp Volume(v), veh/h	278	0	0				0	631	206	266	769	0
Grp Sat Flow(s),veh/h/ln	1558	0	0				0	1777	1516	1781	1777	0
Q Serve(g_s), s	9.8	0.0	0.0				0.0	7.6	5.5	7.9	5.7	0.0
Cycle Q Clear(g_c), s	9.8	0.0	0.0				0.0	7.6	5.5	7.9	5.7	0.0
Prop In Lane	0.16		0.84				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	283	0	0				0	1290	550	319	2229	0
V/C Ratio(X)	0.98	0.00	0.00				0.00	0.49	0.37	0.84	0.34	0.00
Avail Cap(c_a), veh/h	283	0	0				0	1290	550	379	2229	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	0.0	0.0				0.0	13.6	12.9	21.8	4.9	0.0
Incr Delay (d2), s/veh	48.1	0.0	0.0				0.0	1.3	1.9	11.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.0	0.0				0.0	2.7	1.8	3.9	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.5	0.0	0.0				0.0	14.9	14.9	33.0	5.3	0.0
LnGrp LOS	E	A	A				A	B	B	C	A	A
Approach Vol, veh/h		278						837			1035	
Approach Delay, s/veh		70.5						14.9			12.4	
Approach LOS		E						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	14.5	25.4	15.1	39.9
Change Period (Y+Rc), s	4.7	5.4	5.1	5.4
Max Green Setting (Gmax), s	12.8	18.1	10.0	34.5
Max Q Clear Time (g_c+I1), s	9.9	9.6	11.8	7.7
Green Ext Time (p_c), s	0.1	5.5	0.0	12.3

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	70	88	38	45	111	56	322	46	255	305	149
Future Volume (veh/h)	156	70	88	38	45	111	56	322	46	255	305	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	82	104	45	53	131	66	379	54	300	359	175
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	133	170	220	231	474	114	864	122	324	929	444
Arrive On Green	0.17	0.17	0.17	0.12	0.12	0.12	0.06	0.28	0.28	0.18	0.40	0.40
Sat Flow, veh/h	1655	777	996	1781	1870	1501	1781	3112	439	1781	2311	1105
Grp Volume(v), veh/h	199	0	171	45	53	131	66	215	218	300	274	260
Grp Sat Flow(s),veh/h/ln	1788	0	1640	1781	1870	1501	1781	1777	1775	1781	1777	1638
Q Serve(g_s), s	11.2	0.0	10.4	2.4	2.8	7.2	3.9	10.7	10.9	17.8	11.8	12.1
Cycle Q Clear(g_c), s	11.2	0.0	10.4	2.4	2.8	7.2	3.9	10.7	10.9	17.8	11.8	12.1
Prop In Lane	0.93		0.61	1.00		1.00	1.00		0.25	1.00		0.67
Lane Grp Cap(c), veh/h	305	0	280	220	231	474	114	493	493	324	714	659
V/C Ratio(X)	0.65	0.00	0.61	0.20	0.23	0.28	0.58	0.44	0.44	0.93	0.38	0.39
Avail Cap(c_a), veh/h	548	0	502	595	625	790	198	493	493	324	714	659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	0.0	41.3	42.4	42.6	28.5	49.0	32.0	32.0	43.3	22.8	22.9
Incr Delay (d2), s/veh	3.3	0.0	3.1	0.2	0.2	0.1	1.7	2.8	2.9	31.0	1.6	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	4.3	1.1	1.3	0.0	1.7	4.8	4.9	10.4	5.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	0.0	44.4	42.6	42.8	28.6	50.7	34.8	34.9	74.3	24.3	24.6
LnGrp LOS	D	A	D	D	D	C	D	C	C	E	C	C
Approach Vol, veh/h		370			229			499			834	
Approach Delay, s/veh		44.7			34.6			36.9			42.4	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	37.2		25.8	11.6	50.6		19.7
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4
Max Green Setting (Gmax), s	19.6	29.9		33.0	* 12	* 38		36.0
Max Q Clear Time (g_c+I1), s	19.8	12.9		13.2	5.9	14.1		9.2
Green Ext Time (p_c), s	0.0	4.9		2.8	0.0	7.6		0.4

Intersection Summary		
HCM 6th Ctrl Delay	40.5	
HCM 6th LOS	D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	33	95	358	201	11
Future Vol, veh/h	45	33	95	358	201	11
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	38	110	416	234	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	689	261	257	0	-	0
Stage 1	251	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	395	777	1306	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	354	762	1294	-	-	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	1.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1294	-	458	-	-
HCM Lane V/C Ratio	0.085	-	0.198	-	-
HCM Control Delay (s)	8	-	14.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	42	226	1	68	382
Future Vol, veh/h	0	42	226	1	68	382
Conflicting Peds, #/hr	10	10	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	46	248	1	75	420

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	145	0	0	259	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	0	877	-	-	1304	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	860	-	-	1292	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	860	1292	-
HCM Lane V/C Ratio	-	-	0.054	0.058	-
HCM Control Delay (s)	-	-	9.4	8	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	114	274	27	32	189
Future Vol, veh/h	56	114	274	27	32	189
Conflicting Peds, #/hr	10	10	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	133	319	31	37	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	649	195	0	0	360	0
Stage 1	345	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	418	814	-	-	1197	-
Stage 1	689	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	397	799	-	-	1186	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	718	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	599	1186	-
HCM Lane V/C Ratio	-	-	0.33	0.031	-
HCM Control Delay (s)	-	-	13.9	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-

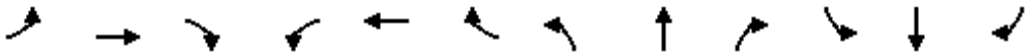
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	161	44	5	245	65	20	166	4	41	133	91
Future Volume (veh/h)	57	161	44	5	245	65	20	166	4	41	133	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.94	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	185	51	6	282	75	23	191	5	47	153	105
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	217	60	7	315	84	58	477	12	88	283	194
Arrive On Green	0.20	0.20	0.20	0.23	0.23	0.23	0.03	0.26	0.26	0.05	0.28	0.28
Sat Flow, veh/h	388	1086	299	29	1380	367	1781	1811	47	1781	1009	693
Grp Volume(v), veh/h	302	0	0	363	0	0	23	0	196	47	0	258
Grp Sat Flow(s),veh/h/ln	1773	0	0	1776	0	0	1781	0	1859	1781	0	1702
Q Serve(g_s), s	17.5	0.0	0.0	21.1	0.0	0.0	1.3	0.0	9.2	2.7	0.0	13.7
Cycle Q Clear(g_c), s	17.5	0.0	0.0	21.1	0.0	0.0	1.3	0.0	9.2	2.7	0.0	13.7
Prop In Lane	0.22		0.17	0.02		0.21	1.00		0.03	1.00		0.41
Lane Grp Cap(c), veh/h	354	0	0	405	0	0	58	0	489	88	0	477
V/C Ratio(X)	0.85	0.00	0.00	0.90	0.00	0.00	0.40	0.00	0.40	0.53	0.00	0.54
Avail Cap(c_a), veh/h	442	0	0	493	0	0	119	0	489	147	0	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	0.0	39.8	0.0	0.0	50.4	0.0	32.3	49.3	0.0	32.5
Incr Delay (d2), s/veh	12.5	0.0	0.0	16.6	0.0	0.0	1.6	0.0	2.4	1.9	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	0.0	0.0	11.0	0.0	0.0	0.6	0.0	4.4	1.2	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	0.0	0.0	56.4	0.0	0.0	52.1	0.0	34.7	51.2	0.0	36.8
LnGrp LOS	D	A	A	E	A	A	D	A	C	D	A	D
Approach Vol, veh/h		302			363			219			305	
Approach Delay, s/veh		53.5			56.4			36.5			39.0	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	35.9		28.7	8.2	37.7		31.8				
Change Period (Y+Rc), s	* 4.7	* 7.9		7.5	* 4.7	7.9		7.5				
Max Green Setting (Gmax), s	* 8.8	* 28		26.5	* 7.1	29.3		29.5				
Max Q Clear Time (g_c+I1), s	4.7	11.2		19.5	3.3	15.7		23.1				
Green Ext Time (p_c), s	0.0	2.5		1.0	0.0	3.1		1.2				

Intersection Summary			
HCM 6th Ctrl Delay		47.6	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	167	4	257	149	588	0	0	953	82
Future Volume (veh/h)	0	0	0	167	4	257	149	588	0	0	953	82
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				184	4	282	164	646	0	0	1047	90
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				454	10	400	200	2053	0	0	1296	111
Arrive On Green				0.26	0.26	0.26	0.11	0.58	0.00	0.00	0.39	0.39
Sat Flow, veh/h				1745	38	1535	1781	3647	0	0	3392	283
Grp Volume(v), veh/h				188	0	282	164	646	0	0	564	573
Grp Sat Flow(s),veh/h/ln				1783	0	1535	1781	1777	0	0	1777	1805
Q Serve(g_s), s				5.7	0.0	10.8	5.8	6.1	0.0	0.0	18.3	18.3
Cycle Q Clear(g_c), s				5.7	0.0	10.8	5.8	6.1	0.0	0.0	18.3	18.3
Prop In Lane				0.98		1.00	1.00		0.00	0.00		0.16
Lane Grp Cap(c), veh/h				464	0	400	200	2053	0	0	698	709
V/C Ratio(X)				0.40	0.00	0.71	0.82	0.31	0.00	0.00	0.81	0.81
Avail Cap(c_a), veh/h				1017	0	875	200	2053	0	0	698	709
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.8	0.0	21.7	28.2	7.1	0.0	0.0	17.5	17.5
Incr Delay (d2), s/veh				0.6	0.0	2.3	21.4	0.4	0.0	0.0	9.7	9.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.3	0.0	3.9	3.5	1.8	0.0	0.0	8.2	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.4	0.0	24.0	49.5	7.5	0.0	0.0	27.2	27.2
LnGrp LOS				C	A	C	D	A	A	A	C	C
Approach Vol, veh/h					470			810			1137	
Approach Delay, s/veh					22.6			16.0			27.2	
Approach LOS					C			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	42.9		12.0	30.9		22.0						
Change Period (Y+Rc), s	5.4		* 4.7	5.4		5.1						
Max Green Setting (Gmax), s	37.5		* 7.3	25.5		37.0						
Max Q Clear Time (g_c+I1), s	8.1		7.8	20.3		12.8						
Green Ext Time (p_c), s	10.6		0.0	4.3		2.2						

Intersection Summary		
HCM 6th Ctrl Delay		22.5
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	164	0	0	0	0	622	264	303	676	0
Future Volume (veh/h)	49	0	164	0	0	0	0	622	264	303	676	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	56	0	189				0	715	303	348	777	0
Peak Hour Factor	0.87	0.87	0.87				0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	60	0	202				0	1265	539	399	2340	0
Arrive On Green	0.17	0.00	0.17				0.00	0.36	0.36	0.22	0.66	0.00
Sat Flow, veh/h	359	0	1212				0	3647	1515	1781	3647	0
Grp Volume(v), veh/h	245	0	0				0	715	303	348	777	0
Grp Sat Flow(s),veh/h/ln	1571	0	0				0	1777	1515	1781	1777	0
Q Serve(g_s), s	9.2	0.0	0.0				0.0	9.7	9.7	11.3	5.7	0.0
Cycle Q Clear(g_c), s	9.2	0.0	0.0				0.0	9.7	9.7	11.3	5.7	0.0
Prop In Lane	0.23		0.77				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	262	0	0				0	1265	539	399	2340	0
V/C Ratio(X)	0.94	0.00	0.00				0.00	0.57	0.56	0.87	0.33	0.00
Avail Cap(c_a), veh/h	262	0	0				0	1265	539	484	2340	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.7	0.0	0.0				0.0	15.6	15.6	22.4	4.5	0.0
Incr Delay (d2), s/veh	38.6	0.0	0.0				0.0	1.8	4.2	12.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	0.0				0.0	3.6	3.4	5.5	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.3	0.0	0.0				0.0	17.4	19.7	34.7	4.9	0.0
LnGrp LOS	E	A	A				A	B	B	C	A	A
Approach Vol, veh/h		245						1018			1125	
Approach Delay, s/veh		63.3						18.1			14.1	
Approach LOS		E						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	18.1	26.8	15.1	44.9
Change Period (Y+Rc), s	4.7	5.4	5.1	5.4
Max Green Setting (Gmax), s	16.0	18.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	13.3	11.7	11.2	7.7
Green Ext Time (p_c), s	0.2	5.1	0.0	13.6

Intersection Summary	
HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	93	162	88	81	209	141	366	63	221	461	159
Future Volume (veh/h)	220	93	162	88	81	209	141	366	63	221	461	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	106	184	100	92	238	160	416	72	251	524	181
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	142	255	306	321	507	186	730	125	277	768	264
Arrive On Green	0.21	0.21	0.21	0.17	0.17	0.17	0.10	0.24	0.24	0.16	0.30	0.30
Sat Flow, veh/h	1519	672	1203	1781	1870	1519	1781	3016	517	1781	2573	884
Grp Volume(v), veh/h	295	0	245	100	92	238	160	244	244	251	361	344
Grp Sat Flow(s),veh/h/ln	1794	0	1601	1781	1870	1519	1781	1777	1756	1781	1777	1680
Q Serve(g_s), s	18.8	0.0	17.2	6.0	5.2	15.1	10.7	14.6	14.8	16.7	21.6	21.8
Cycle Q Clear(g_c), s	18.8	0.0	17.2	6.0	5.2	15.1	10.7	14.6	14.8	16.7	21.6	21.8
Prop In Lane	0.85		0.75	1.00		1.00	1.00		0.29	1.00		0.53
Lane Grp Cap(c), veh/h	380	0	339	306	321	507	186	430	425	277	531	502
V/C Ratio(X)	0.78	0.00	0.72	0.33	0.29	0.47	0.86	0.57	0.58	0.91	0.68	0.69
Avail Cap(c_a), veh/h	490	0	437	530	557	699	211	430	425	302	531	502
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	44.4	43.9	43.6	32.4	53.2	40.3	40.4	50.2	37.3	37.4
Incr Delay (d2), s/veh	7.0	0.0	5.2	0.2	0.2	0.3	23.7	5.3	5.6	26.5	6.9	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	7.2	2.6	2.4	5.5	5.9	6.9	6.9	9.3	10.2	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	0.0	49.6	44.2	43.8	32.7	77.0	45.6	45.9	76.6	44.2	44.8
LnGrp LOS	D	A	D	D	D	C	E	D	D	E	D	D
Approach Vol, veh/h		540			430			648			956	
Approach Delay, s/veh		50.9			37.7			53.5			52.9	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.2	36.5		33.0	17.4	43.4		27.2
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4
Max Green Setting (Gmax), s	20.5	29.0		33.0	* 14	* 36		36.0
Max Q Clear Time (g_c+I1), s	19.7	16.8		20.8	12.7	23.8		17.1
Green Ext Time (p_c), s	0.1	4.6		3.4	0.0	6.6		0.8

Intersection Summary		
HCM 6th Ctrl Delay	50.1	
HCM 6th LOS	D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	59	51	228	434	60
Future Vol, veh/h	44	59	51	228	434	60
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	68	59	262	499	69

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	803	554	578	0	-	0
Stage 1	544	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	336	531	994	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	309	521	985	-	-	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	1.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	985	-	403	-	-
HCM Lane V/C Ratio	0.06	-	0.294	-	-
HCM Control Delay (s)	8.9	-	17.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	239	4	59	430
Future Vol, veh/h	0	41	239	4	59	430
Conflicting Peds, #/hr	10	10	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	260	4	64	467

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	152	0	0	274	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	0	868	-	-	1288	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	852	-	-	1276	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	852	1276	-
HCM Lane V/C Ratio	-	-	0.052	0.05	-
HCM Control Delay (s)	-	-	9.5	8	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

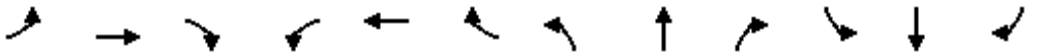
Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	65	171	25	89	340
Future Vol, veh/h	16	65	171	25	89	340
Conflicting Peds, #/hr	10	10	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	75	197	29	102	391

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	827	133	0	0	236	0
Stage 1	222	-	-	-	-	-
Stage 2	605	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	325	892	-	-	1330	-
Stage 1	794	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	294	875	-	-	1317	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	629	1317	-
HCM Lane V/C Ratio	-	-	0.148	0.078	-
HCM Control Delay (s)	-	-	11.7	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	172	52	1	136	35	19	101	1	89	226	44
Future Volume (veh/h)	37	172	52	1	136	35	19	101	1	89	226	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.92	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	223	68	1	177	45	25	131	1	116	294	57
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	261	79	1	205	52	63	476	4	145	457	89
Arrive On Green	0.22	0.22	0.22	0.15	0.15	0.15	0.04	0.26	0.26	0.08	0.30	0.30
Sat Flow, veh/h	250	1163	355	8	1405	357	1781	1853	14	1781	1508	292
Grp Volume(v), veh/h	339	0	0	223	0	0	25	0	132	116	0	351
Grp Sat Flow(s),veh/h/ln	1768	0	0	1770	0	0	1781	0	1867	1781	0	1800
Q Serve(g_s), s	17.4	0.0	0.0	11.7	0.0	0.0	1.3	0.0	5.4	6.1	0.0	16.0
Cycle Q Clear(g_c), s	17.4	0.0	0.0	11.7	0.0	0.0	1.3	0.0	5.4	6.1	0.0	16.0
Prop In Lane	0.14		0.20	0.00		0.20	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	396	0	0	258	0	0	63	0	480	145	0	545
V/C Ratio(X)	0.86	0.00	0.00	0.86	0.00	0.00	0.39	0.00	0.28	0.80	0.00	0.64
Avail Cap(c_a), veh/h	487	0	0	290	0	0	133	0	480	252	0	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	0.0	39.5	0.0	0.0	44.7	0.0	28.1	42.7	0.0	28.6
Incr Delay (d2), s/veh	11.9	0.0	0.0	20.9	0.0	0.0	1.5	0.0	1.4	3.8	0.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	6.5	0.0	0.0	0.6	0.0	2.5	2.7	0.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.2	0.0	0.0	60.4	0.0	0.0	46.2	0.0	29.6	46.5	0.0	34.3
LnGrp LOS	D	A	A	E	A	A	D	A	C	D	A	C
Approach Vol, veh/h		339			223			157			467	
Approach Delay, s/veh		47.2			60.4			32.2			37.4	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	32.2		28.7	8.1	36.6		21.3				
Change Period (Y+Rc), s	* 4.7	* 7.9		7.5	* 4.7	7.9		7.5				
Max Green Setting (Gmax), s	* 13	* 23		26.1	* 7.1	28.7		15.5				
Max Q Clear Time (g_c+I1), s	8.1	7.4		19.4	3.3	18.0		13.7				
Green Ext Time (p_c), s	0.1	1.4		1.1	0.0	3.6		0.2				

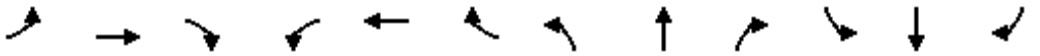
Intersection Summary			
HCM 6th Ctrl Delay		43.8	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

ATTACHMENT 3

EXISTING + PROJECT INTERSECTION ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	190	1	278	142	455	0	0	680	97
Future Volume (veh/h)	0	0	0	190	1	278	142	455	0	0	680	97
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				250	1	366	187	599	0	0	895	128
Peak Hour Factor				0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				548	2	475	227	1919	0	0	1069	153
Arrive On Green				0.31	0.31	0.31	0.13	0.54	0.00	0.00	0.34	0.34
Sat Flow, veh/h				1775	7	1540	1781	3647	0	0	3193	443
Grp Volume(v), veh/h				251	0	366	187	599	0	0	513	510
Grp Sat Flow(s),veh/h/ln				1782	0	1540	1781	1777	0	0	1777	1766
Q Serve(g_s), s				7.9	0.0	15.0	7.1	6.5	0.0	0.0	18.5	18.5
Cycle Q Clear(g_c), s				7.9	0.0	15.0	7.1	6.5	0.0	0.0	18.5	18.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.25
Lane Grp Cap(c), veh/h				550	0	475	227	1919	0	0	613	609
V/C Ratio(X)				0.46	0.00	0.77	0.82	0.31	0.00	0.00	0.84	0.84
Avail Cap(c_a), veh/h				949	0	821	228	1919	0	0	613	609
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.3	0.0	21.8	29.5	8.8	0.0	0.0	20.9	20.9
Incr Delay (d2), s/veh				0.6	0.0	2.7	19.7	0.4	0.0	0.0	12.9	12.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.1	0.0	5.4	4.1	2.1	0.0	0.0	8.9	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.9	0.0	24.4	49.2	9.3	0.0	0.0	33.8	33.9
LnGrp LOS				B	A	C	D	A	A	A	C	C
Approach Vol, veh/h					617			786			1023	
Approach Delay, s/veh					22.6			18.8			33.8	
Approach LOS					C			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	42.9		13.6	29.3		26.5						
Change Period (Y+Rc), s	5.4		* 4.7	5.4		5.1						
Max Green Setting (Gmax), s	37.5		* 8.9	23.9		37.0						
Max Q Clear Time (g_c+I1), s	8.5		9.1	20.5		17.0						
Green Ext Time (p_c), s	9.7		0.0	2.8		2.8						

Intersection Summary		
HCM 6th Ctrl Delay	26.1	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	0	196	0	0	0	0	556	185	221	651	0
Future Volume (veh/h)	37	0	196	0	0	0	0	556	185	221	651	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	45	0	236				0	670	223	266	784	0
Peak Hour Factor	0.83	0.83	0.83				0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	45	0	238				0	1290	550	319	2229	0
Arrive On Green	0.18	0.00	0.18				0.00	0.36	0.36	0.18	0.63	0.00
Sat Flow, veh/h	249	0	1308				0	3647	1516	1781	3647	0
Grp Volume(v), veh/h	281	0	0				0	670	223	266	784	0
Grp Sat Flow(s),veh/h/ln	1558	0	0				0	1777	1516	1781	1777	0
Q Serve(g_s), s	9.9	0.0	0.0				0.0	8.1	6.0	7.9	5.8	0.0
Cycle Q Clear(g_c), s	9.9	0.0	0.0				0.0	8.1	6.0	7.9	5.8	0.0
Prop In Lane	0.16		0.84				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	283	0	0				0	1290	550	319	2229	0
V/C Ratio(X)	0.99	0.00	0.00				0.00	0.52	0.41	0.84	0.35	0.00
Avail Cap(c_a), veh/h	283	0	0				0	1290	550	379	2229	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.5	0.0	0.0				0.0	13.8	13.1	21.8	4.9	0.0
Incr Delay (d2), s/veh	51.2	0.0	0.0				0.0	1.5	2.2	11.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	0.0				0.0	2.9	2.0	3.9	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.6	0.0	0.0				0.0	15.2	15.3	33.0	5.3	0.0
LnGrp LOS	E	A	A				A	B	B	C	A	A
Approach Vol, veh/h		281						893			1050	
Approach Delay, s/veh		73.6						15.3			12.4	
Approach LOS		E						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	14.5	25.4	15.1	39.9
Change Period (Y+Rc), s	* 4.7	5.4	5.1	5.4
Max Green Setting (Gmax), s	* 13	18.1	10.0	34.5
Max Q Clear Time (g_c+I1), s	9.9	10.1	11.9	7.8
Green Ext Time (p_c), s	0.1	5.4	0.0	12.5

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	70	88	39	45	111	56	368	50	255	321	149
Future Volume (veh/h)	156	70	88	39	45	111	56	368	50	255	321	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	82	104	46	53	131	66	433	59	300	378	175
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	133	170	220	231	474	114	869	118	324	946	430
Arrive On Green	0.17	0.17	0.17	0.12	0.12	0.12	0.06	0.28	0.28	0.18	0.40	0.40
Sat Flow, veh/h	1655	777	996	1781	1870	1501	1781	3131	424	1781	2352	1070
Grp Volume(v), veh/h	199	0	171	46	53	131	66	244	248	300	284	269
Grp Sat Flow(s),veh/h/ln	1788	0	1640	1781	1870	1501	1781	1777	1778	1781	1777	1646
Q Serve(g_s), s	11.2	0.0	10.4	2.5	2.8	7.2	3.9	12.4	12.6	17.8	12.3	12.6
Cycle Q Clear(g_c), s	11.2	0.0	10.4	2.5	2.8	7.2	3.9	12.4	12.6	17.8	12.3	12.6
Prop In Lane	0.93		0.61	1.00		1.00	1.00		0.24	1.00		0.65
Lane Grp Cap(c), veh/h	305	0	280	220	231	474	114	493	494	324	714	662
V/C Ratio(X)	0.65	0.00	0.61	0.21	0.23	0.28	0.58	0.50	0.50	0.93	0.40	0.41
Avail Cap(c_a), veh/h	548	0	502	595	625	790	198	493	494	324	714	662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	0.0	41.4	42.5	42.6	28.5	49.0	32.6	32.7	43.3	22.9	23.0
Incr Delay (d2), s/veh	3.3	0.0	3.1	0.2	0.2	0.1	1.7	3.5	3.6	31.0	1.7	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	4.3	1.1	1.3	0.0	1.7	5.7	5.7	10.4	5.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	0.0	44.4	42.6	42.8	28.6	50.7	36.1	36.3	74.3	24.6	24.9
LnGrp LOS	D	A	D	D	D	C	D	D	D	E	C	C
Approach Vol, veh/h		370			230			558			853	
Approach Delay, s/veh		44.7			34.6			37.9			42.2	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	37.2		25.8	11.6	50.6		19.7
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4
Max Green Setting (Gmax), s	19.6	29.9		33.0	* 12	* 38		36.0
Max Q Clear Time (g_c+I1), s	19.8	14.6		13.2	5.9	14.6		9.2
Green Ext Time (p_c), s	0.0	5.3		2.8	0.0	7.8		0.4

Intersection Summary		
HCM 6th Ctrl Delay		40.6
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	33	95	418	221	11
Future Vol, veh/h	45	33	95	418	221	11
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	38	110	486	257	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	747	284	280	0	-	0
Stage 1	274	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	364	754	1281	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	740	1269	-	-	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1269	-	427	-	-
HCM Lane V/C Ratio	0.087	-	0.212	-	-
HCM Control Delay (s)	8.1	-	15.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	42	2	286	1	68	392	10
Future Vol, veh/h	0	0	5	0	0	42	2	286	1	68	392	10
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	230	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	92	91	92	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	46	2	314	1	75	431	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	437	-	-	178	442	0	0	325	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	0	0	619	0	0	835	1116	-	-	1233	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	619	-	-	819	1116	-	-	1221	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	9.7	0.1	1.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1116	-	-	619	819	1221	-	-
HCM Lane V/C Ratio	0.002	-	-	0.009	0.056	0.061	-	-
HCM Control Delay (s)	8.2	-	-	10.9	9.7	8.1	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.2	-	-

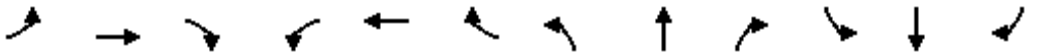
Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	0	5	56	0	114	2	276	27	32	194	10
Future Vol, veh/h	60	0	5	56	0	114	2	276	27	32	194	10
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	86	92	86	92	86	86	86	86	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	0	5	65	0	133	2	321	31	37	226	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	481	672	242	669	662	196	237	0	0	362	0	0
Stage 1	306	306	-	351	351	-	-	-	-	-	-	-
Stage 2	175	366	-	318	311	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	482	376	796	357	381	813	1329	-	-	1195	-	-
Stage 1	703	661	-	639	631	-	-	-	-	-	-	-
Stage 2	810	622	-	693	658	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	388	360	788	339	365	798	1329	-	-	1184	-	-
Mov Cap-2 Maneuver	388	360	-	339	365	-	-	-	-	-	-	-
Stage 1	702	641	-	632	623	-	-	-	-	-	-	-
Stage 2	668	615	-	660	638	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	15.1	0	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1329	-	-	404	552	1184	-	-
HCM Lane V/C Ratio	0.002	-	-	0.175	0.358	0.031	-	-
HCM Control Delay (s)	7.7	-	-	15.8	15.1	8.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	1.6	0.1	-	-



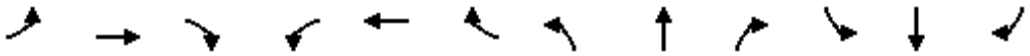
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	161	44	5	245	67	20	168	4	44	140	91
Future Volume (veh/h)	57	161	44	5	245	67	20	168	4	44	140	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.94	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	185	51	6	282	77	23	193	5	51	161	105
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	216	60	7	313	85	58	477	12	91	291	190
Arrive On Green	0.20	0.20	0.20	0.23	0.23	0.23	0.03	0.26	0.26	0.05	0.28	0.28
Sat Flow, veh/h	388	1086	299	29	1371	374	1781	1812	47	1781	1033	674
Grp Volume(v), veh/h	302	0	0	365	0	0	23	0	198	51	0	266
Grp Sat Flow(s),veh/h/ln	1773	0	0	1775	0	0	1781	0	1859	1781	0	1707
Q Serve(g_s), s	17.6	0.0	0.0	21.4	0.0	0.0	1.4	0.0	9.4	3.0	0.0	14.2
Cycle Q Clear(g_c), s	17.6	0.0	0.0	21.4	0.0	0.0	1.4	0.0	9.4	3.0	0.0	14.2
Prop In Lane	0.22		0.17	0.02		0.21	1.00		0.03	1.00		0.39
Lane Grp Cap(c), veh/h	353	0	0	405	0	0	58	0	490	91	0	482
V/C Ratio(X)	0.85	0.00	0.00	0.90	0.00	0.00	0.40	0.00	0.40	0.56	0.00	0.55
Avail Cap(c_a), veh/h	439	0	0	479	0	0	118	0	490	153	0	482
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	0.0	40.1	0.0	0.0	50.8	0.0	32.5	49.6	0.0	32.7
Incr Delay (d2), s/veh	12.8	0.0	0.0	18.0	0.0	0.0	1.6	0.0	2.5	2.0	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	0.0	11.2	0.0	0.0	0.6	0.0	4.4	1.4	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.1	0.0	0.0	58.1	0.0	0.0	52.4	0.0	35.0	51.6	0.0	37.2
LnGrp LOS	D	A	A	E	A	A	D	A	C	D	A	D
Approach Vol, veh/h		302			365			221			317	
Approach Delay, s/veh		54.1			58.1			36.8			39.5	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.2	36.1		28.8	8.2	38.1		31.9				
Change Period (Y+Rc), s	* 4.7	* 7.9		7.5	* 4.7	7.9		7.5				
Max Green Setting (Gmax), s	* 9.2	* 28		26.5	* 7.1	29.9		28.9				
Max Q Clear Time (g_c+I1), s	5.0	11.4		19.6	3.4	16.2		23.4				
Green Ext Time (p_c), s	0.0	2.5		1.0	0.0	3.2		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		48.3	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	182	4	257	154	604	0	0	981	82
Future Volume (veh/h)	0	0	0	182	4	257	154	604	0	0	981	82
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				200	4	282	169	664	0	0	1078	90
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				457	9	401	200	2050	0	0	1298	108
Arrive On Green				0.26	0.26	0.26	0.11	0.58	0.00	0.00	0.39	0.39
Sat Flow, veh/h				1748	35	1535	1781	3647	0	0	3401	276
Grp Volume(v), veh/h				204	0	282	169	664	0	0	579	589
Grp Sat Flow(s),veh/h/ln				1783	0	1535	1781	1777	0	0	1777	1806
Q Serve(g_s), s				6.2	0.0	10.8	6.0	6.3	0.0	0.0	19.1	19.1
Cycle Q Clear(g_c), s				6.2	0.0	10.8	6.0	6.3	0.0	0.0	19.1	19.1
Prop In Lane				0.98		1.00	1.00		0.00	0.00		0.15
Lane Grp Cap(c), veh/h				466	0	401	200	2050	0	0	697	709
V/C Ratio(X)				0.44	0.00	0.70	0.84	0.32	0.00	0.00	0.83	0.83
Avail Cap(c_a), veh/h				1015	0	874	200	2050	0	0	697	709
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				20.0	0.0	21.7	28.3	7.2	0.0	0.0	17.8	17.8
Incr Delay (d2), s/veh				0.6	0.0	2.2	25.6	0.4	0.0	0.0	11.0	10.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	3.9	3.8	1.9	0.0	0.0	8.7	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.7	0.0	24.0	53.9	7.6	0.0	0.0	28.8	28.8
LnGrp LOS				C	A	C	D	A	A	A	C	C
Approach Vol, veh/h					486			833			1168	
Approach Delay, s/veh					22.6			17.0			28.8	
Approach LOS					C			B			C	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	42.9		12.0	30.9		22.1						
Change Period (Y+Rc), s	5.4		* 4.7	5.4		5.1						
Max Green Setting (Gmax), s	37.5		* 7.3	25.5		37.0						
Max Q Clear Time (g_c+I1), s	8.3		8.0	21.1		12.8						
Green Ext Time (p_c), s	10.9		0.0	3.8		2.3						

Intersection Summary		
HCM 6th Ctrl Delay	23.6	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	172	0	0	0	0	643	274	303	719	0
Future Volume (veh/h)	49	0	172	0	0	0	0	643	274	303	719	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	56	0	198				0	739	315	348	826	0
Peak Hour Factor	0.87	0.87	0.87				0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	58	0	204				0	1265	539	399	2340	0
Arrive On Green	0.17	0.00	0.17				0.00	0.36	0.36	0.22	0.66	0.00
Sat Flow, veh/h	346	0	1223				0	3647	1515	1781	3647	0
Grp Volume(v), veh/h	254	0	0				0	739	315	348	826	0
Grp Sat Flow(s),veh/h/ln	1569	0	0				0	1777	1515	1781	1777	0
Q Serve(g_s), s	9.7	0.0	0.0				0.0	10.1	10.1	11.3	6.2	0.0
Cycle Q Clear(g_c), s	9.7	0.0	0.0				0.0	10.1	10.1	11.3	6.2	0.0
Prop In Lane	0.22		0.78				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	261	0	0				0	1265	539	399	2340	0
V/C Ratio(X)	0.97	0.00	0.00				0.00	0.58	0.58	0.87	0.35	0.00
Avail Cap(c_a), veh/h	261	0	0				0	1265	539	484	2340	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	0.0	0.0				0.0	15.7	15.7	22.4	4.6	0.0
Incr Delay (d2), s/veh	47.6	0.0	0.0				0.0	2.0	4.6	12.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	0.0				0.0	3.8	3.6	5.5	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	0.0	0.0				0.0	17.7	20.3	34.7	5.0	0.0
LnGrp LOS	E	A	A				A	B	C	C	A	A
Approach Vol, veh/h		254						1054			1174	
Approach Delay, s/veh		72.4						18.5			13.8	
Approach LOS		E						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	18.1	26.8	15.1	44.9
Change Period (Y+Rc), s	4.7	5.4	5.1	5.4
Max Green Setting (Gmax), s	16.0	18.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	13.3	12.1	11.7	8.2
Green Ext Time (p_c), s	0.2	4.9	0.0	14.4

Intersection Summary	
HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	93	162	92	81	209	141	397	65	221	512	159
Future Volume (veh/h)	220	93	162	92	81	209	141	397	65	221	512	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	106	184	105	92	238	160	451	74	251	582	181
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	142	255	306	321	507	186	736	120	277	791	245
Arrive On Green	0.21	0.21	0.21	0.17	0.17	0.17	0.10	0.24	0.24	0.16	0.30	0.30
Sat Flow, veh/h	1519	672	1203	1781	1870	1519	1781	3042	496	1781	2649	821
Grp Volume(v), veh/h	295	0	245	105	92	238	160	262	263	251	390	373
Grp Sat Flow(s),veh/h/ln	1794	0	1601	1781	1870	1519	1781	1777	1761	1781	1777	1693
Q Serve(g_s), s	18.8	0.0	17.2	6.3	5.2	15.1	10.7	15.9	16.1	16.7	23.8	24.0
Cycle Q Clear(g_c), s	18.8	0.0	17.2	6.3	5.2	15.1	10.7	15.9	16.1	16.7	23.8	24.0
Prop In Lane	0.85		0.75	1.00		1.00	1.00		0.28	1.00		0.49
Lane Grp Cap(c), veh/h	380	0	339	306	321	507	186	430	426	277	531	506
V/C Ratio(X)	0.78	0.00	0.72	0.34	0.29	0.47	0.86	0.61	0.62	0.91	0.73	0.74
Avail Cap(c_a), veh/h	490	0	437	530	557	699	211	430	426	302	531	506
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	44.4	44.1	43.6	32.4	53.2	40.8	40.8	50.2	38.1	38.1
Incr Delay (d2), s/veh	7.0	0.0	5.2	0.2	0.2	0.3	23.7	6.3	6.6	26.5	8.8	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	7.2	2.8	2.4	5.5	5.9	7.5	7.6	9.3	11.4	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	0.0	49.6	44.3	43.8	32.7	77.0	47.1	47.4	76.6	46.9	47.4
LnGrp LOS	D	A	D	D	D	C	E	D	D	E	D	D
Approach Vol, veh/h		540			435			685			1014	
Approach Delay, s/veh		50.9			37.8			54.2			54.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.2	36.5		33.0	17.4	43.4		27.2
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4
Max Green Setting (Gmax), s	20.5	29.0		33.0	* 14	* 36		36.0
Max Q Clear Time (g_c+I1), s	19.7	18.1		20.8	12.7	26.0		17.1
Green Ext Time (p_c), s	0.1	4.5		3.4	0.0	6.1		0.8

Intersection Summary	
HCM 6th Ctrl Delay	51.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	59	51	268	501	60
Future Vol, veh/h	44	59	51	268	501	60
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	68	59	308	576	69

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	903	631	655	0	-	0
Stage 1	621	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	292	480	930	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	268	471	921	-	-	-
Mov Cap-2 Maneuver	268	-	-	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.1	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	921	-	356	-	-
HCM Lane V/C Ratio	0.064	-	0.333	-	-
HCM Control Delay (s)	9.2	-	20.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	0	0	41	6	279	4	59	463	34
Future Vol, veh/h	0	0	3	0	0	41	6	279	4	59	463	34
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	230	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	0	0	45	7	303	4	64	503	37

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	522	-	-	174	540	0	0	317	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	0	0	554	0	0	840	1027	-	-	1241	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	554	-	-	824	1027	-	-	1229	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	9.6	0.2	0.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1027	-	-	554	824	1229	-	-
HCM Lane V/C Ratio	0.006	-	-	0.006	0.054	0.052	-	-
HCM Control Delay (s)	8.5	-	-	11.5	9.6	8.1	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.2	-	-

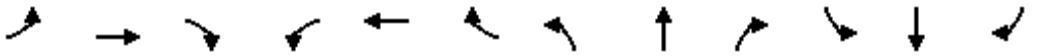
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	0	4	16	0	65	6	177	25	89	343	33
Future Vol, veh/h	40	0	4	16	0	65	6	177	25	89	343	33
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	87	92	87	92	87	87	87	87	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	0	4	18	0	75	7	203	29	102	394	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	742	872	422	870	876	136	430	0	0	242	0	0
Stage 1	616	616	-	242	242	-	-	-	-	-	-	-
Stage 2	126	256	-	628	634	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	318	288	631	258	287	888	1128	-	-	1323	-	-
Stage 1	477	481	-	741	705	-	-	-	-	-	-	-
Stage 2	865	695	-	470	472	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	270	261	625	235	260	871	1128	-	-	1310	-	-
Mov Cap-2 Maneuver	270	261	-	235	260	-	-	-	-	-	-	-
Stage 1	474	443	-	729	694	-	-	-	-	-	-	-
Stage 2	778	684	-	426	435	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	12.6	0.2	1.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1128	-	-	285	568	1310	-	-
HCM Lane V/C Ratio	0.006	-	-	0.168	0.164	0.078	-	-
HCM Control Delay (s)	8.2	-	-	20.2	12.6	8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.6	0.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	172	52	1	136	39	19	109	1	91	231	44
Future Volume (veh/h)	37	172	52	1	136	39	19	109	1	91	231	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.92	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	223	68	1	177	51	25	142	1	118	300	57
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	260	79	1	204	59	63	471	3	148	456	87
Arrive On Green	0.22	0.22	0.22	0.15	0.15	0.15	0.04	0.25	0.25	0.08	0.30	0.30
Sat Flow, veh/h	250	1163	355	8	1361	392	1781	1854	13	1781	1514	288
Grp Volume(v), veh/h	339	0	0	229	0	0	25	0	143	118	0	357
Grp Sat Flow(s),veh/h/ln	1768	0	0	1761	0	0	1781	0	1867	1781	0	1801
Q Serve(g_s), s	17.5	0.0	0.0	12.1	0.0	0.0	1.3	0.0	5.9	6.2	0.0	16.4
Cycle Q Clear(g_c), s	17.5	0.0	0.0	12.1	0.0	0.0	1.3	0.0	5.9	6.2	0.0	16.4
Prop In Lane	0.14		0.20	0.00		0.22	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	396	0	0	263	0	0	63	0	474	148	0	543
V/C Ratio(X)	0.86	0.00	0.00	0.87	0.00	0.00	0.39	0.00	0.30	0.80	0.00	0.66
Avail Cap(c_a), veh/h	485	0	0	287	0	0	133	0	474	252	0	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	0.0	39.6	0.0	0.0	44.9	0.0	28.7	42.9	0.0	29.0
Incr Delay (d2), s/veh	12.1	0.0	0.0	22.5	0.0	0.0	1.5	0.0	1.6	3.7	0.0	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	6.8	0.0	0.0	0.6	0.0	2.8	2.8	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	0.0	0.0	62.1	0.0	0.0	46.4	0.0	30.3	46.6	0.0	35.1
LnGrp LOS	D	A	A	E	A	A	D	A	C	D	A	D
Approach Vol, veh/h		339			229			168			475	
Approach Delay, s/veh		47.6			62.1			32.7			38.0	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.6	32.1		28.8	8.1	36.6		21.7				
Change Period (Y+Rc), s	* 4.7	* 7.9		7.5	* 4.7	7.9		7.5				
Max Green Setting (Gmax), s	* 14	* 23		26.1	* 7.1	28.7		15.5				
Max Q Clear Time (g_c+I1), s	8.2	7.9		19.5	3.3	18.4		14.1				
Green Ext Time (p_c), s	0.1	1.5		1.1	0.0	3.6		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		44.5	
HCM 6th LOS		D	

Notes

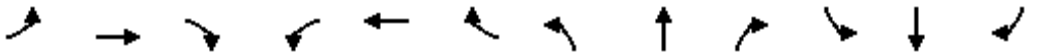
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

ATTACHMENT 4

CUMULATIVE PROJECTS INFORMATION AND EXISTING + CUMULATIVE + PROJECT INTERSECTION ANALYSIS WORKSHEETS

NEAR-TERM CUMULATIVE PROJECTS INFORMATION

Project Name	Location
CHP Headquarters	Northwest corner of 4th Street / Danenberg Drive intersection
State Court House	Northwest corner of Thomas Drive / Wake Avenue intersection
Heber Meadows Apartments	Northeast corner of 6th Street / Spear Avenue intersection
Gas Station and Carwash	Southeast corner of 4th Street / Danenberg Drive intersection
Mixed-Use Project	Parcel south of the "Gas Station and Carwash" cumulative project
City Sewer and Water Improvements	Along Danenberg Drive between 4th Street and Dogwood Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	203	1	295	163	489	0	0	724	103
Future Volume (veh/h)	0	0	0	203	1	295	163	489	0	0	724	103
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				267	1	388	214	643	0	0	953	136
Peak Hour Factor				0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				570	2	494	209	1885	0	0	1075	153
Arrive On Green				0.32	0.32	0.32	0.12	0.53	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1775	7	1541	1781	3647	0	0	3194	442
Grp Volume(v), veh/h				268	0	388	214	643	0	0	546	543
Grp Sat Flow(s),veh/h/ln				1782	0	1541	1781	1777	0	0	1777	1766
Q Serve(g_s), s				8.5	0.0	16.2	8.3	7.3	0.0	0.0	20.5	20.5
Cycle Q Clear(g_c), s				8.5	0.0	16.2	8.3	7.3	0.0	0.0	20.5	20.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.25
Lane Grp Cap(c), veh/h				572	0	494	209	1885	0	0	616	612
V/C Ratio(X)				0.47	0.00	0.78	1.02	0.34	0.00	0.00	0.89	0.89
Avail Cap(c_a), veh/h				933	0	807	209	1885	0	0	616	612
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.2	0.0	21.8	31.2	9.5	0.0	0.0	21.8	21.8
Incr Delay (d2), s/veh				0.6	0.0	2.8	68.3	0.5	0.0	0.0	17.1	17.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.4	0.0	5.8	7.3	2.4	0.0	0.0	10.4	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.8	0.0	24.6	99.5	10.0	0.0	0.0	38.9	39.0
LnGrp LOS				B	A	C	F	B	A	A	D	D
Approach Vol, veh/h					656			857			1089	
Approach Delay, s/veh					22.6			32.4			38.9	
Approach LOS					C			C			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	42.9		13.0	29.9		27.8						
Change Period (Y+Rc), s	5.4		* 4.7	5.4		5.1						
Max Green Setting (Gmax), s	37.5		* 8.3	24.5		37.0						
Max Q Clear Time (g_c+I1), s	9.3		10.3	22.5		18.2						
Green Ext Time (p_c), s	10.4		0.0	1.7		3.0						

Intersection Summary		
HCM 6th Ctrl Delay	32.7	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	0	213	0	0	0	0	609	200	235	698	0
Future Volume (veh/h)	39	0	213	0	0	0	0	609	200	235	698	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	47	0	257				0	734	241	283	841	0
Peak Hour Factor	0.83	0.83	0.83				0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	44	0	239				0	1257	536	335	2229	0
Arrive On Green	0.18	0.00	0.18				0.00	0.35	0.35	0.19	0.63	0.00
Sat Flow, veh/h	241	0	1316				0	3647	1515	1781	3647	0
Grp Volume(v), veh/h	304	0	0				0	734	241	283	841	0
Grp Sat Flow(s),veh/h/ln	1557	0	0				0	1777	1515	1781	1777	0
Q Serve(g_s), s	10.0	0.0	0.0				0.0	9.3	6.7	8.4	6.4	0.0
Cycle Q Clear(g_c), s	10.0	0.0	0.0				0.0	9.3	6.7	8.4	6.4	0.0
Prop In Lane	0.15		0.85				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	283	0	0				0	1257	536	335	2229	0
V/C Ratio(X)	1.07	0.00	0.00				0.00	0.58	0.45	0.84	0.38	0.00
Avail Cap(c_a), veh/h	283	0	0				0	1257	536	366	2229	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.5	0.0	0.0				0.0	14.5	13.7	21.6	5.0	0.0
Incr Delay (d2), s/veh	74.6	0.0	0.0				0.0	2.0	2.7	14.2	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	0.0	0.0				0.0	3.4	2.3	4.4	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.1	0.0	0.0				0.0	16.5	16.4	35.7	5.5	0.0
LnGrp LOS	F	A	A				A	B	B	D	A	A
Approach Vol, veh/h		304						975			1124	
Approach Delay, s/veh		97.1						16.4			13.1	
Approach LOS		F						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	15.0	24.9	15.1	39.9
Change Period (Y+Rc), s	4.7	5.4	5.1	5.4
Max Green Setting (Gmax), s	11.3	18.5	10.0	34.5
Max Q Clear Time (g_c+I1), s	10.4	11.3	12.0	8.4
Green Ext Time (p_c), s	0.0	5.3	0.0	13.3

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	76	111	41	49	118	66	388	53	271	340	169
Future Volume (veh/h)	193	76	111	41	49	118	66	388	53	271	340	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	227	89	131	48	58	139	78	456	62	319	400	199
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	134	199	226	237	469	116	840	114	313	881	432
Arrive On Green	0.19	0.19	0.19	0.13	0.13	0.13	0.07	0.27	0.27	0.18	0.39	0.39
Sat Flow, veh/h	1681	699	1040	1781	1870	1503	1781	3132	423	1781	2289	1122
Grp Volume(v), veh/h	241	0	206	48	58	139	78	258	260	319	309	290
Grp Sat Flow(s),veh/h/ln	1786	0	1634	1781	1870	1503	1781	1777	1778	1781	1777	1634
Q Serve(g_s), s	14.1	0.0	13.0	2.7	3.1	7.9	4.8	13.8	14.0	19.6	14.4	14.8
Cycle Q Clear(g_c), s	14.1	0.0	13.0	2.7	3.1	7.9	4.8	13.8	14.0	19.6	14.4	14.8
Prop In Lane	0.94		0.64	1.00		1.00	1.00		0.24	1.00		0.69
Lane Grp Cap(c), veh/h	342	0	313	226	237	469	116	477	477	313	684	629
V/C Ratio(X)	0.71	0.00	0.66	0.21	0.24	0.30	0.67	0.54	0.55	1.02	0.45	0.46
Avail Cap(c_a), veh/h	529	0	484	575	604	764	208	477	477	313	684	629
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	0.0	41.7	43.7	43.9	29.9	50.9	34.9	35.0	45.9	25.5	25.6
Incr Delay (d2), s/veh	3.8	0.0	3.3	0.2	0.2	0.1	2.5	4.3	4.4	55.6	2.2	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	5.4	1.2	1.4	2.8	2.2	6.4	6.5	13.3	6.3	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.9	0.0	45.0	43.8	44.1	30.0	53.4	39.2	39.4	101.6	27.7	28.0
LnGrp LOS	D	A	D	D	D	C	D	D	D	F	C	C
Approach Vol, veh/h		447			245			596			918	
Approach Delay, s/veh		45.5			36.0			41.2			53.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	37.2		28.7	12.0	50.2		20.5
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4
Max Green Setting (Gmax), s	19.6	29.9		33.0	* 13	* 37		36.0
Max Q Clear Time (g_c+I1), s	21.6	16.0		16.1	6.8	16.8		9.9
Green Ext Time (p_c), s	0.0	5.3		3.3	0.0	7.9		0.5

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	35	101	442	239	12
Future Vol, veh/h	48	35	101	442	239	12
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	41	117	514	278	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	796	305	302	0	-	0
Stage 1	295	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	340	734	1257	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	302	720	1245	-	-	-
Mov Cap-2 Maneuver	302	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	569	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	400	-	-
HCM Lane V/C Ratio	0.094	-	0.241	-	-
HCM Control Delay (s)	8.2	-	16.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.9	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	45	2	302	1	72	421	10
Future Vol, veh/h	0	0	5	0	0	45	2	302	1	72	421	10
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	230	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	92	91	92	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	49	2	332	1	79	463	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	469	-	-	187	474	0	0	343	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	0	0	593	0	0	824	1086	-	-	1214	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	593	-	-	808	1086	-	-	1202	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	9.7	0.1	1.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1086	-	-	593	808	1202	-	-
HCM Lane V/C Ratio	0.002	-	-	0.009	0.061	0.066	-	-
HCM Control Delay (s)	8.3	-	-	11.1	9.7	8.2	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.2	-	-

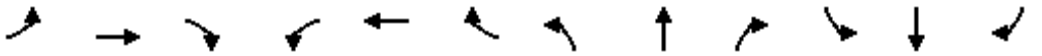
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	0	5	59	0	121	2	295	29	34	212	10
Future Vol, veh/h	60	0	5	59	0	121	2	295	29	34	212	10
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	86	92	86	92	86	86	86	86	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	0	5	69	0	141	2	343	34	40	247	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	519	724	263	719	712	209	258	0	0	387	0	0
Stage 1	333	333	-	374	374	-	-	-	-	-	-	-
Stage 2	186	391	-	345	338	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	453	351	775	329	357	798	1305	-	-	1170	-	-
Stage 1	680	643	-	620	617	-	-	-	-	-	-	-
Stage 2	798	606	-	670	640	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	358	335	768	312	340	783	1305	-	-	1159	-	-
Mov Cap-2 Maneuver	358	335	-	312	340	-	-	-	-	-	-	-
Stage 1	679	620	-	613	610	-	-	-	-	-	-	-
Stage 2	647	599	-	636	618	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.9	16.4	0	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1305	-	-	373	524	1159	-	-
HCM Lane V/C Ratio	0.002	-	-	0.189	0.399	0.034	-	-
HCM Control Delay (s)	7.8	-	-	16.9	16.4	8.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	1.9	0.1	-	-



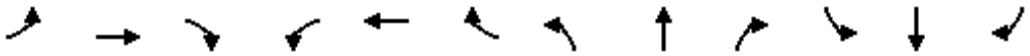
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	171	47	5	260	71	21	180	4	47	154	97
Future Volume (veh/h)	60	171	47	5	260	71	21	180	4	47	154	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.94	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	69	197	54	6	299	82	24	207	5	54	177	111
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	225	62	7	326	89	59	464	11	91	288	180
Arrive On Green	0.21	0.21	0.21	0.24	0.24	0.24	0.03	0.26	0.26	0.05	0.27	0.27
Sat Flow, veh/h	383	1092	299	28	1371	376	1781	1816	44	1781	1051	659
Grp Volume(v), veh/h	320	0	0	387	0	0	24	0	212	54	0	288
Grp Sat Flow(s),veh/h/ln	1774	0	0	1775	0	0	1781	0	1860	1781	0	1710
Q Serve(g_s), s	19.3	0.0	0.0	23.5	0.0	0.0	1.5	0.0	10.6	3.3	0.0	16.2
Cycle Q Clear(g_c), s	19.3	0.0	0.0	23.5	0.0	0.0	1.5	0.0	10.6	3.3	0.0	16.2
Prop In Lane	0.22		0.17	0.02		0.21	1.00		0.02	1.00		0.39
Lane Grp Cap(c), veh/h	365	0	0	422	0	0	59	0	475	91	0	468
V/C Ratio(X)	0.88	0.00	0.00	0.92	0.00	0.00	0.41	0.00	0.45	0.59	0.00	0.62
Avail Cap(c_a), veh/h	426	0	0	465	0	0	115	0	475	148	0	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	0.0	0.0	41.0	0.0	0.0	52.3	0.0	34.5	51.2	0.0	35.0
Incr Delay (d2), s/veh	16.5	0.0	0.0	22.0	0.0	0.0	1.7	0.0	3.0	2.3	0.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.0	0.0	12.7	0.0	0.0	0.7	0.0	5.1	1.5	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.0	0.0	0.0	63.0	0.0	0.0	54.0	0.0	37.6	53.5	0.0	41.0
LnGrp LOS	E	A	A	E	A	A	D	A	D	D	A	D
Approach Vol, veh/h		320			387			236			342	
Approach Delay, s/veh		59.0			63.0			39.2			43.0	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	36.1		30.2	8.3	38.1		33.7				
Change Period (Y+Rc), s	* 4.7	* 7.9		7.5	* 4.7	7.9		7.5				
Max Green Setting (Gmax), s	* 9.2	* 28		26.5	* 7.1	29.9		28.9				
Max Q Clear Time (g_c+I1), s	5.3	12.6		21.3	3.5	18.2		25.5				
Green Ext Time (p_c), s	0.0	2.6		0.9	0.0	3.1		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		52.3	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	197	4	273	173	646	0	0	1048	87
Future Volume (veh/h)	0	0	0	197	4	273	173	646	0	0	1048	87
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				216	4	300	190	710	0	0	1152	96
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				476	9	418	197	2021	0	0	1279	106
Arrive On Green				0.27	0.27	0.27	0.11	0.57	0.00	0.00	0.39	0.39
Sat Flow, veh/h				1750	32	1536	1781	3647	0	0	3402	275
Grp Volume(v), veh/h				220	0	300	190	710	0	0	618	630
Grp Sat Flow(s),veh/h/ln				1783	0	1536	1781	1777	0	0	1777	1807
Q Serve(g_s), s				6.8	0.0	11.6	7.0	7.1	0.0	0.0	21.6	21.7
Cycle Q Clear(g_c), s				6.8	0.0	11.6	7.0	7.1	0.0	0.0	21.6	21.7
Prop In Lane				0.98		1.00	1.00		0.00	0.00		0.15
Lane Grp Cap(c), veh/h				485	0	418	197	2021	0	0	687	698
V/C Ratio(X)				0.45	0.00	0.72	0.96	0.35	0.00	0.00	0.90	0.90
Avail Cap(c_a), veh/h				1000	0	862	197	2021	0	0	687	698
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.9	0.0	21.7	29.2	7.7	0.0	0.0	19.0	19.0
Incr Delay (d2), s/veh				0.7	0.0	2.3	53.1	0.5	0.0	0.0	17.0	17.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	0.0	4.2	5.7	2.2	0.0	0.0	10.7	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.6	0.0	24.0	82.3	8.2	0.0	0.0	36.1	36.1
LnGrp LOS				C	A	C	F	A	A	A	D	D
Approach Vol, veh/h					520			900			1248	
Approach Delay, s/veh					22.6			23.8			36.1	
Approach LOS					C			C			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	42.9		12.0	30.9		23.1						
Change Period (Y+Rc), s	5.4		* 4.7	5.4		5.1						
Max Green Setting (Gmax), s	37.5		* 7.3	25.5		37.0						
Max Q Clear Time (g_c+I1), s	9.1		9.0	23.7		13.6						
Green Ext Time (p_c), s	11.6		0.0	1.7		2.4						

Intersection Summary		
HCM 6th Ctrl Delay		29.3
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	0	197	0	0	0	0	697	294	322	783	0
Future Volume (veh/h)	52	0	197	0	0	0	0	697	294	322	783	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	60	0	226				0	801	338	370	900	0
Peak Hour Factor	0.87	0.87	0.87				0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	56	0	213				0	1205	513	420	2322	0
Arrive On Green	0.17	0.00	0.17				0.00	0.34	0.34	0.24	0.65	0.00
Sat Flow, veh/h	329	0	1239				0	3647	1513	1781	3647	0
Grp Volume(v), veh/h	286	0	0				0	801	338	370	900	0
Grp Sat Flow(s),veh/h/ln	1567	0	0				0	1777	1513	1781	1777	0
Q Serve(g_s), s	10.3	0.0	0.0				0.0	11.5	11.4	12.0	7.1	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0				0.0	11.5	11.4	12.0	7.1	0.0
Prop In Lane	0.21		0.79				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	269	0	0				0	1205	513	420	2322	0
V/C Ratio(X)	1.06	0.00	0.00				0.00	0.66	0.66	0.88	0.39	0.00
Avail Cap(c_a), veh/h	269	0	0				0	1205	513	490	2322	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	0.0	0.0				0.0	16.9	16.9	22.1	4.8	0.0
Incr Delay (d2), s/veh	72.5	0.0	0.0				0.0	2.9	6.5	13.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	0.0	0.0				0.0	4.5	4.3	6.0	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.3	0.0	0.0				0.0	19.8	23.4	35.9	5.3	0.0
LnGrp LOS	F	A	A				A	B	C	D	A	A
Approach Vol, veh/h		286						1139			1270	
Approach Delay, s/veh		97.3						20.9			14.2	
Approach LOS		F						C			B	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	18.9	25.7		15.4		44.6						
Change Period (Y+Rc), s	4.7	5.4		5.1		5.4						
Max Green Setting (Gmax), s	13.3	18.0		10.3		39.2						
Max Q Clear Time (g_c+I1), s	14.0	13.5		12.3		9.1						
Green Ext Time (p_c), s	0.2	3.7		0.0		15.5						

Intersection Summary	
HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	100	186	97	88	222	171	419	69	235	540	199
Future Volume (veh/h)	255	100	186	97	88	222	171	419	69	235	540	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	290	114	211	110	100	252	194	476	78	267	614	226
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	348	143	274	314	330	512	215	719	117	274	692	254
Arrive On Green	0.23	0.23	0.23	0.18	0.18	0.18	0.12	0.24	0.24	0.15	0.27	0.27
Sat Flow, veh/h	1542	636	1216	1781	1870	1520	1781	3042	495	1781	2520	926
Grp Volume(v), veh/h	337	0	278	110	100	252	194	277	277	267	433	407
Grp Sat Flow(s),veh/h/ln	1793	0	1600	1781	1870	1520	1781	1777	1761	1781	1777	1669
Q Serve(g_s), s	22.9	0.0	20.7	6.9	5.9	17.0	13.7	18.0	18.2	19.0	29.7	29.8
Cycle Q Clear(g_c), s	22.9	0.0	20.7	6.9	5.9	17.0	13.7	18.0	18.2	19.0	29.7	29.8
Prop In Lane	0.86		0.76	1.00		1.00	1.00		0.28	1.00		0.55
Lane Grp Cap(c), veh/h	404	0	361	314	330	512	215	420	416	274	488	459
V/C Ratio(X)	0.83	0.00	0.77	0.35	0.30	0.49	0.90	0.66	0.67	0.97	0.89	0.89
Avail Cap(c_a), veh/h	464	0	414	503	529	673	215	420	416	274	488	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.1	0.0	46.2	46.0	45.6	34.2	55.2	44.0	44.1	53.7	44.3	44.3
Incr Delay (d2), s/veh	12.0	0.0	8.4	0.2	0.2	0.3	34.9	7.9	8.2	46.9	20.5	21.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	8.9	3.0	2.7	6.2	8.1	8.7	8.7	11.9	15.6	14.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.0	0.0	54.6	46.3	45.8	34.5	90.1	51.9	52.3	100.6	64.8	66.1
LnGrp LOS	E	A	D	D	D	C	F	D	D	F	E	E
Approach Vol, veh/h		615			462			748			1107	
Approach Delay, s/veh		57.1			39.8			62.0			73.9	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	37.4		36.1	20.1	42.3		28.9
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4
Max Green Setting (Gmax), s	19.6	29.9		33.0	* 15	* 35		36.0
Max Q Clear Time (g_c+I1), s	21.0	20.2		24.9	15.7	31.8		19.0
Green Ext Time (p_c), s	0.0	4.4		3.0	0.0	2.3		0.9

Intersection Summary	
HCM 6th Ctrl Delay	62.0
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	63	54	289	533	64
Future Vol, veh/h	47	63	54	289	533	64
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	72	62	332	613	74

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	960	670	697	0	-	0
Stage 1	660	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	269	456	897	-	-	-
Stage 1	513	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	245	447	888	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	719	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.4	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	888	-	331	-	-
HCM Lane V/C Ratio	0.07	-	0.382	-	-
HCM Control Delay (s)	9.4	-	22.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.7	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	0	0	44	6	301	4	63	494	34
Future Vol, veh/h	0	0	3	0	0	44	6	301	4	63	494	34
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	230	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	0	0	48	7	327	4	68	537	37

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	556	-	-	186	574	0	0	341	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	0	0	530	0	0	825	997	-	-	1216	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	530	-	-	809	997	-	-	1204	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	9.7	0.2	0.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	997	-	-	530	809	1204	-	-
HCM Lane V/C Ratio	0.007	-	-	0.006	0.059	0.057	-	-
HCM Control Delay (s)	8.6	-	-	11.8	9.7	8.2	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.2	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	0	4	17	0	69	6	194	27	94	369	33
Future Vol, veh/h	40	0	4	17	0	69	6	194	27	94	369	33
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	87	92	87	92	87	87	87	87	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	0	4	20	0	79	7	223	31	108	424	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	794	936	452	933	939	147	460	0	0	264	0	0
Stage 1	658	658	-	263	263	-	-	-	-	-	-	-
Stage 2	136	278	-	670	676	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	292	264	607	233	263	874	1099	-	-	1299	-	-
Stage 1	452	460	-	720	690	-	-	-	-	-	-	-
Stage 2	854	680	-	446	452	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	244	238	601	211	237	857	1099	-	-	1287	-	-
Mov Cap-2 Maneuver	244	238	-	211	237	-	-	-	-	-	-	-
Stage 1	449	421	-	708	679	-	-	-	-	-	-	-
Stage 2	763	669	-	402	414	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.1	13.3	0.2	1.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	258	534	1287	-	-
HCM Lane V/C Ratio	0.006	-	-	0.185	0.185	0.084	-	-
HCM Control Delay (s)	8.3	-	-	22.1	13.3	8.1	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.7	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	183	55	1	144	41	20	122	1	96	250	47
Future Volume (veh/h)	39	183	55	1	144	41	20	122	1	96	250	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	1.00		0.94	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	238	71	1	187	53	26	158	1	125	325	61
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	271	81	1	212	60	65	452	3	155	446	84
Arrive On Green	0.23	0.23	0.23	0.15	0.15	0.15	0.04	0.24	0.24	0.09	0.29	0.29
Sat Flow, veh/h	251	1170	349	7	1368	388	1781	1856	12	1781	1517	285
Grp Volume(v), veh/h	360	0	0	241	0	0	26	0	159	125	0	386
Grp Sat Flow(s),veh/h/ln	1770	0	0	1763	0	0	1781	0	1867	1781	0	1802
Q Serve(g_s), s	19.1	0.0	0.0	13.1	0.0	0.0	1.4	0.0	6.9	6.7	0.0	18.8
Cycle Q Clear(g_c), s	19.1	0.0	0.0	13.1	0.0	0.0	1.4	0.0	6.9	6.7	0.0	18.8
Prop In Lane	0.14		0.20	0.00		0.22	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	410	0	0	273	0	0	65	0	455	155	0	530
V/C Ratio(X)	0.88	0.00	0.00	0.88	0.00	0.00	0.40	0.00	0.35	0.81	0.00	0.73
Avail Cap(c_a), veh/h	474	0	0	280	0	0	130	0	455	247	0	530
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.1	0.0	0.0	40.4	0.0	0.0	46.0	0.0	30.5	43.7	0.0	30.9
Incr Delay (d2), s/veh	15.4	0.0	0.0	26.1	0.0	0.0	1.5	0.0	2.1	4.3	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.0	0.0	7.6	0.0	0.0	0.6	0.0	3.2	3.1	0.0	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	0.0	0.0	66.4	0.0	0.0	47.5	0.0	32.6	48.0	0.0	39.4
LnGrp LOS	D	A	A	E	A	A	D	A	C	D	A	D
Approach Vol, veh/h		360			241			185			511	
Approach Delay, s/veh		51.5			66.4			34.7			41.5	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.2	31.7		30.1	8.2	36.6		22.6				
Change Period (Y+Rc), s	* 4.7	* 7.9		7.5	* 4.7	7.9		7.5				
Max Green Setting (Gmax), s	* 14	* 23		26.1	* 7.1	28.7		15.5				
Max Q Clear Time (g_c+I1), s	8.7	8.9		21.1	3.4	20.8		15.1				
Green Ext Time (p_c), s	0.1	1.7		1.0	0.0	3.2		0.1				

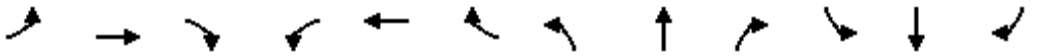
Intersection Summary			
HCM 6th Ctrl Delay		47.9	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

ATTACHMENT 5

EXISTING + CUMULATIVE + PROJECT WITH MITIGATION INTERSECTION ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	100	186	97	88	222	171	419	69	235	540	199
Future Volume (veh/h)	255	100	186	97	88	222	171	419	69	235	540	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	233	211	110	100	252	194	476	78	267	614	226
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	346	363	296	316	332	527	220	752	122	289	735	270
Arrive On Green	0.19	0.19	0.19	0.18	0.18	0.18	0.12	0.25	0.25	0.16	0.29	0.29
Sat Flow, veh/h	1781	1870	1524	1781	1870	1520	1781	3043	495	1781	2521	926
Grp Volume(v), veh/h	205	233	211	110	100	252	194	277	277	267	433	407
Grp Sat Flow(s),veh/h/ln	1781	1870	1524	1781	1870	1520	1781	1777	1761	1781	1777	1670
Q Serve(g_s), s	12.7	13.9	15.7	6.5	5.6	15.9	13.0	16.8	17.0	17.9	27.6	27.6
Cycle Q Clear(g_c), s	12.7	13.9	15.7	6.5	5.6	15.9	13.0	16.8	17.0	17.9	27.6	27.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.55
Lane Grp Cap(c), veh/h	346	363	296	316	332	527	220	439	435	289	518	487
V/C Ratio(X)	0.59	0.64	0.71	0.35	0.30	0.48	0.88	0.63	0.64	0.92	0.84	0.84
Avail Cap(c_a), veh/h	486	510	416	530	557	709	227	439	435	289	518	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	44.8	45.6	43.6	43.2	31.6	52.1	40.6	40.7	49.9	40.1	40.1
Incr Delay (d2), s/veh	2.3	2.7	4.6	0.2	0.2	0.3	28.9	6.7	7.0	33.3	14.7	15.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	6.6	6.2	2.9	2.6	5.7	7.4	8.0	8.1	10.5	13.8	13.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.7	47.5	50.2	43.9	43.4	31.9	81.0	47.3	47.6	83.3	54.8	55.8
LnGrp LOS	D	D	D	D	D	C	F	D	D	F	D	E
Approach Vol, veh/h		649			462			748			1107	
Approach Delay, s/veh		48.1			37.2			56.2			62.0	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	37.2		30.9	19.6	42.6		27.9				
Change Period (Y+Rc), s	5.4	7.3		7.4	* 4.7	* 7.3		6.4				
Max Green Setting (Gmax), s	19.6	29.9		33.0	* 15	* 35		36.0				
Max Q Clear Time (g_c+I1), s	19.9	19.0		17.7	15.0	29.6		17.9				
Green Ext Time (p_c), s	0.0	4.8		4.1	0.0	3.8		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		53.6	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

ATTACHMENT 2

Intersection Control Evaluation – SR-86 / Countryside Drive Intersection

LINSCOTT LAW & GREENSPAN engineers

INTERSECTION CONTROL EVALUATION

SR-86 / COUNTRYSIDE DRIVE INTERSECTION

El Centro, California
November 8, 2024

LLG Ref. 3-23-3841

Prepared by:
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INTERSECTION CONTROL EVALUATION

SR-86 / COUNTRYSIDE DRIVE

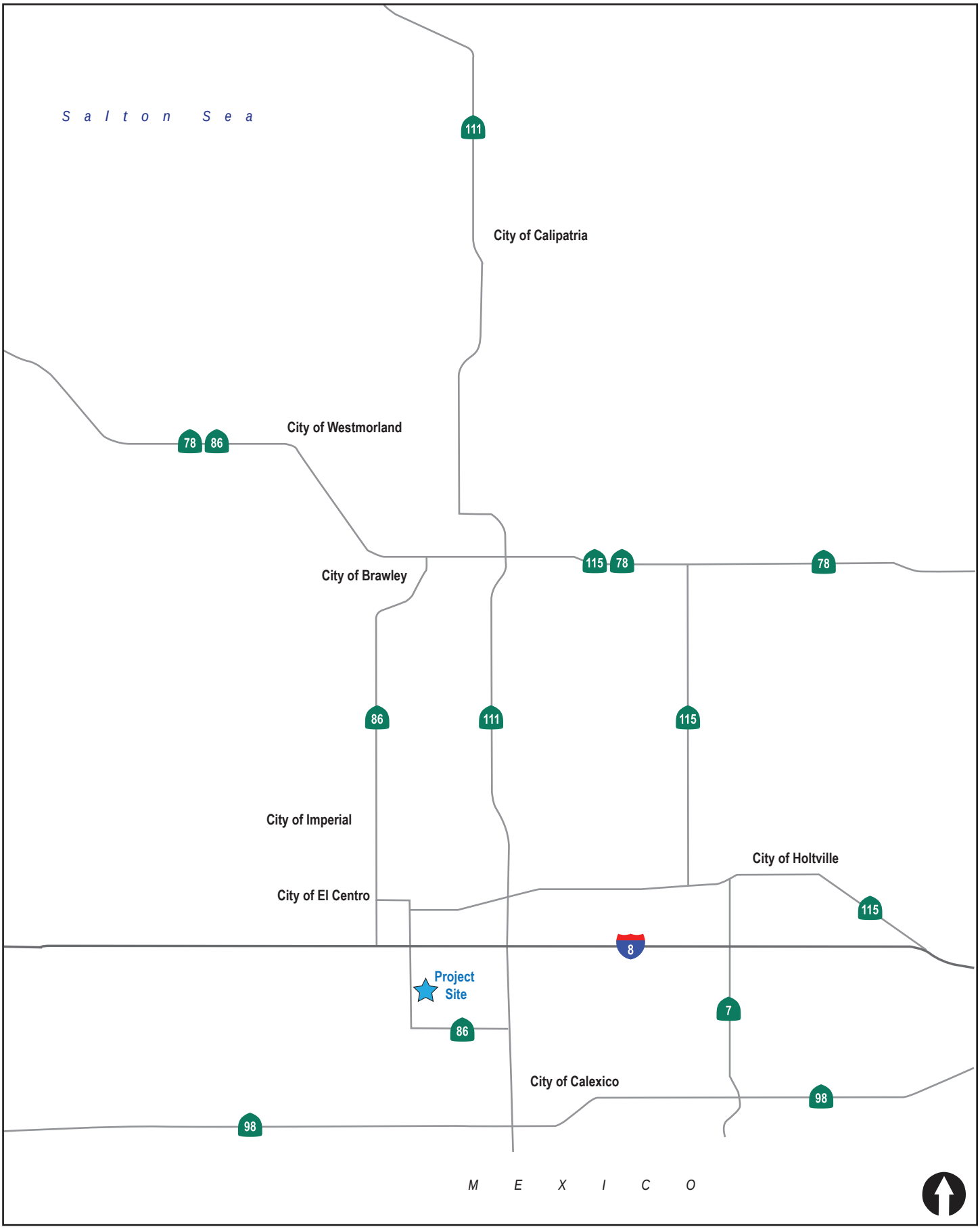
Imperial County, California
November 8, 2024

1.0 INTRODUCTION

Linscott, Law and Greenspan, Engineers (LLG) has prepared the following report to detail our assessment, findings, and conclusions of the Intersection Control Evaluation (ICE) at the intersection of SR-86 / Countryside Drive, a Caltrans-maintained intersection located in El Centro.

LLG conducted an ICE analysis to objectively evaluate and screen intersection control alternatives at the subject intersection. The intersection traffic control options which were assessed are minor-street stop, all-way stop, signalization, and roundabout control. The intersection control alternatives were analyzed using Year 2045 (Horizon Year) forecast traffic volumes including traffic generated by the planned Willow Bend project.

Figure 1–2 depicts the Vicinity Map and ***Figure 1–3*** depicts the area of the subject intersection in greater detail.



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Figure 1-1

Vicinity Map

SR-86 / Countryside Drive Intersection - ICE Project



LINSCOTT LAW & GREENSPAN engineers

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Figure 1-2

Intersection Location

2.0 EXISTING TRAFFIC CONDITIONS

2.1 Existing Traffic Conditions

Following is a description of the two subject roadways:

SR-86

As described in the *Circulation and Scenic Highways Element*, Imperial County, January 29, 2008, State Route 86 is generally a north-south route and begins near the community of Heber in the south as a two-lane conventional highway and continues into Riverside County line in the north as a four-lane expressway.

Near the SR-86/Countryside Drive intersection, SR-86 is built as 3-Lane Road to the north of Countryside Drive up to Dannenberg Road, with a raised median, two lanes northbound and one lane southbound. South of Countryside Drive to McCabe Road, SR-86 is a two-lane undivided road. Curb, gutter, and sidewalks are not provided. Bike lanes and bus stops are not provided, and the speed limit is posted at 55 mph.

The Willow Bend Project will build the second southbound through Lane on SR 86 along its frontage between just north of Willow Bend Drive and just south of Countryside Drive.

Countryside Drive

Countryside Drive is a two-lane residential street east of SR-86. Curb, gutter, and non-contiguous sidewalks are provided on Countryside Drive. Countryside Drive ends at SR-86 and does not continue west of SR-86.

The Willow Bend Project, which is planned on the westside of SR 86 between just north of Willow Bend Drive and just south of Countryside Drive will extend Countryside Drive to the west of SR 86. This new west leg of the SR 86/ Countryside Drive intersection will provide access to the site.

Existing conditions are depicted graphically on ***Figure 2–1***.

The SR-86/Countryside Drive intersection is currently a three-leg intersection, with stop control on westbound Countryside Drive. Currently, the west leg does not exist. Hence, the existing intersection geometry is as follows:

- Southbound: One left-turn lane and one through lane
- Westbound: One shared left / right lane
- Northbound: One through lane and one shared through / right lane

2.2 Existing Traffic Volumes

Existing traffic volume counts were obtained from the Caltrans Traffic Census Website. ***Figure 2–2*** depicts the existing peak hour volumes at the SR-86 / Countryside Drive intersection.

2.3 Safety Review - Existing Traffic Collision History

A total of one (1) collision occurred on SR-86 at Countryside Drive based on accident data provided by the Statewide Integrated Traffic Records System (SWITRS) over a six-year period from January 1, 2016, through December 31, 2021. This collision involved a vehicle and an object with injury to one person. There are no fatalities reported at this location.

Appendix A contains the Collision data.

2.4 Natural Habitat and Visual Impacts

The affected right of way is comprised primarily of disturbed soils within the existing right-of-way (ROW). West of SR-86, agricultural land and overhead electrical distribution line poles are present both the north and south side of Countryside Drive. An irrigation canal runs north/south on the east side of SR-86 and provides a delivery point to the farmlands west of SR-86, south of Countryside Drive. East of SR-86 are single-family residences, with a sub-division generally north of Countryside Drive and larger single-family lots south of Countryside Drive. There are no scenic resources occurring within this area.



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Figure 2-1

Existing Conditions Diagram



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Figure 2-2

Existing Traffic Volumes

3.0 NEAR-TERM AND LONG-TERM YEAR 2045 TRAFFIC VOLUMES

The impetus for this analysis is the proposed reconfiguration and control of the SR-86 / Countryside Drive intersection. Currently, this is a T-intersection with no west leg. The fourth (west) leg will be provided at this intersection and will provide direct access to the proposed Willow Bend project. The following intersection geometry is proposed at the SR-86 / Countryside Drive intersection:

- Southbound: One left turn lane, one through lane and one shared through /right lane
- Westbound: One left turn lane and one shared through / right-turn lane
- Northbound: One left turn lane, one through lane and one shared through /right lane
- Eastbound: One left turn lane and one shared through / right-turn lane (new west leg)

3.1 Proposed Willow Bend Project

The Willow Bend residential project (Project) is proposed on the west side of SR-86 between Willow Bend Drive and Countryside Drive. The Willow Bend Traffic Impact Study dated March 2006 was approved by the City. Following is one of the conditions of approval:

- Prior to the issuance of the first certificate of occupancy, the applicant shall signalize the Highway 86 and Countryside intersection.

The traffic signal at this intersection was recommended in the previous March 2006 report but is no longer required as described later in this report. Since this intersection is maintained by Caltrans, an Intersection Control Evaluation (ICE) study is required.

Table 3-1 summarizes the Trip Generation for the proposed Willow Bend Project. As seen in *Table 3–1*, the Willow Bend project is calculated to generate 1,264 daily trips with 94 AM peak hour trips (24 inbound/ 70 outbound trips) and 126 PM peak hour trips (79 inbound/ 47 outbound trips).

It should be noted that after this report was completed, the number of units in the proposed Project was reduced to 120. However, since this analysis assumes 134 units, the analysis is conservative and the very small decrease in peak hour trips would not change the results of this analysis.

Figure 3–1 depicts the proposed Willow Bend project site plan.

3.2 Existing Traffic Volumes With Willow Bend Project

The traffic generated by the Willow Bend project was assigned to the SR-86 / Countryside Drive intersection. This traffic was added to the existing traffic at this intersection to obtain the Existing with Willow Bend project traffic at the SR-86 / Countryside Drive intersection.

Figure 3–2 depicts the Existing with Willow Bend project traffic volumes.

3.3 Year 2045 Volumes Forecast

In order to obtain future ADT and peak hour volumes for the Year 2045 conditions, a growth factor was applied to the existing traffic volumes. For the purposes of this report, a growth factor of 1.28 was obtained from the approved Circulation and Scenic Highways Element report, January 2008. The growth factor was calculated between the forecasted Year 2025 and Year 2050 ADT volumes. The traffic generated by the Willow Bend project was added to the Year 2045 traffic to obtain the total Year 2045 Traffic.

Figure 3-3 depicts the Year 2045 project Traffic Volumes.

TABLE 3–1
WILLOW BEND PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour					PM Peak Hour				
		Rate [a]	Volume	Rate [a]	In:Out Split [a]	Volume			Rate [a]	In:Out Split [a]	Volume		
						In	Out	Total			In	Out	Total
Single-Family Detached Housing [b]	134 DU	9.43 / DU	1,264	0.70 / DU [b]	26:74	24	70	94	0.94 / DU [b]	63:37	79	47	126

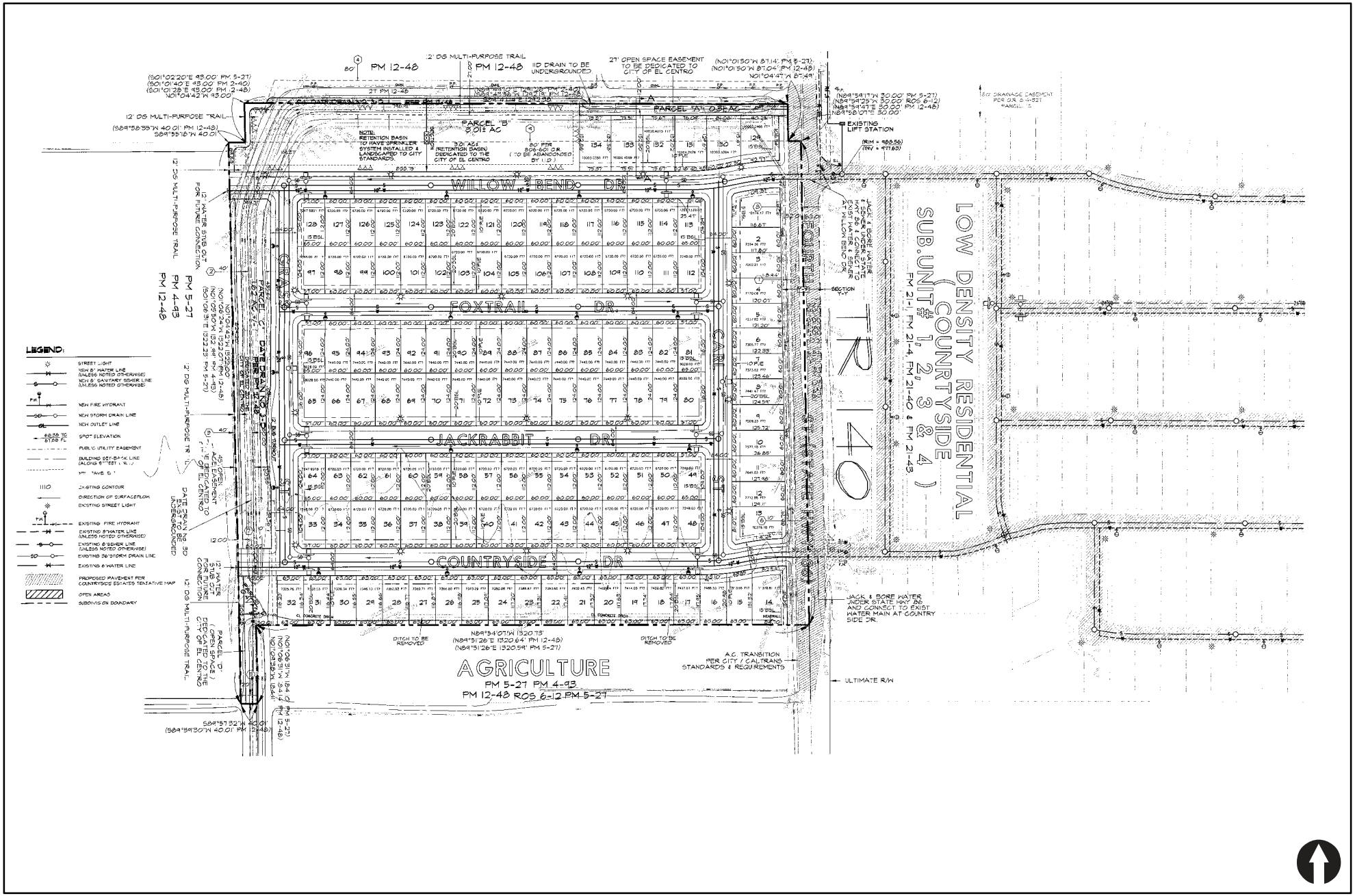
Source: Table 1-1 Project Trip Generation, The *Willow Bend Traffic Impact Study,* March 2006.

Footnotes:

a. Trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 11th Edition.
b. Rates for Single-Family Detached Housing (Land Use 210) were used.

General Notes:

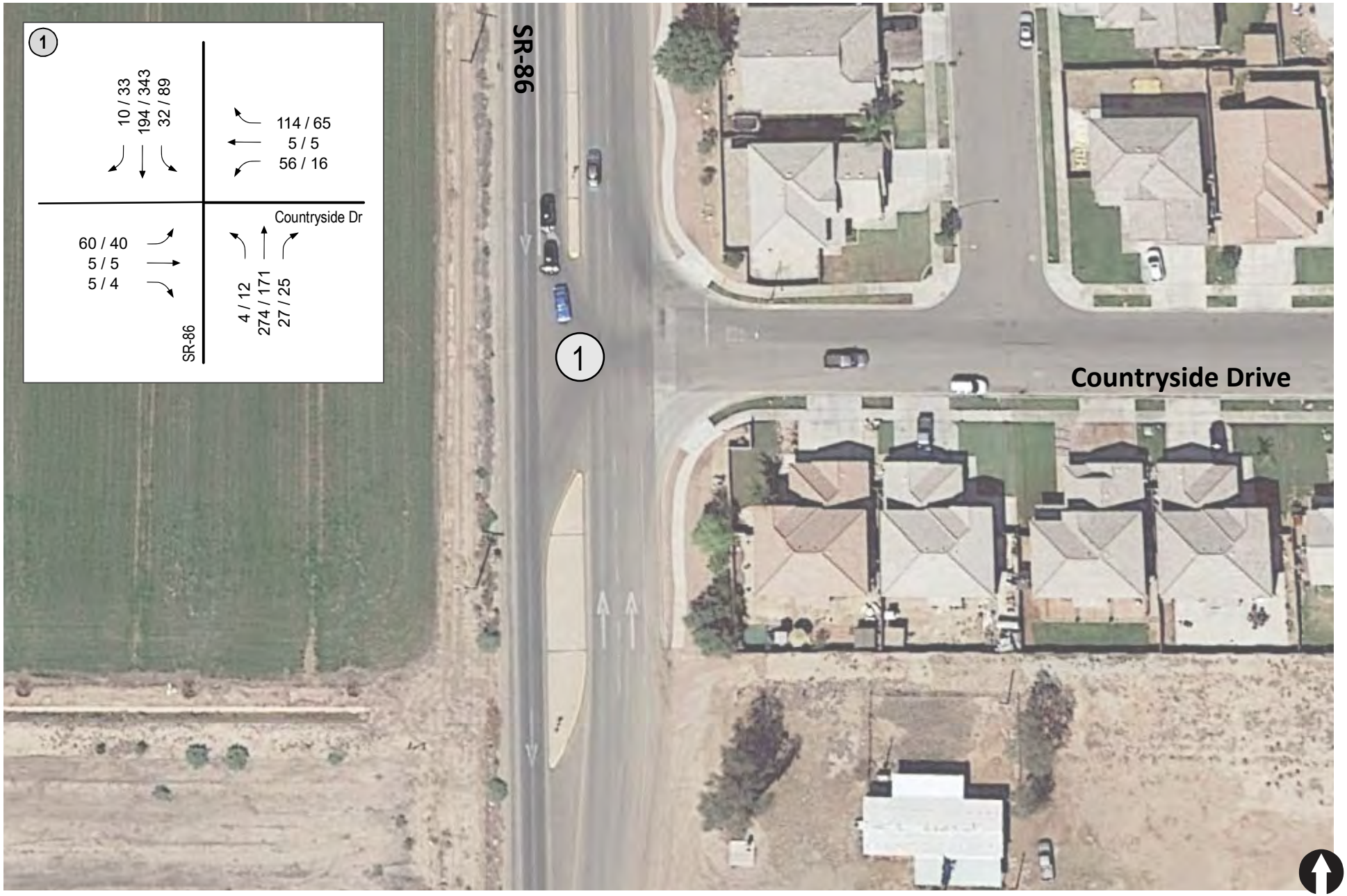
DU – dwelling units



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Figure 3-1

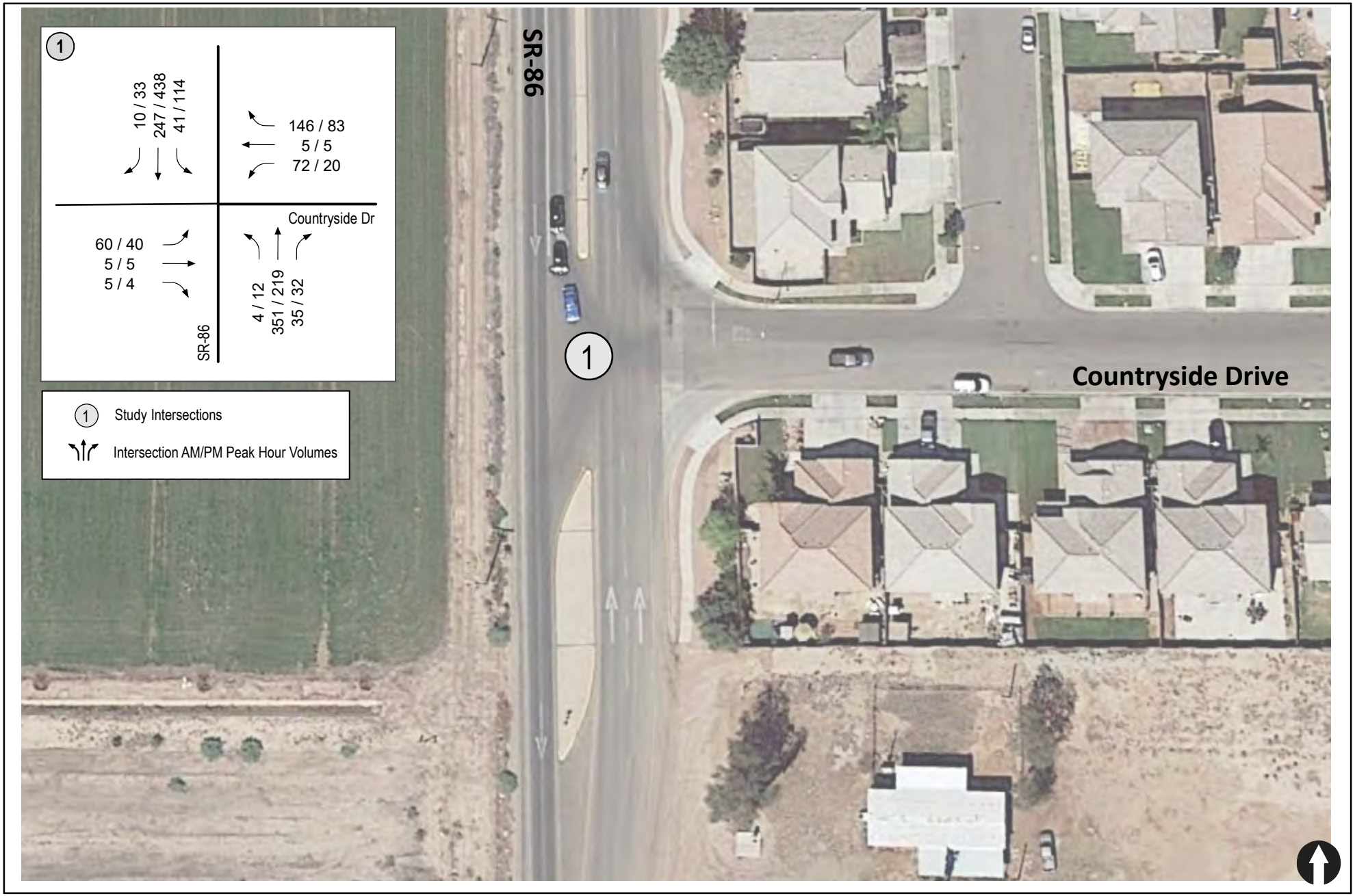
Willow Bend Site Plan



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Figure 3-2

Existing (With Willow Bend Project) Traffic Volumes



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Figure 3-3

Year 2045 (with Willow Bend Project) Traffic Volumes

4.0 PLANNING-LEVEL SCREENING ANALYSIS

According to the ICE Process Steps & Outcomes flowchart provided in TOPD 13-02, an initial screening should be performed to eliminate options and strategies that fail to meet the established need. To facilitate this initial screening process, ***Table 4–1*** provides thresholds for suggested control strategies by Average Daily Traffic on the adjacent roadways. The Design Year for modeling future traffic volumes and estimated ADT is 2045 and the estimated total entering ADT at this intersection is 11,800 vehicles per day in the Year 2045. Using this ADT based screening method, grade separation can be eliminated as a rational traffic control strategy. Therefore, this study assesses Minor-Street Stop Control, the All-Way Stop Control, Signal Control and Single-Lane Roundabout Control for the design and traffic analysis process.

TABLE 4–1
SUGGESTED INTERSECTION CONTROL STRATEGIES BY TOTAL ADT ENTERING

Total Entering ADT	All-Way Stop	Signal	Yield (RBT)	Grade Separation
7,500-15,000	X		X (Single lane)	
15,000-25,000	X	X	X (Single lane)	
25,000-80,000		X	X (Multi-lane)	
>80,000				X

There are various methodologies used to analyze signalized and unsignalized intersections. The measure of effectiveness for intersections is level of service (LOS) which denotes the operating conditions which occur at a given intersection. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. LOS designation is reported differently for signalized and unsignalized intersections.

Table 4–2 provides a description of the levels of service from A through F. ***Table 4–3*** summarizes the criteria, which are based on the average control delay for the worst minor street movement (unsignalized intersections) and overall intersection (signalized intersections).

4.1 Unsignalized Operations Evaluation

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement. For All-Way-Stop-controlled (AWSC) intersections, the overall intersection delay is reported. For two-way-stop-controlled (MSSC) intersections, LOS is not defined for the overall intersection, but the worst-case movement (typically the minor street left-turn) delay and LOS are reported.

4.2 Signal Operations Evaluation

Level of service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria are stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in addition to the stop delay. In the Highway Capacity Manual (HCM) 6th Edition, LOS for signalized intersections is defined in terms of delay. The LOS analysis provides results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

TABLE 4–2
LOS DESCRIPTIONS

LOS	Description
A	Operations with very low delay and most vehicles do not stop.
B	Operations with good progression but with some restricted movement.
C	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines
E	Operations where there is significant delay, extensive queuing, and poor progression.
F	Operations that is unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

TABLE 4–3
INTERSECTION LEVEL OF SERVICE (LOS) & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: Highway Capacity Manual 6th Edition

4.3 Roundabout Operations Evaluation

The Highway Capacity Manual (HCM) published by the Transportation Research Board establishes procedures to evaluate highway facilities and rate their ability to process traffic volumes. The terminology "level of service" is used to provide a qualitative evaluation based on certain quantitative calculations, which are related to empirical values. NCHRP Report 1043, Guide for Roundabouts, 2023 (Roundabout Guide) provides the methodology for calculating the Level of Service (LOS) for yield-controlled roundabouts. ***Table 4–4*** displays the LOS thresholds for roundabouts presented in the HCM 6th Edition. If the V/C is greater than 1.0, the LOS is F.

TABLE 4–4
LOS CRITERIA FOR ROUNDABOUT INTERSECTIONS

Control Delay (seconds/vehicle)	Level of Service by Volume to Capacity Ratio
≤10.0	A
>10.0 and ≤15.0	B
>15.0 and ≤25.0	C
>25.0 and ≤35.0	D
>35.0 and ≤50.0	E
>50.0	F

Source: 2010 Highway Capacity Manual, Chapter 22, Page 22-9, Exhibit 22-8.

5.0 INTERSECTION ANALYSIS

5.1 Analysis Scenarios

This section summarizes the traffic analysis results and other considerations for each intersection alternative. The following traffic control alternatives are evaluated, with detailed discussion of each alternative in this section:

1. Existing Conditions - Minor Street Stop Control (MSSC)
2. Existing Conditions (With Willow Bend Project traffic)
    a. MSSC
    b. All-Way Stop Control (AWSC)
    c. Traffic Signal
    d. Roundabout
        i. One-Lane
        ii. Two-Lane
3. Year 2045 (Includes Willow Bend Project)
    a. MSSC
    b. AWSC
    c. Traffic Signal
    d. Roundabout
        i. One-Lane
        ii. Two-Lane

These alternatives were developed to establish what the intersection configuration requirements for operations to perform at LOS C or better during both peak periods. Per Caltrans Guide for the Preparation of Traffic Impact Studies, "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities". Additionally, providing manageable queuing lengths is another goal of the design alternatives. As these are two very different types of control strategies, there are differences in the overall intersection footprint and lane geometry needs.

5.2 Intersection Analysis

5.2.1 *Existing*

Currently, the minor street left-turn movement at the SR-86 / Countryside Drive intersection is calculated to operate at LOS B during the AM and PM peak hours.

Appendix B contains the Existing peak hour intersection analysis worksheets.

5.2.2 *Existing With Willow Bend Traffic*

With the Willow Bend Project, the fourth leg (west leg) of the SR-86 / Countryside Drive intersection will be built. ***Table 5–1*** shows the intersection operations for each of the four (4) intersection controls. As shown in *Table 5–1*, with the Willow Bend traffic, this intersection is calculated to operate at LOS C or better under all the traffic control alternatives listed in Section 5.1 during the AM and PM peak hours.

Appendix C contains the Existing With Willow Bend Traffic peak hour intersection analysis worksheets for all alternatives.

5.2.3 *Year 2045*

As shown in *Table 5–1*, In the Year 2045 traffic, the subject intersection is calculated to operate at LOS D or better under all the traffic control alternatives listed in Section 5.1 during the AM and PM peak hours.

Appendix D contains the peak hour intersection analysis worksheets for all alternatives.

5.3 Queue Analysis

Table 5–2 summarizes the queues at the SR-86 / Countryside Drive intersection for all analysis scenarios. The longest queue between the AM and PM peak hours is shown for each alternative. For all alternatives, the 95th percentile queue lengths are calculated. Queue analysis worksheets are available for signalized intersections but not for unsignalized intersections. Queues for roundabouts are provided in the peak hour analysis worksheets.

5.3.1 *Existing*

As seen in *Table 5–2*, under Existing conditions, the queue in the southbound left-turn movement is within the available storage. Northbound and eastbound left-turn movements do not exist. In the westbound approach, the left and right movements are shared.

5.3.2 *Existing With Willow Bend Project*

With the Willow Bend Project, it is recommended that 75-foot-long left-turn lanes be provided in the westbound, northbound, and eastbound approaches. As seen in *Table 5–2*, with the Willow Bend Project, queues in all left-turn movements are calculated to be within the available storage.

Appendix C contains the Existing With Willow Bend queue analysis worksheets.

5.3.3 *Year 2045*

As seen in *Table 5–2*, in the Year 2045, queues in all left-turn movements are calculated to be within the available storage.

Appendix D contains the Year 2045 queue analysis worksheets.

TABLE 5–1
INTERSECTION ANALYSIS

Scenario / Control Type	Peak Hour	Delay [a]	LOS [b]
Existing			
MSSC [c]	AM	12.7	B
	PM	11.0	B
Existing with Willow Bend Project			
MSSC	AM	18.6	C
	PM	22.3	C
AWSC [d]	AM	12.0	B
	PM	12.3	B
Signal	AM	23.4	C
	PM	19.9	B
Single-Lane Roundabout	AM	5.2	A
	PM	5.7	A
Two-Lane Roundabout	AM	4.9	A
	PM	5.3	A
Year 2045 with Willow Bend Project			
MSSC	AM	26.6	D
	PM	33.6	D
AWSC	AM	16.1	C
	PM	17.4	C
Signal	AM	24.8	C
	PM	20.6	C
Single-Lane Roundabout	AM	6.2	A
	PM	6.8	A
Two-Lane Roundabout	AM	5.7	A
	PM	6.3	A

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. MSSC – Minor Street Stop Controlled intersection. Minor street left-turn delay, and LOS reported.
d. AWSC – All Way Stop Controlled intersection. Overall delay, and LOS reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 5-2
QUEUE ANALYSIS

Scenario / Control Type	Movement	Storage (feet)	95th Percentile Queue (feet) [a]	Adequate?
Existing				
MSSC	SBL	225	6	Yes
	WBL	-	-	NA
	NBL	DNE	DNE	NA
	EBL	DNE	DNE	NA
Existing With Willow Bend Project				
MSSC	SBL	225	6	Yes
	WBL	75	13	Yes
	NBL	100	0	Yes
	EBL	100	22	Yes
AWSC	SBL	225	[b]	NA
	WBL	75	[b]	NA
	NBL	100	[b]	NA
	EBL	100	[b]	NA
Signal	SBL	225	99	Yes
	WBL	75	79	Yes
	NBL	100	18	Yes
	EBL	100	83	Yes
Single-Lane Roundabout	SB	>100	2	Yes
	WB	>100	1	Yes
	NB	>100	1	Yes
	EB	>100	1	Yes
Two-Lane Roundabout	SB	>100	2	Yes
	WB	>100	1	Yes
	NB	>100	1	Yes
	EB	>100	1	Yes

TABLE 5–2 (CONTINUED)
QUEUE ANALYSIS

Scenario / Control Type	Movement	Available Storage (feet)	95th Percentile Queue (feet) [a]	Adequate?
Year 2045 With Willow Bend Project				
MSSC	SBL	225	3	Yes
	WBL	75	25	Yes
	NBL	100	1	Yes
	EBL	100	37	Yes
AWSC	SBL	225	[b]	NA
	WBL	75	[b]	NA
	NBL	100	[b]	NA
	EBL	100	[b]	NA
Signal	SBL	225	123	Yes
	WBL	75	95	Yes
	NBL	100	19	Yes
	EBL	100	84	Yes
Single-Lane Roundabout	SB	>100	3	Yes
	WB	>100	1	Yes
	NB	>100	2	Yes
	EB	>100	1	Yes
Two-Lane Roundabout	SB	>100	3	Yes
	WB	>100	1	Yes
	NB	>100	1	Yes
	EB	>100	1	Yes

Footnotes:

a. 95th percentile queue length in feet (25 feet per vehicle). Longest of the AM and PM peak hour queue.
b. Shared lane, queue not available.

General Notes:

MSSC – Minor Street Stop Controlled intersection
AWSC – All Way Stop Controlled intersection
DNE – Does not exist
NA – Not Applicable

6.0 INTERSECTION ALTERNATIVES DISCUSSION

The following is a detailed discussion of each alternative traffic control for the SR-86 / Countryside Drive intersection.

6.1 Minor-Street Stop Control Alternative

The minor-street stop control alternative retains the existing Stop sign traffic control on westbound Countryside Drive and assumes a stop control on (the new) eastbound Countryside Drive. Analysis was completed using HCM 7 methodology and Synchro (version 12) software.

Figure 6–1 depicts the intersection geometry for the Minor-Street-Stop-Control (MSSC) alternative. As seen on *Figure 6–1*, the following lane geometry is assumed:

- Southbound: One left turn lane, one through lane and one shared through /right lane
- Westbound: One left turn lane and one shared through / right-turn lane
- Northbound: One left turn lane, one through lane and one shared through /right lane
- Eastbound: One left turn lane and one shared through / right-turn lane (new west leg)

The eastbound and westbound lane assignment match and the second southbound through lane matches the 2 northbound through lanes.

Currently there is a fire hydrant at the southeast corner of the SR 86 / Countryside Drive intersection and two driveways immediately adjacent. Hence there is no opportunity for parking along the south curb of Countryside Drive, east of SR 86, for a distance of approximately 110 feet east of SR 86 and the provision of two (2) westbound lanes will not impede curbside parking. Currently, the volume in the westbound direction during the AM peak hour is approximately 56 in the left-turn movement and 114 in the right-turn movement. Therefore, having a dedicated left-turn lane will provide better operations at this intersection.

The critical minor-street left-turn delay in the westbound left-turn movement is reported in *Table 5–1*. As seen, the westbound left movement is calculated to operate at an acceptable LOS C during the AM and PM peak hours with delays of 20.2 seconds and 22.8 seconds during the AM & PM peak hours respectively, with the MSSC. The calculated overall average delay for the intersection is less than five seconds, as traffic on the major street (SR-86) does not stop.

The maximum calculated queue in the left-turn movements on all approaches is approximately one (1) vehicle or less during the AM and PM peak hours. The storage provided in the left-turn movements on all approaches can accommodate the calculated queues.

Appendix C contains the Existing with Willow Bend Traffic Minor-Street Stop Control Alternative queue analysis worksheets and *Appendix D* contains the same for Year 2045 with Willow Bend traffic.

6.1.1 *Safety Considerations*

The most significant pedestrian conflict for MSSC intersections is pedestrians crossing the major street who have potential conflicts with through vehicles on the major street. Pedestrians crossing the minor street will encounter drivers turning into the minor street with drivers being processed through the stop sign. These drivers are focused primarily on looking for gaps in the major street traffic and may not see pedestrians.

6.1.2 *Right-of-Way Easement Impacts*

Within the intersection improvement limits and from available record information, there is not any recorded highway right of way along the west side SR-86, therefore it is assumed that prescriptive rights would be approximately 34 feet west of the highway centerline. Due to the required pavement widening to accommodate second southbound through lane, shoulder and drainage improvements, this alternative would require a minimum of 26 ft of additional right of way, along the west side of SR-86 from Willow Bend Drive to approximately 1,680 lineal feet south of Countryside Drive. The proposed right-of-way acquisition area would impact the existing agricultural field south of Countryside Drive. The land north of Countryside Drive is the proposed single family home subdivision, requiring access onto SR-86 at Countryside Drive. The widening of SR 86 is necessary only along the frontage of the Willow Bend Project and does not need to extend to McCabe Road.

Due to the proposed southbound widening, this option would require the relocation of the power poles for the length of the widening. The poles carry both electrical distribution and communications facilities; therefore, both would be impacted by the pole relocation. The anticipated relocation length would be approximately 1,900 lineal feet. The construction estimate provided in *Table 9-1*, includes known estimated utility relocation costs.

6.1.3 *Environmental Impacts*

Due to the proposed development, a westbound leg of Countryside Drive extended would be constructed west of SR-86, thus creating a four-way intersection. No impacts to native habitat or visual resources are expected to occur with implementation of this proposed SR-86/Countryside Drive MSSC alternative.

6.2 All-Way Stop Control Alternative

The All-Way-Stop-Control (AWSC) alternative assumes stop control on all four approaches. Analysis was completed using HCM 7 methodology and Synchro (version 12) software.

Figure 6–2 depicts recommended lane geometry proposed for the AWSC alternative. As shown on *Figure 6-2*, a flashing R1-1 is recommended on the SR 86 median in both the north and south approaches to Countryside Drive. In addition, an advanced flashing W3-1 should be provided on SR 86 in both the north and south approaches to Countryside to alert drivers approaching the intersection at night.

The overall intersection delay and LOS is reported in *Table 5–1*. As seen in *Table 5–1*, this intersection is calculated to operate at an overall LOS B during the AM and PM peak hours with delays of 12.0 seconds and 12.2 seconds during the AM & PM peak hours respectively, with AWSC.

The calculated queues in the left-turn movements on all approaches are one (1) vehicle or less during the AM and PM peak hours. The storage provided in the left-turn movements on all approaches can accommodate the calculated queues.

Appendix C the Existing with Willow Bend Traffic contains the All-Way Stop Control Alternative intersection and queue analysis worksheets and Appendix D Contains the same for the Year 2045 With Willow Bend traffic.

6.2.1 *Safety Considerations*

With the All-Way-Stop Control alternative, vehicles on all approaches will stop and proceed when clear. Pedestrian crosswalks will be provided on all approaches. This will eliminate vehicle / pedestrian conflicts since every vehicle has to stop before proceeding through the intersection. As described previously, development of the Willow Bend project is not anticipated to generate any substantial increase in pedestrian crossing demand at this location.

6.2.2 *Right-of-Way Easement Impacts*

The amount of widening on SR-86 for the AWSC alternative is the same as for the MSSC alternative and no additional right-of-way impacts are anticipated outside of what was discussed above. Please see the description in Section 6.1.2 above.

In addition, this alternative will have the same impacts and associated costs for the overhead utility relocations as noted in Section 6.1.2.

6.2.3 *Environmental Impacts*

The amount of widening on SR-86 for the AWSC alternative is the same as for the MSSC alternative and no additional environmental impacts are anticipated with this alternative. Please see the description in Section 6.1.3 above.

6.3 Traffic Signal Alternative

The traffic signal alternative assumes installation of a traffic signal with protected left-turn phasing for all approaches. Analysis was completed using HCM 7 methodology and Synchro (version 12) software.

Figure 6–3 depicts the intersection geometry for the Traffic Signal (Signal) alternative. As seen in *Figure 6–3*, it is proposed to provide the lane geometry proposed for the TWSC alternative.

The overall intersection delay and LOS is reported in *Table 5–1*. As seen in *Table 5–1*, this intersection is calculated to operate at an overall LOS C or better during the AM and PM peak hours with delays of 22.9 seconds and 19.2 seconds during the AM & PM peak hours respectively, with signal control.

The calculated queues in the left-turn movements on all approaches are five (5) vehicles or less during the AM and PM peak hours. The storage provided in the left-turn movements on all approaches can accommodate the calculated queues.

Appendix C contains the Existing with Willow Bend Traffic Signal Alternative intersection analysis and queue analysis worksheets and *Appendix D* contains the same for Year 2045 with Willow Bend traffic.

6.3.1 *Safety Considerations*

Traffic signals can reduce the likelihood of pedestrian-vehicle conflicts by providing visual and audible pedestrian signal indications in coordination with compatible vehicular traffic phases. However, pedestrian conflicts can still occur due to red light running (illegal), right turns on green, left turns on green, and right turns on red (legal). The greatest left-turn volume is 10 vehicles on southbound approach for this project.

6.3.2 *Right-of-Way Easement Impacts*

The amount of widening on SR-86 for the Signal alternative is the same as for the MSSC alternative and no additional right-of-way impacts are anticipated outside of what was discussed above. Please see the description in Section 6.1.2 above.

6.3.3 *Environmental Impacts*

The amount of widening on SR-86 for the Signal alternative is the same as for the MSSC alternative and no additional environmental impacts are anticipated with this alternative. Please see the description in Section 6.1.3 above.

6.4 Roundabout Alternative

The following two roundabout options were studied:

Option 1

One-lane roundabout with one circulating lane, 140-foot outer diameter and 112 feet diameter of the central island. Single-lane approaches are proposed on all legs on SR-86 and Countryside Drive.

Figure 6–4 depicts the intersection geometry for the one-lane Roundabout Alternative

Option 2

Two-lane roundabout with two circulating lanes, 150-foot outer diameter and 86 feet diameter of the central island. Two-lane approaches on SR-86, and single lane approaches on Countryside Drive are proposed.

Figure 6–5 depicts the intersection geometry for the two-lane Roundabout Alternative.

As seen in *Figures 6-4* and *6-5*, the existing curvature at the south leg has been maintained to prevent improvements from exceeding the eastern right-of-way. A curve approach has been introduced for the

north leg to enhance traffic calming as vehicles approach the roundabout. Additionally, tighter exit radii have been implemented at the east leg on Countryside Drive to avoid encroaching on existing properties. The shared path meets the minimum width requirement of 8 feet in both instances, while the single-lane roundabout provides a preferred width of 10 feet.

Analysis was completed using HCM 7 methodology and Synchro (version 12) software.

The overall intersection delay and LOS is reported in *Table 5–1*. As shown in *Table 5–1*, this intersection is calculated to operate at an overall LOS A during the AM and PM peak hours with delays of 5.2 seconds and 5.6 seconds during the AM & PM peak hours respectively, with Roundabout control.

The calculated queues in all approaches are one (1) vehicle or less during the AM and PM peak hours. The storage provided in the left-turn movements on all approaches can accommodate the calculated queues.

In general, the performance of roundabouts during off-peak periods is good compared with other intersection improvement options, requiring fewer vehicles to stop or slow, though no off-peak analysis was completed at this intersection.

Appendix C contains the Existing with Willow Bend Traffic Signal Alternative intersection analysis worksheets and *Appendix D* contains the same for Year 2045 with Willow Bend traffic. The roundabout analysis worksheets also including the queues.

6.4.1 *Safety Considerations*

A roundabout is one of the options contemplated for this intersection. It may be noted that per Exhibit 10.3 Common Inscribed Circle Diameter Ranges in the Roundabout Guide, shown below, the diameter for a two-lane roundabout that accommodates STAA trucks, or equivalent of WB-62 or WB-67 trucks ranges between 140 to 180 feet.

Ideally, the entry speed for a single-lane roundabout should be no more than 20 mph and for a dual-lane roundabout should be no more than 25 mph, as indicated in Table 6-3 in the Roundabout Guide. Hence the approach speed on SR 86 needs to be reduced from 50 mph to no more than 20 or 25 mph as described above. The circulatory speed within the roundabout should be 20 mph or less for both single and dual-lane roundabouts.

The diameter assumed for a roundabout at this intersection is 165 feet, approximately in the middle of the prescribed range. The purpose and result of a roundabout is to reduce the speed of traffic on the intersecting streets. In the northbound direction, due to the existing homes on the east curb of SR 86, the center of the roundabout has to be located to the west of the intersection, providing minimum deflection at the northbound entry into the roundabout. The following conditions prevail:

- Traffic entering the roundabout from the south does not have to reduce speed since they enter and exit the roundabout at almost 90^0.

- The entry angle cannot be increased as there is not sufficient Caltrans ROW. Increasing it would require major realignment of SR 86 through Countryside Drive with acquisition of a large amount of right-of way, new easements to the IID for the relocation of the undergrounded Dogwood Lateral 2 canal and necessary eminent domain for ROW acquisition and relocation of multiple single-family homes, which would result in additional environmental impacts. ROW needs are from both the east and west of SR 86.
- Traffic entering the roundabout from the east at speeds of 15 mph or lower, has to merge with traffic traveling at almost 50 mph.
- Reducing the diameter is not ideal since, as a result, trucks will have to use the center island to negotiate the roundabout.
- A residential project is proposed at the northwest corner of the SR 86 / Countryside Drive intersection with two southbound lanes on SR 86 per the city's mobility element. This will require the two southbound lanes to merge into one lane prior to entering the one lane roundabout option. This will also require new easements to the IID for the relocation of the undergrounded Dogwood Lateral 2 canal and necessary eminent domain for ROW acquisition and relocation of multiple single-family homes, which would result in additional environmental impacts.
- Roundabouts result in an increase in single-vehicle and fixed-object crashes compared to other intersection treatments.
- Multilane roundabouts present more difficulties for individuals with blindness or low vision due to challenges in detecting gaps and determining that vehicles have yielded at crosswalks.

Exhibit 10.3. Common Inscribed Circle Diameter Ranges

Roundabout Configuration	Typical AASHTO Design Vehicle	Common ICD Range[a]
Mini-roundabout	SU-30	45 ft to 90 ft (14 m to 27 m)
Compact roundabout	BUS-40 WB-40 WB-62 or WB-67[b]	65 ft to 120 ft (20 m to 37 m)
Single-lane roundabout (non-traversable central island)	BUS-40 WB-40 WB-62 or WB-67	90 ft to 120 ft (27 m to 37 m) 100 ft to 130 ft (30 m to 40 m) 120 ft to 180 ft (37 m to 55 m)
Multilane roundabout (2 lanes circulating)[c]	WB-40 WB-62 or WB-67	135 ft to 160 ft (41 m to 49 m) 140 ft to 180 ft (43 m to 55 m)
Multilane roundabout (3 lanes circulating)[c]	WB-62 or WB-67	190 ft to 240 ft (58 m to 73 m)

Footnotes:

a. Assumes 90-degree angles between entries and no more than four legs. List of possible design vehicles is not comprehensive.

b. Serving WB-62 or larger vehicles as through movements. Right turning may require other special considerations for approach and splitter island design.

c. Common ICD ranges depend on whether the design vehicle will straddle or stay in-lane. Does not account for special vehicles or OSOWs.

- Trucks may also have to straddle the two lanes, thus disrupting the path of other vehicles through the roundabout, which is not desirable.
- The posted speed limit on SR 86 is 50 mph. The needs to slow down to 20-25 mph on the approaches to the roundabout. The reduction in speed can only be achieved by the introduction of a curve on the approaches to slow traffic speeds that would result in requiring additional right-of-way. This large reduction in the speed is not desirable and hence, a roundabout is not appropriate traffic control at this intersection.
- The center of the Roundabout is offset to the west from the SR 86 center line because of existing homes along the eastern curb of SR 86 and due to right-of-way constraints. Therefore, sufficient deflection is not provided at the entry to the roundabout from the south.

For the reasons stated above, a roundabout is not the ideal traffic control type for this intersection.

The following roundabout description of roundabouts and their functioning provided in the Roundabout Guide for, 2023 is provided for information:

> *Multilane roundabouts include at least two circulating lanes in at least a portion of the circulatory roadway. They include roundabouts with entries on one or more approaches that flare from one to two or more lanes that circulate through the roundabout. In some cases, the roundabout may have a different number of lanes on one or more approaches (e.g., two-lane entries on the major street and one-lane entries on the minor street). The geometric design includes raised splitter islands, a truck apron, a non-traversable central island, and appropriate entry path deflection.*
>
> *Multilane roundabouts have some key differences from single-lane roundabouts. They typically have higher circulating and exiting speeds than single-lane roundabouts. This is a result of their larger ICD and wider entry and exit configurations that allow vehicles to navigate larger curve radii on their travel paths through the roundabout. Circulatory roadway widths may also vary, depending on the number of lanes and the design vehicle turning requirements. A constant width is not required throughout the entire circulatory roadway, and it is desirable to provide the minimum width necessary to serve the required lane configurations within that specific portion of the roundabout.*
>
> *A multilane entry or exit also increases pedestrian crossing exposure compared with a single-lane entry or exit. Research into accessible pedestrian design has concluded that in many circumstances, additional geometric treatments, traffic control treatments, or both are needed to make the crossing accessible to all pedestrians.*
>
> *Multilane roundabouts have more conflict points (16) than single-lane roundabouts (4) because of additional lanes and the associated width between curbs, as with any larger intersection.*

Multilane roundabouts often do not achieve the same levels of crash reduction as their single-lane counterparts. Multilane roundabouts serve higher traffic volumes over more lanes compared with single-lane configurations. However, the severity of crashes is generally comparable at multilane and single-lane roundabouts (5, 6). The low speeds present in roundabouts compared with those of non-roundabout intersections reduce the frequency of severe crashes.

6.4.2 *Right-of-Way Easement Impacts*

Option 1: One-Lane Roundabout

See Section 6.1.2 for a discussion on the existing right of way along with the required highway widening outside of the roundabout footprint at SR-86 and Countryside Drive. If the proposed one-lane roundabout were implemented at the subject location, right of way would be required at the northwest and southwest quadrants of the intersection. The roundabout design concept, depicting a 140-foot inscribed diameter, will accommodate a STAA 53 design vehicle.

Since the design of the roundabout footprint would push most of the improvements to the west side of SR 86, into the proposed subdivision boundary, the developer would be required to dedicate approximately 35 feet from the edge of pavement to accommodate the roundabout improvements and necessary drainage features.

Like the prior noted alternatives, the overhead utility facilities along the west side of SR 86 will be impacted by the single lane roundabout. However, the limits of impact will be less than the other options, as the roundabout option does not require an auxiliary merge lane south of Countryside Drive. The anticipated relocation length would be approximately 900 lineal feet. The construction estimates provided in *Table 7-1* include known estimated utility relocation costs.

Option 2: Two-Lane Roundabout

See Section 6.1.2 for a discussion on the existing right of way along with the required highway widening outside of the roundabout footprint at SR-86 and Countryside Drive. If the proposed two-lane roundabout were implemented at the subject location, right of way would be required at the northwest and southwest quadrants of the intersection. The roundabout design concept, depicting a 150-foot inscribed diameter, will accommodate a STAA 53 design vehicle.

Similar to the one-lane roundabout option, since the design of the roundabout footprint would push most of the improvements to the west side of SR 86, into the proposed subdivision boundary, the developer would be required to dedicate approximately 65 feet from the edge of pavement to accommodate the roundabout improvements and necessary drainage features.

In addition, this alternative will have the same impacts and associated costs for the overhead utility relocations as noted in Option 1 above.

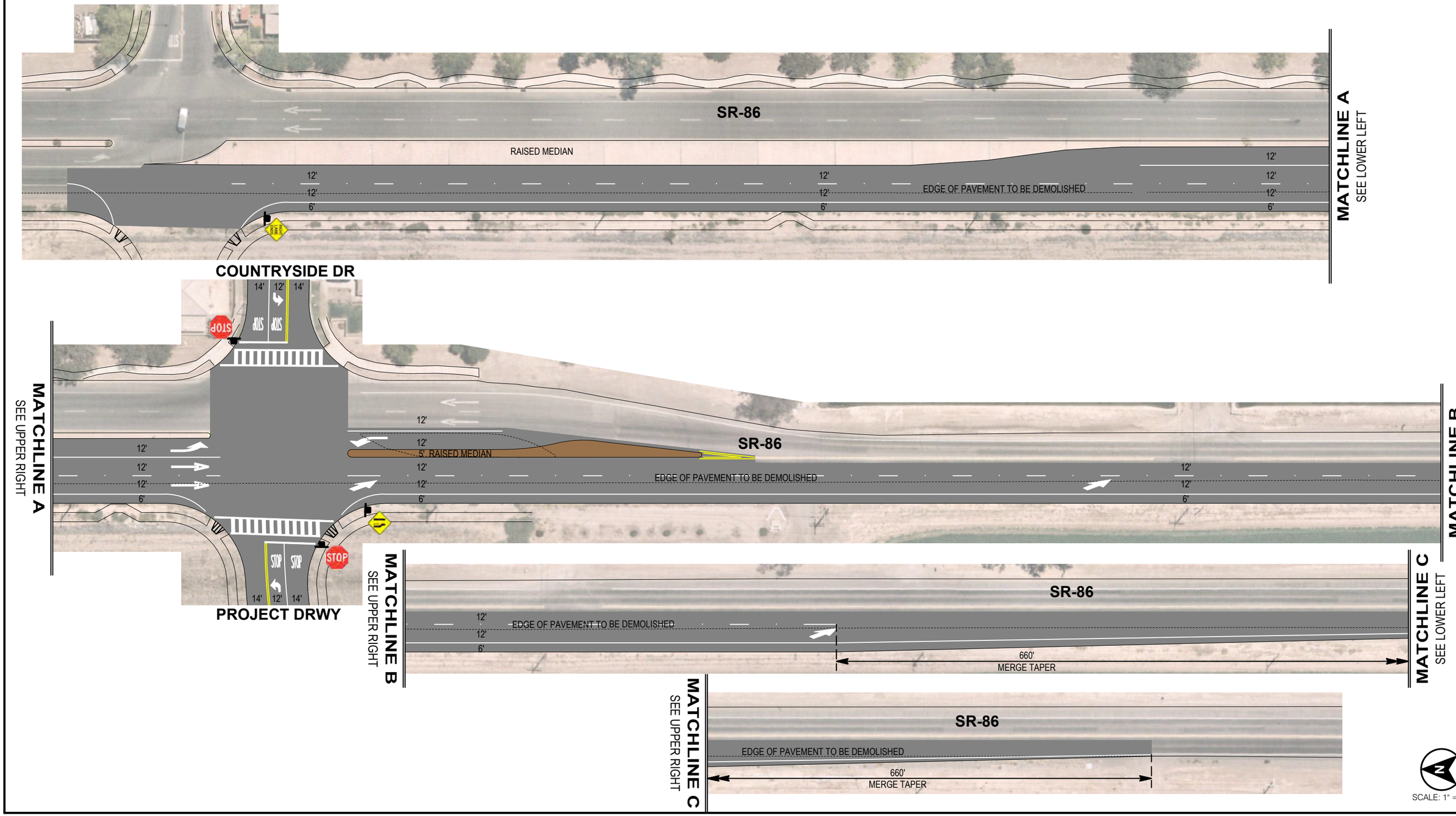
6.4.3 *Environmental Impacts*

Option 1: One-Lane Roundabout

The One-Lane Roundabout intersection improvements will require additional right of way beyond what is described in Section 6.1.3, however, all additional roundabout right of way would take away from any onsite development potential. The project does not foresee any impacts to native habitat or visual resources are expected to occur with implementation of the SR-86/Countryside Drive one-lane Roundabout option.

Option 2: Two-Lane Roundabout

The Two-Lane roundabout intersection improvements will require additional right of way beyond what is described in Section 6.1.3, however, all additional roundabout right of way would take away from any onsite development potential. The project does not foresee any impacts to native habitat or visual resources are expected to occur with implementation of the SR-86/Countryside Drive two-lane Roundabout option.



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C O N C E P T U A L O N L Y
NOT FOR CONSTRUCTION

Figure 6-1

Conceptual Plan - Two-Way Stop Control

Willow Bend

SR-86

RAISED MEDIAN

12' 12' 6' | 12' 12' 6' | 12' 12' 6'

EDGE OF PAVEMENT TO BE DEMOLISHED

MATCHLINE A
SEE LOWER LEFT

COUNTRYSIDE DR

14' 12' 14'

STOP

FLASHING W3-1

MATCHLINE A
SEE UPPER RIGHT

12' 12' 12' 6'

12' 12' 5' RAISED MEDIAN 12' 12' 6'

SR-86

EDGE OF PAVEMENT TO BE DEMOLISHED

12' 12' 6'

MATCHLINE B
SEE LOWER LEFT

PROJECT DRWY

14' 12' 14'

STOP

FLASHING R1-1

MATCHLINE B
SEE UPPER RIGHT

SR-86

12' 12' 6'

EDGE OF PAVEMENT TO BE DEMOLISHED

660'
MERGE TAPER

MATCHLINE C
SEE LOWER LEFT

MATCHLINE C
SEE UPPER RIGHT

SR-86

EDGE OF PAVEMENT TO BE DEMOLISHED

660'
MERGE TAPER

SCALE: 1" = 60'

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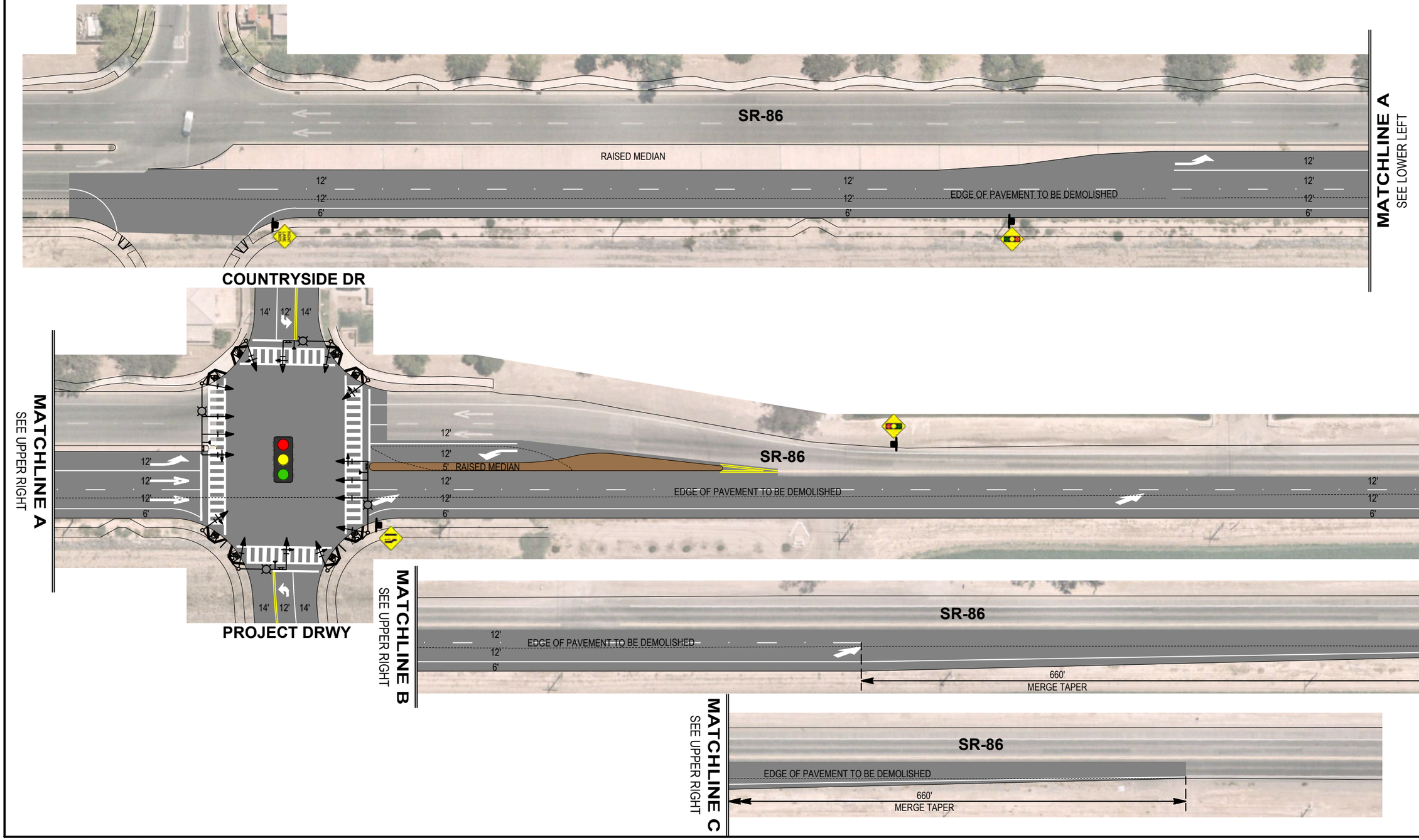
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Figure 6-2

Conceptual Plan - All-Way Stop Control

Willow Bend



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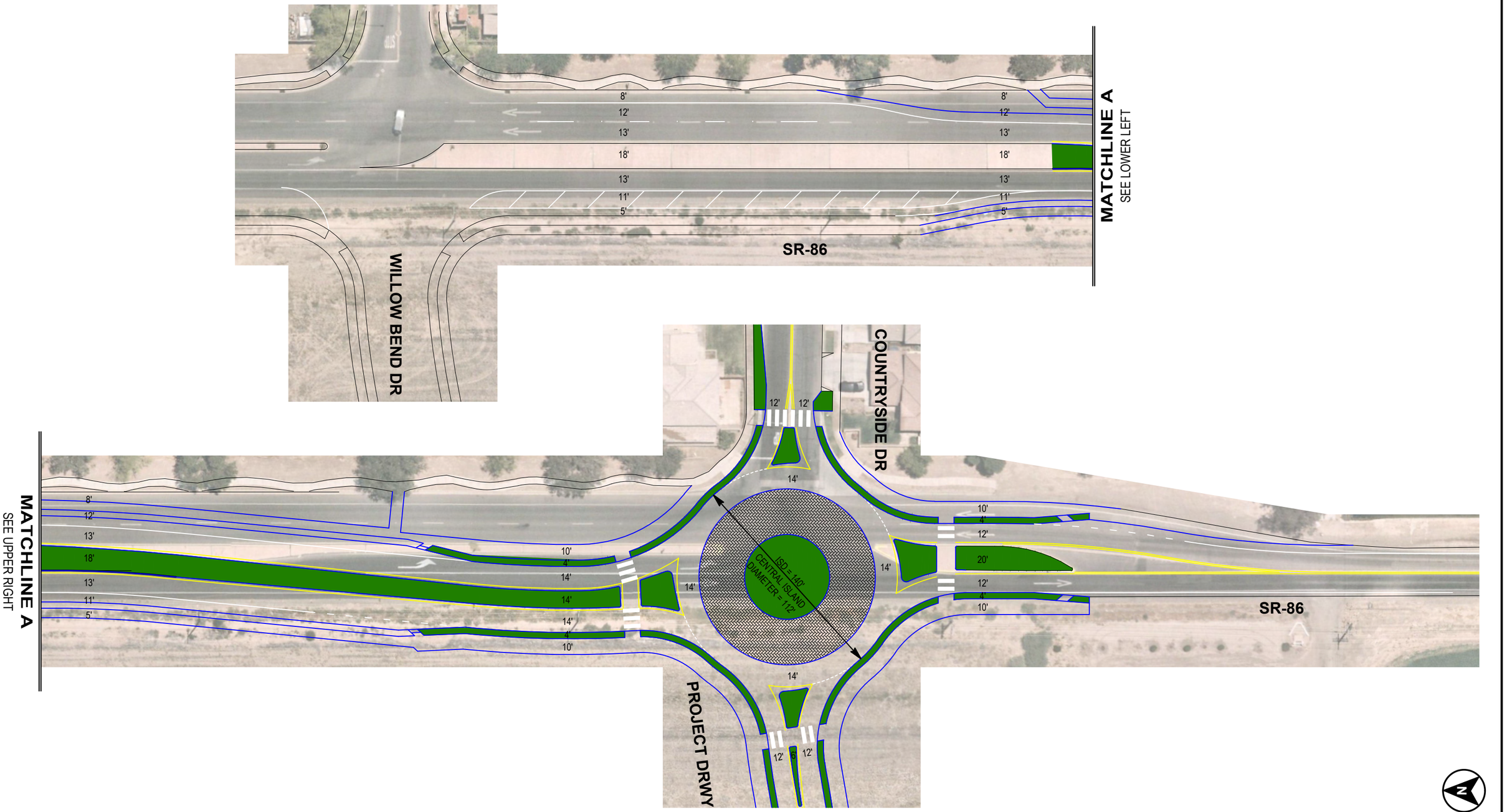
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Figure 6-3

Conceptual Plan - Signal Control

Willow Bend



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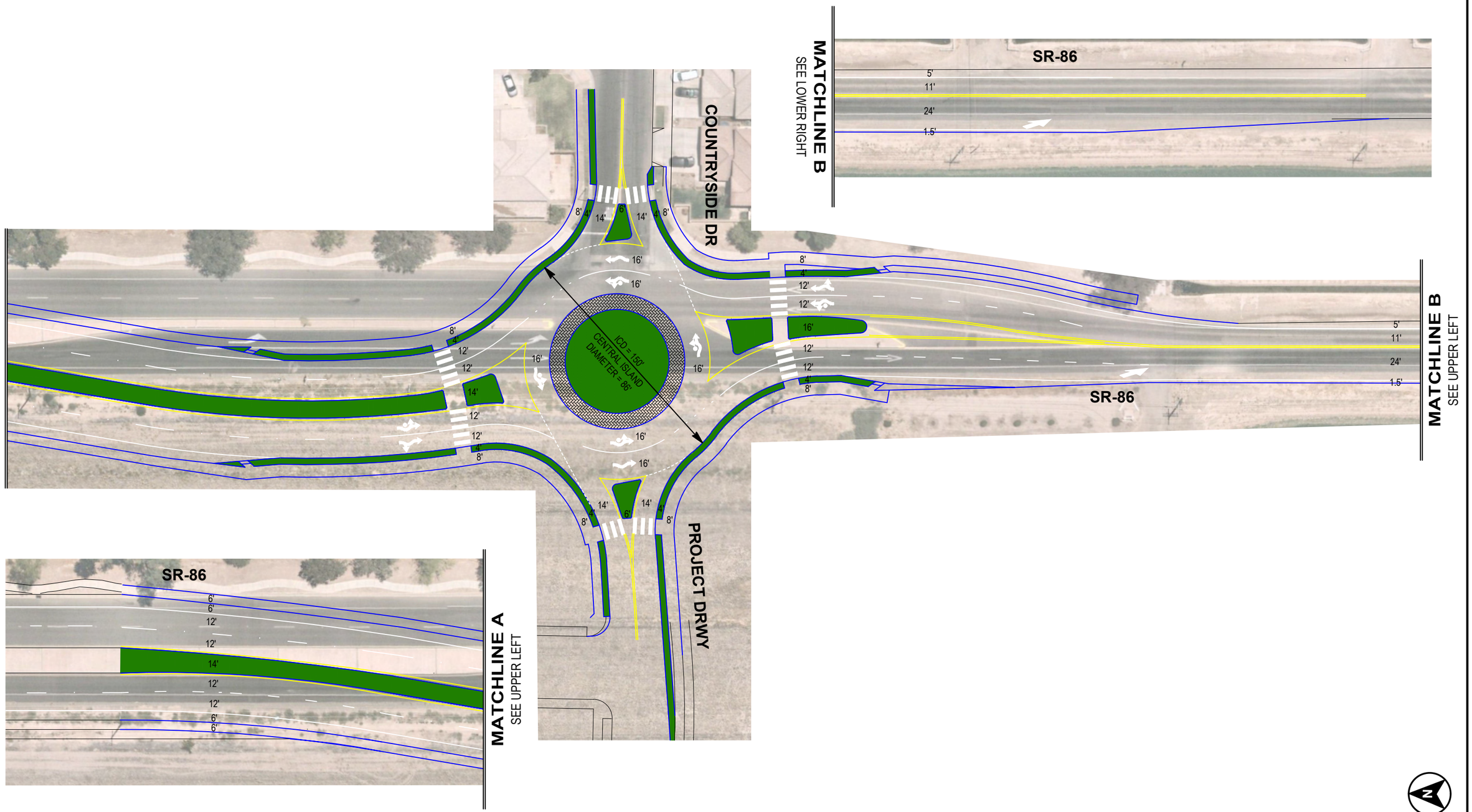
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Figure 6-4

Single-Lane Roundabout Concept Plan

Willow Bend



SCALE: 1" = 60'

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C O N C E P T U A L O N L Y
NOT FOR CONSTRUCTION

Figure 6-5

2X1 Roundabout Concept Plan

Willow Bend

7.0 SIGNAL WARRANT ANALYSIS

The following is a discussion of the various signal warrants for the SR-86 / Countryside Drive intersection for the Near-Term.

Assumptions

The SR-86 / Countryside Drive intersection is currently a three-leg intersection with no west leg. As explained in Section 3.0 Year 2045 Traffic Volumes, the Willow Bend Project will install the west leg and provide the following geometry on the Project Opening Day:

- Southbound: One left turn lane one through lane and one shared through /right lane
- Westbound: One left turn lane and one shared through / right-turn lane
- Northbound: One left-turn lane, one through and one shared through / right-turn lane
- Eastbound: One left turn lane and one shared through / right-turn lane (new west leg)

The following assumptions are made in determining the conditions at the subject intersection:

- *Approach Lanes* – One right-turn lane and one left-turn lane will be provided in the eastbound and westbound directions on Countryside Drive.

  Page 847 of the California Manual On Uniform Traffic Control Devices (MUTCD) 2014 Edition states "*for an approach with one lane for through and right-turning traffic plus a left-turn lane, if engineering judgment indicates that it should be considered a one-lane approach because the traffic using the left-turn lane is minor, the total traffic volume approaching the intersection should be applied against the signal warrants as a one-lane approach. The approach should be considered two lanes if approximately half of the traffic on the approach turns left and the left-turn lane is of sufficient length to accommodate all left-turn vehicles."*

  At this location, the project access road is a two-lane road (one lane in each direction) with dedicated left-turn and a shared through/right lanes at the intersection and it is not considered to be possible for traffic to enter SR 86 with "minimal conflict". The storage in the left-turn lane will not be sufficient to accommodate the entire left-turning traffic. Hence, this approach will function and is analyzed as a one lane approach.

- *Approach Volumes* – As stated in the MUTCD, "engineering judgment and rationale should be applied to a street approach with one left-turn lane plus a shared through/right lane. In this case, the degree of conflict of minor-street right-turn traffic with traffic on the major street should be considered. Thus, right-turn traffic should not be included in the minor-street volume if the movement enters the major street with minimal conflict. The approach should be evaluated as a one-lane approach with only the traffic volume in the through/left-turn lane considered."

  As described above, a shared through right lane and a left-turn lane is provided on the approach to SR 86, on countryside Drive. Based on the number of approach lanes and the MUTCD (previous bullet item), based on engineering judgement, a 25% reduction in right-turning traffic is assumed

since this is considered a one-lane approach (see above) and right-turning traffic has to enter a 4-lane Major Road.

7.1 Near-Term Conditions

Near-Term traffic volumes include the traffic generated by the proposed Willow Bend Project.

Warrant 1 – Eight-Hour Vehicular Volume

Methodology

The need for a traffic signal shall be considered if an engineering study finds that one of the following conditions exist for each of 8 hours of an average day:

A. The vehicles per hour given in both 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or
B. The vehicles per hour given in both 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition, the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours. If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70% columns in Table 4C-1 may be used in place of the 100 percent columns.

The subject intersection is located in an isolated community and the posted speed limit is 50 mph. Therefore the 70% criterion was used for all warrants as applicable, in this study.

Table 7–1 shows the 70% volume thresholds for two-lane (or more) approaches on the major street and one-lane approach on the minor street.

TABLE 7–1
WARRANT 1: EIGHT - HOUR VEHICULAR VOLUME: EXISTING
70% CRITERIA

Warrant 1	Vehicles Per Hour on Major Street (Total of Both Approaches)	Vehicles Per Hour on Higher-Volume Minor-Street (One Direction Only)
Condition A	420	105
Condition B	630	53

Calculations

Table 7–2 compares the actual 24-hour volumes to the minimum volumes (*Table 7–1*) required to satisfy this warrant. As seen in *Table 7–2*, the Condition A warrant volumes are met for only one hour and hence Condition A is not satisfied. Condition B warrant volumes are met for only seven (7) hours on a typical day and hence Condition B is not satisfied.

Based on the above, Warrant 1 is not satisfied in the Existing with Willow Bend Traffic condition.

TABLE 7–2
WARRANT 1: TRAFFIC VOLUME DATA: EXISTING WITH WILLOW BEND TRAFFIC
70% CRITERIA

Hour Begin	SR-86 (Major Street)	Countryside Drive (Minor Street)	1-A	1-B
0:00	38	3	N	N
1:00	22	2	N	N
2:00	35	0	N	N
3:00	53	3	N	N
4:00	84	5	N	N
5:00	208	50	N	N
6:00	316	43	N	N
7:00	619	217	Y	Y
8:00	507	64	N	N
9:00	420	42	N	N
10:00	405	55	N	N
11:00	497	39	N	N
12:00	589	55	N	Y
13:00	358	65	N	N
14:00	611	59	N	Y
15:00	756	78	N	Y
16:00	723	68	N	Y
17:00	819	85	N	Y
18:00	559	63	N	Y
19:00	375	26	N	N
20:00	306	31	N	N
21:00	234	18	N	N
22:00	144	10	N	N
23:00	61	5	N	N
Total	**8,739**	**1,086**	**1**	**7**

Warrant 2 – Four-Hour Vehicular Volume

Methodology

The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes, on the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours. If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Calculations

As explained previously, the 70% criterion applies. Therefore, Figure 4C-2 applies. ***Table 7–3*** summarizes the Warrant 2 calculations. As seen in Figure 4C-2 below, all hourly traffic volumes except two fall below the "2 Lane & 1 Lane" curve when plotted on Figure 4C-2 of the California MUTCD.

Based on the above, Warrant 2 is not satisfied for the Existing with Willow Bend Traffic condition.

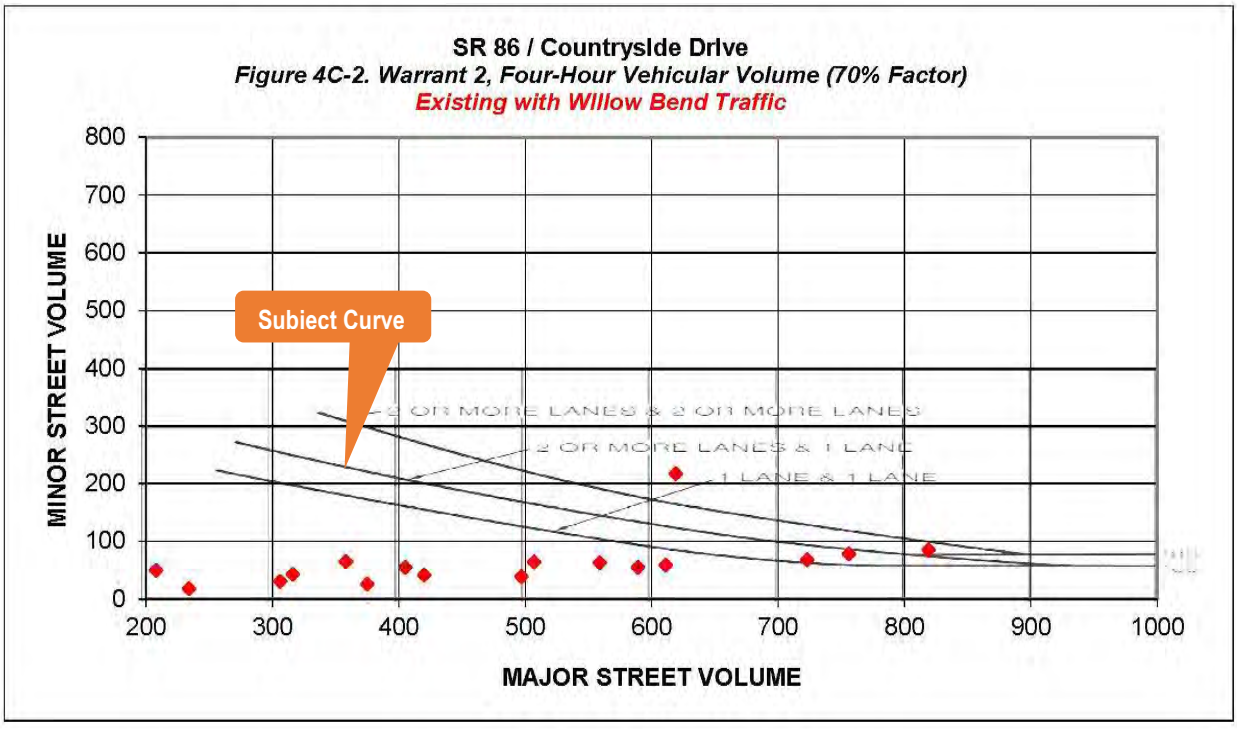


TABLE 7–3
WARRANT 2, FOUR-HOUR VEHICULAR WARRANT: EXISTING WITH WILLOW BEND TRAFFIC

Warrant 2 - Four-Hour Vehicular Warrant Satisfied * **Yes** ☐ **No** ☑

Approach Lanes	One	2 or More				
Both Approaches -Major Street		X				
Highest Approaches -Minor Street	X					

* All Plotted points fall above the curves in MUTCD Figure 4C-1 or 4C-2 **Yes** ☐ **No** ☑

Warrant 3 – Peak Hour

Methodology

The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

A. If all of the three conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:
   1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds:4 Vehicles-hours for a one-lane approach; or 5 vehicle-hours for a two-lane approach, and
   2. The volume on the same-minor street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
   3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for the intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume on the minor – street approach (one direction only) for 1 hour (or any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of Figure 4C-3 to satisfy the criteria in the second category.

Calculations

None of the three conditions of Part A are satisfied and hence Part A is not satisfied. As explained previously, the 70% criterion applies for Part B. Therefore, the Figure 4C-4 is used in place of Figure 4C-3. ***Table 7–4*** summarizes Warrant 3 calculations. As seen in *Table 7–4*, peak hour traffic volumes

fall below the curve for the appropriate number of lanes when plotted on Figure 4C-4 of the California MUTCD.

The unsignalized Existing + Willow Bend peak hour intersection analysis indicates LOS C (22.9 seconds delay) during the AM peak hour and LOS B (19.2 seconds delay) during the PM peak hour. The calculated 95th percentile queue in the eastbound left-turn lane is 99 feet or approximately 4 cars length in the AM peak hour and 25 feet or approximately 1 car length in the PM peak hour. The Existing AM and PM peak hour intersection analysis worksheets are included in ***Appendix D***.

Based on the above, and *Table 7–4*, Warrant 3 is not satisfied for the Existing with Willow Bend Traffic condition.

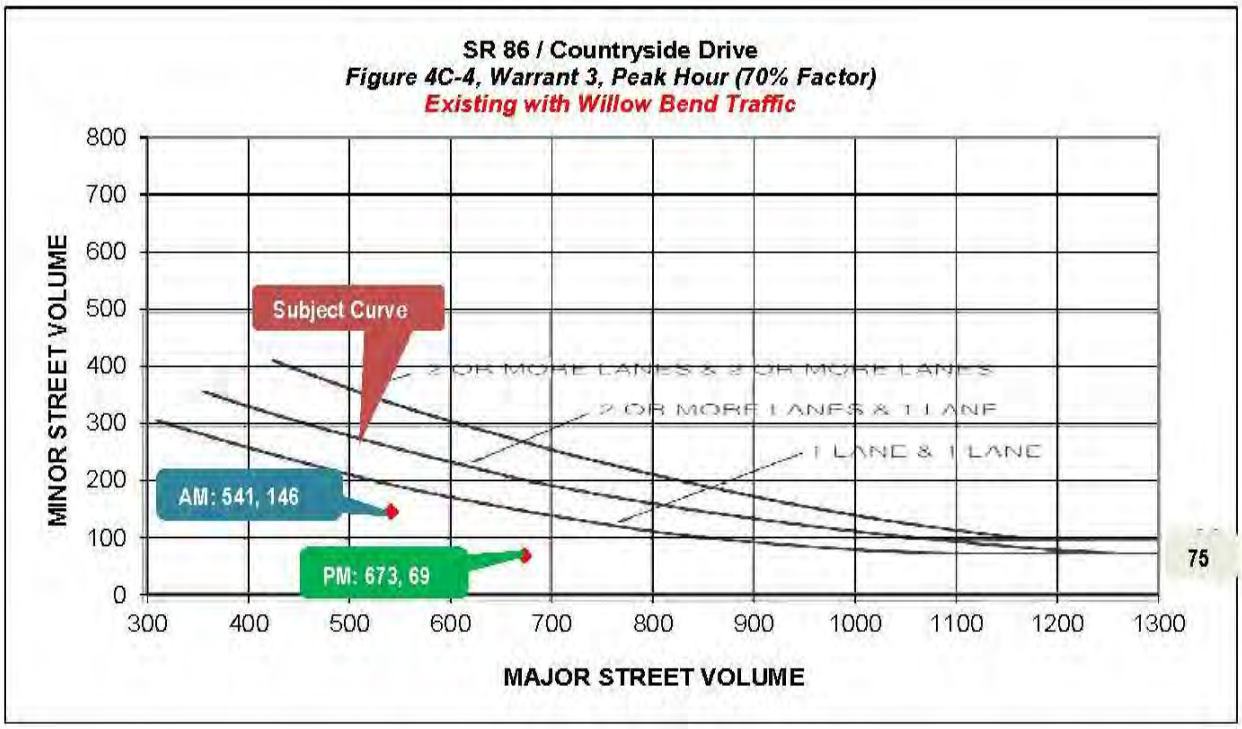


TABLE 7–4
WARRANT 3: PEAK - HOUR: EXISTING

Warrant 3 – Peak Hour	Part A or Part B Satisfied	**Yes** ☐	**No** ☑
Part A (All Parts 1, 2, and 3 below must be satisfied)	Satisfied	**Yes** ☐	**No** ☑
1. The total delay experienced for traffic on one minor-street approach controlled by a STOP sign equal or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND		**Yes** ☐	**No** ☑
2. The volume on the same-minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND		**Yes** ☑	**No** ☐
3. The entering volume serviced during the hour equals or exceeds 800 vph for the intersections with four or more approaches or 650 vehicles per hour for intersections with three approaches.		**Yes** ☐	**No** ☑
Part B	Satisfied	**Yes** ☐	**No** ☑

Approach Lanes	**One**	**2 or More**				
Both Approaches -Major Street	X					
Highest Approaches -Minor Street	X					

The plotted points for vehicles per hour on Major streets (both approaches) and the corresponding per hour higher volume vehicle minor street approach (one direction only) for one hour (any consecutive 15-minute period) fall above the applicable curves in MUTCD Figure 4C-3 or 4C-4.

Warrant 4 – Pedestrian Volume

Methodology

The need for a traffic control signal at an intersection or midblock shall be considered if an engineering study finds that both of the following criteria are met:

A. The pedestrian volume crossing the major street at an intersection or midblock location during an average day is 100 or more for each of any 4 hours or 190 or more during any 1 hour; and
B. There are fewer than 60 gaps per hour in the traffic stream of adequate length to allow pedestrians to cross during the same period when the pedestrian volume criterion is satisfied. Where there is a divided street having a median of sufficient width for pedestrians to wait, the requirement applies separately to each direction of vehicular traffic.

The Pedestrian Volume signal warrant shall not be applied at locations where the distance to the nearest traffic signal along the major street is less than 300 feet unless the proposed traffic control signal will not restrict the progressive movement of traffic. If this warrant is met and a traffic control

signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads conforming to requirements set forth in Chapter 4E of the MUTCD.

Calculations

As explained previously, pedestrians are not a major factor at this intersection and therefore, Warrant 4 is not satisfied for the Existing with Willow Bend Traffic condition.

Warrant 5 – School Crossing

Methodology

The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the children are using the crossing less than the number of minutes in the same period (see Section 7A.03) and there are a minimum of 20 students during the highest crossing hour. Before a decision is made to install a traffic control signal, consideration should be given to the implementation of other remedial measures, such as warning signs, flashers, school speed zones, school crossing guards, or a grade-separated crossing. The School Crossing signal warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 90 m (300 ft.) unless the proposed traffic control signal will not restrict the progressive movement of traffic.

Calculations

There are no schools in the vicinity of the proposed intersection and therefore this warrant does not apply. Thus, Warrant 5 is not satisfied for the Existing with Willow Bend Traffic condition.

Warrant 6 – Coordinated Signal System

Methodology

The need for a traffic control signal shall be considered if an engineering study finds that, one of the following criteria are met:

A. On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.
B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

Calculations

The proposed intersection will not improve coordination along the SR-86 corridor and therefore, this warrant does not apply. Thus, Warrant 6 is not satisfied for the Existing with Willow Bend Traffic condition.

Warrant 7 – Crash Experience

Methodology

The need for a traffic control signal shall be considered if an engineering study finds that, all of the following criteria are met:

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and,
B. Five or more reported crashes of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and
C. For each of 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1, or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Calculations

A total of one (1) collision occurred on SR-86 at Countryside Drive based on collision data provided by the Statewide Integrated Traffic Records System (SWITRS) over a six-year period from January 1, 2016, through December 31, 2021. This collision involved a vehicle hitting an object, causing injury to one person. There are no fatalities reported at this location. Based on this discussion, Warrant 7 is not satisfied for the Existing with Willow Bend Traffic condition.

Warrant 8 – Roadway Network

Methodology

The need for a traffic signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:

A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday, or,

B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).

A major route as used in this signal warrant shall have one or more of the following characteristics.

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, or traversing a City; or
C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.

Calculations

The above thresholds are not met at this intersection. Therefore, Warrant 8 is not satisfied for the Existing with Willow Bend Traffic condition.

Warrant 9, Intersection Near a Grade Crossing

Methodology

The need for a traffic control signal shall be considered if an engineering study finds that both of the following criteria are met:

A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and
B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13.

Calculations

No grade crossing exists in the vicinity of this intersection. Therefore, Warrant 9 is not satisfied for the Existing with Willow Bend Traffic condition.

7.2 Long-Term (Year 2045) Conditions

Traffic counts cannot be counted at the SR 86 / Countryside Drive intersection in the Year 2045. Hence, Figure 4C-103(CA) Traffic Signal Warrants Worksheet (Average Traffic Estimate Form) based on Year 2045 ADT volumes was utilized to determine if Signal Warrants are satisfied in the Year 2045 with Willow Bend Traffic. The following three warrants are not satisfied:

- Condition A – Minimum vehicular Volume Warrant

- Condition B, Interruption of Continuous Traffic
- The combination of Conditions A & B

Therefore, signal warrants are not satisfied at the SR-86 / Countryside Drive intersection in the Existing With Willow Bend Traffic and the Year 2045 with Willow Bend Traffic conditions.

Figure 4C-103(CA) Traffic Signal Warrants Worksheet (Average Traffic Estimate Form) based on Year 2045 ADT volumes is included in *Appendix E*.

7.3 Summary of Warrants Satisfied

Table 7–9 summarizes the warrants satisfied at the proposed SR-86 / Countryside Drive intersection for the two analysis scenarios. As seen in *Table 7–9*, none of the warrants are satisfied in the Near-Term conditions. In the Long-Term (Year 2045) conditions, Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume) and Warrant 3 (Peak Hour Volume) are also not satisfied.

TABLE 7–9
SIGNAL WARRANT ANALYSIS SUMMARY

Warrant	Near-Term (With Willow Bend Traffic)	Long-Term (With Willow Bend Traffic)
1. Eight-Hour Vehicular Volume	Not satisfied	Not satisfied per Figure 4C-103(CA). See *Appendix E.*
2. Four-Hour Vehicular Volume	Not satisfied	
3. Peak hour Volume	Not satisfied	
4. Pedestrian Volume	Not satisfied	
5. School Crossing	Not satisfied	
6. Coordinated Signal System	Not satisfied	
7. Crash Experience	Not satisfied	
8. Roadway Network	Not satisfied	
9. Intersection Near a Grade Crossing	Not satisfied	

8.0 PROJECT COSTS

This section will provide an analysis of the various costs associated with the four traffic control alternatives analyzed in this report.

8.1 Construction Cost

The construction cost for the four alternatives, including necessary widening to accommodate the required turn lanes, is summarized in ***Table 8–1***. The project costs include costs for widening, traffic signals / stop signs, and also relocation of utilities such as gas, electric, water, sewer, stormwater, or streams of water.

TABLE 8–1
ALTERNATIVES CONSTRUCTION COSTS

Alternative	Construction Cost
2-Way Stop Pavement Widening	$1,140,000
4-Way Stop Pavement Widening	$1,155,000
Traffic Signal w/ Pavement Widening	$1,590,000
-Lane Roundabout w/ corners Widening	$2,014,000
2-Lane Roundabout w/ corners Widening	$2,478,000

For the above estimated construction costs, the overhead utility relocations for the 2-Way Stop, 4-Way Stop, and Traffic Signal were estimated at $160,000 and both roundabout alternatives were estimated at $70,000.

8.2 Operation and Maintenance Cost

Life cycle costs include the initial construction costs, user costs and benefits, maintenance costs and rehabilitation costs. The 20-year Stop-Control Condition, Traffic Signal Maintenance and Roundabout Costs are provided in ***Tables 8–2*** through ***8–4***. It should be noted that the 20-year cost is determined assuming a 2% maintenance cost increase per year for 20 years.

TABLE 8–2
20-YEAR STOP-CONTROL CONDITION MAINTENANCE COSTS (INTERSECTION LIGHTING)

Cost Item	Lifespan (Years)	Replacement Cost	Cost Per Year	20-Year Cost
Electrical Costs	N/A	N/A	$1,750	$42,500
Maintenance	N/A	N/A	$2,200	$53,500
Overheard Safety Lighting Luminaires (x4)	15	$15,000 [a]	$1,000	$24,300
Street Light Poles (x4)	50	$14,000 [a]	$280	$6,800
Total:				**$127,100**

Footnotes:

a. Denotes total cost

TABLE 8–3
20-YEAR TRAFFIC SIGNAL MAINTENANCE COSTS

Cost Item	Lifespan (Years)	Replacement Cost	Cost Per Year	20-Year Cost
Electrical Costs	N/A	N/A	$1,750	$42,500
Maintenance	N/A	N/A	$2,200	$53,500
Controller Cabinet & Equipment	20	$44,000	$2,200	$53,500
Video Detection Cameras	15	$16,500	$1,100	$26,700
Vehicle Detection Loops	10	$6,800	$680	$16,500
Vehicle LED Indications	10	$15,000	$1,500	$36,500
Pedestrian LED Indications	10	$9,500	$950	$23,100
Internally Illuminated Street Name Signs (IISNS)	15	$4,050 [a]	$270	$6,600
Overhead Safety Lighting Luminaires	15	$15,000 [a]	$1,000	$24,300
Wiring	30	$45,000	$1,500	$36,500
Signal Poles & Mast Arms	50	$370,000 [a]	$7,400	$179,800
Total:				**$499,500**

Footnotes:

a. Denotes total cost

TABLE 8–4
20-YEAR ROUNDABOUT MAINTENANCE COSTS (INTERSECTION LIGHTING)

Cost Item	Lifespan (Years)	Replacement Cost	Cost Per Year	20-Year Cost
Electrical Costs	N/A	N/A	$1,750	$42,500
Maintenance	N/A	N/A	$2,200	$53,500
Overhead Safety Lighting Luminaires	15	$45,000 [a]	$3,000	$72,900
Street Light Poles	50	$42,000 [a]	$840	$20,400
Total:				**$189,300**

Footnotes:

a. Denotes total cost

9.0 SUMMARY OF FINDINGS

The purpose of the ICE process is to objectively evaluate and screen intersection control alternatives at the SR-86 / Countryside Drive intersection. As part of the screening process, three intersection control alternatives were evaluated and analyzed in addition to the existing MSSC condition, an AWSC alternative, a Traffic Signal alternative and a Dual-Lane yield controlled Roundabout alternative. The operations, safety, and right-of-way impacts were considered in each alternative.

According to the analysis results, all intersection control alternatives are forecast to operate at LOS D or better during the peak hours except with the MSSC alternative, which is calculated to operate at LOS E during the PM peak hour in the long-term. The calculated 95th percentile queue lengths can be accommodated in all traffic control alternatives.

As described previously, signal warrants are not met in the Existing with Willow Bend Traffic or in the Year 2045 with Willow Bend Traffic condition and therefore, a traffic signal is not recommended.

Even though this intersection operates with the lowest delay and LOS with the roundabout alternative and the number of conflict points are the least, the roundabout traffic control alternative is not recommended for the following reasons:

- Traffic entering the roundabout from the south does not have to reduce speed since they enter and exit the roundabout at almost 90^0. This would be considered a dangerous condition.
- To achieve a reduction in the approach speed, a curved approach needs to be introduced in the north leg to ensure traffic calming as vehicles approach the roundabout. This adjustment will require additional right-of-way on the east side, on the developer's property, requiring approximately 35 feet for the single-lane roundabout and 65 feet for the dual lane roundabout from the edge of pavement. Reducing the diameter is not recommended since, trucks would need to use the center island to negotiate the roundabout.
- Trucks will have to straddle the two lanes, thus disrupting the path of other vehicles through the roundabout, which is not desirable.

The AWSC traffic control alternative adequately serves this intersection for the following reasons:

- The intersection operates at an adequate LOS C.
- All-Way-Stop-Control improvements can be made within the existing right-of-way.
- This traffic control will eliminate vehicle / pedestrian conflicts since every vehicle has to stop before proceeding through the intersection.
- The cost of the AWSC alternative is between 50% to 60% of the cost of the traffic signal and the two roundabout alternatives.
- At a STOP sign, all traffic must stop and then proceed. Thus, traffic collisions occur at low speeds, resulting in lower impact collisions.

Table 9–1 is a comparison of the various parameters for each alternative.

It is recommended that the AWSC Alternative be implemented, based on the comparison of the ICE performance measures in *Table 9–1* and the safety considerations listed above.

TABLE 9–1
ALTERNATIVES PERFORMANCE SUMMARY TABLE

Performance Measure	Minor- Street Stop Control	All-Way Stop Control	Traffic Signal	Roundabout (1-Lane)	Roundabout (2-Lane)	Comments
Traffic Analysis						
Intersection Delay Analysis – All approaches LOS D or better (LOS A rated at a 5, LOS E rated at a 1).						Table 5–1
Queue Analysis – Adequate queue storage?	Yes	Yes	Yes	Yes	Yes	Table 5–2
Traffic Safety Analysis						
Vehicle Conflicts [a] – The number of potential conflict points for all movements based on intersection geometry.	40	40	40	**8**	**14**	-
Bicycle Conflicts [a] – The number of potential conflict points for all movements based on intersection geometry.	38	38	38	**8**	**12**	-
Pedestrian Conflicts [a] – The number of potential conflict points for all movements based on intersection geometry.	28	28	28	**8**	**12**	-
Design						
Right-of-Way (ROW)	26 ft of ROW for a distance of 1.680 feet along the west side of SR-86 south of Willow Bend Drive to 1,680 feet south of Countryside Drive	26 ft of ROW for a distance of 1.680 feet along the west side of SR-86 south of Willow Bend Drive to 1,680 feet south of Countryside Drive	26 ft of ROW for a distance of 1.680 feet along the west side of SR-86 south of Willow Bend Drive to 1,680 feet south of Countryside Drive	26 ft of ROW for a distance of 1.680 feet along the west side of SR-86 south of Willow Bend Drive to 1,680 feet south of Countryside Drive and 35-foot right-of-way on the developer's property, from the edge of pavement	26 ft of ROW for a distance of 1.680 feet along the west side of SR-86 south of Willow Bend Drive to 1,680 feet south of Countryside Drive and 65-foot right-of-way on the developer's property, from the edge of pavement	Section 6

CONTINUED ON THE NEXT PAGE

TABLE 9–1 (CONTINUED)
ALTERNATIVES PERFORMANCE SUMMARY TABLE

Performance Measure	Two-Way Stop Control	All-Way Stop Control	Traffic Signal Alternative	Roundabout (1-Lane)	Roundabout (2-Lane)	Comments
CONTINUED FROM THE PREVIOUS PAGE						
Non-Standard Features – Based on the Highway Design Manual (HDM).	0	**0**	**0**	**0**	**0**	Figure 6-1 through Figure 6-5
Truck Accommodations – Serves design vehicle for all movements?	Yes	Yes	Yes	Yes	Yes	
Project Costs						
Construction Cost	$1.140,000	$1,155,000	$1,590,000	$2,014,400	$2,478,000	Tables 8-1 through 8–4
20-Year Operations & Maintenance Cost	$127,200	$127,200	$499,500	$189,300	$189,300	
TOTAL COST	$1,267,200	$1,282,200	$2,089,500	$2,203,700	$2,667,300	
Total Performance Measures Met	No	Yes	Yes	Yes	Yes	

Footnote:

a. NCHRP Research Report 1043 Guide for Roundabouts.

LINSCOTT LAW & GREENSPAN
engineers

TECHNICAL APPENDICES
SR-86 / COUNTRYSIDE DRIVE INTERSECTION (WILLOW BEND)

El Centro, California
November 8, 2024

LLG Ref. 3-23-3841

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APPENDICES

APPENDIX

A. Existing Traffic Collision Data

B. Intersection and Queue Analysis Worksheets - Existing

C. Intersection and Queue Analysis Worksheets – Existing With Willow Bend

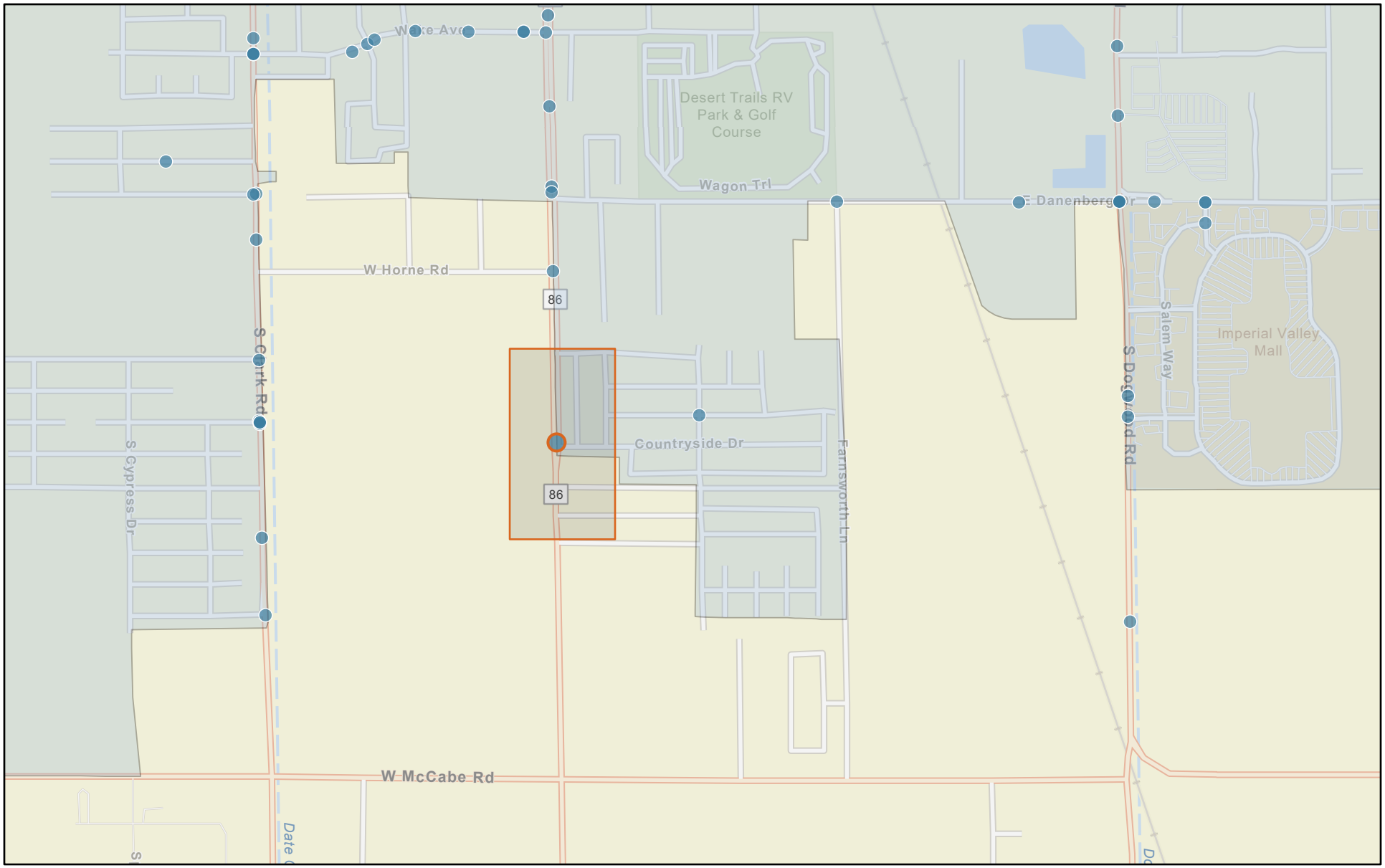
D. Intersection and Queue Analysis Worksheets – Year 2045 With Willow Bend

E. Figure 4C-103(CA), MUTCD

APPENDIX A

EXISTING TRAFFIC COLLISION DATA

SWITRS GIS Map: Imperial, El Centro 01/01/2016 - 12/31/2021



12/21/2023

SWITRS

Crashes

Crashes (Selected)

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

California State Parks, Esri, HERE, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management,

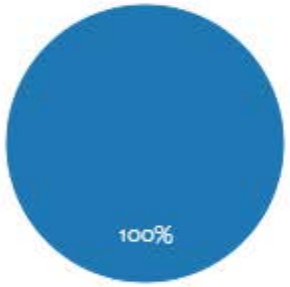
TIMS (https://tims.berkeley.edu), SafeTREC, UC Berkeley

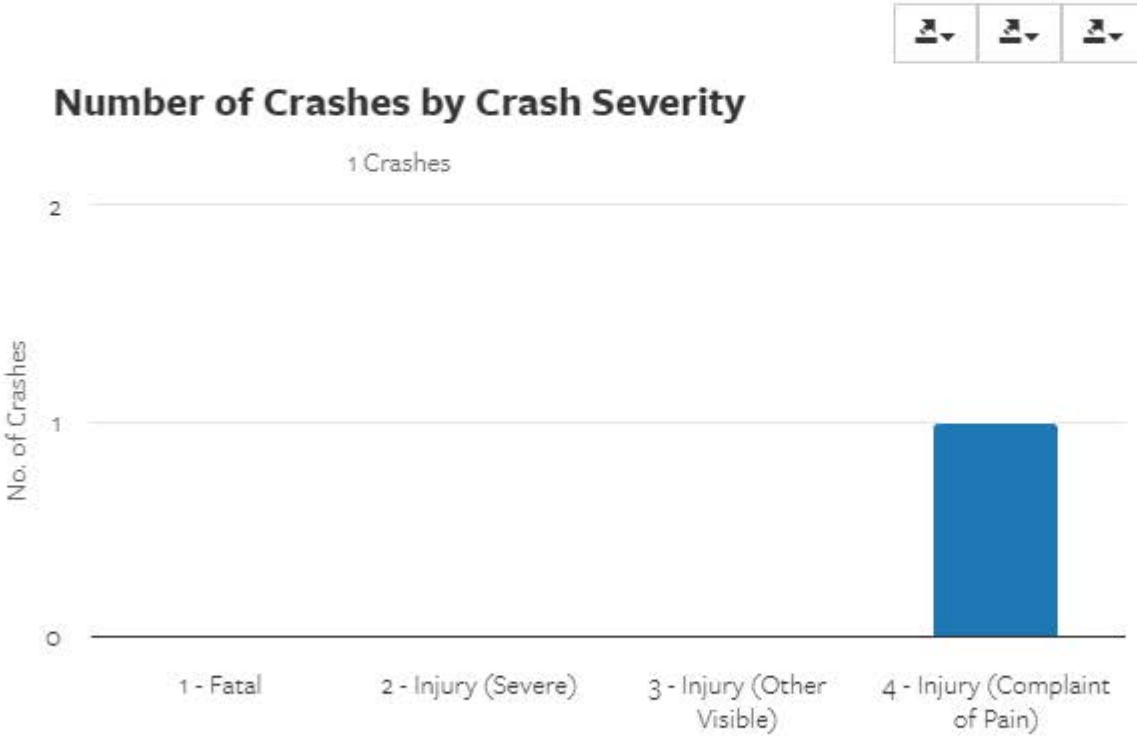
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Crash Summary by All Selected Crashes

Crash Summary | Victim Summary | Ped Crash Summary

By Crash Severity





Show Zero

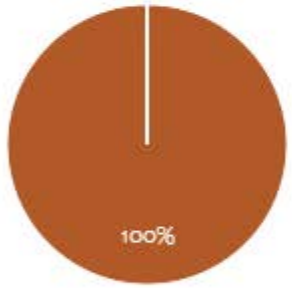
Crash Severity	Count	%
4 - Injury (Complaint of Pain)	1	0.16%

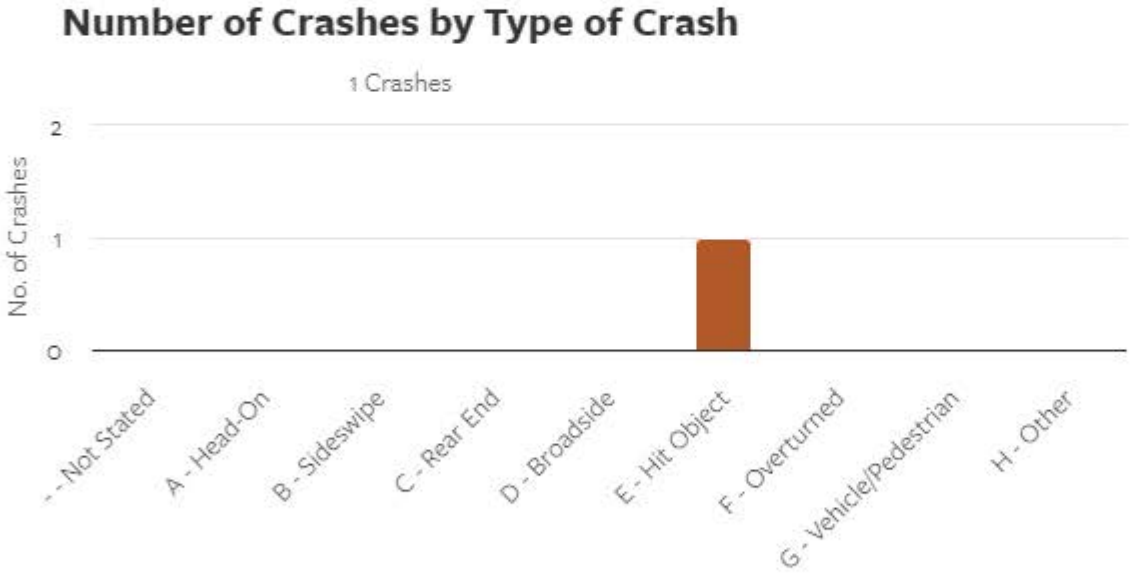
Crash Summary by All Selected Crashes

Crash Summary | Victim Summary | Ped Crash Summary

By Crash Severity

By Crash Type







Show Zero

Type of Crash	Count	%
E - Hit Object	1	100.00%

APPENDIX B

INTERSECTION AND QUEUE ANALYSIS WORKSHEETS - EXISTING

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	114	274	27	32	189
Future Vol, veh/h	56	114	274	27	32	189
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	124	298	29	35	205

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	588	164	0	0	327	0
Stage 1	313	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	456	853	-	-	1231	-
Stage 1	716	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	443	853	-	-	1231	-
Mov Cap-2 Maneuver	443	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	749	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	12.67	0	1.16
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	654	1231	-
HCM Lane V/C Ratio	-	-	0.283	0.028	-
HCM Control Delay (s/veh)	-	-	12.7	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	65	171	25	89	340
Future Vol, veh/h	16	65	171	25	89	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	71	186	27	97	370

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	762	107	0	0	213	0
Stage 1	199	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	356	928	-	-	1356	-
Stage 1	815	-	-	-	-	-
Stage 2	569	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	331	928	-	-	1356	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	528	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	11.04	0	1.63
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	684	1356	-
HCM Lane V/C Ratio	-	-	0.129	0.071	-
HCM Control Delay (s/veh)	-	-	11	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

APPENDIX C

INTERSECTION AND QUEUE ANALYSIS WORKSHEETS - EXISTING WITH WILLOW BEND

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	5	5	56	5	114	4	274	27	32	194	10
Future Vol, veh/h	60	5	5	56	5	114	4	274	27	32	194	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	5	5	61	5	124	4	298	29	35	211	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	595	622	216	604	613	313	222	0	0	327	0	0
Stage 1	286	286	-	321	321	-	-	-	-	-	-	-
Stage 2	309	336	-	283	291	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	416	403	824	410	408	728	1347	-	-	1232	-	-
Stage 1	721	675	-	691	652	-	-	-	-	-	-	-
Stage 2	701	642	-	724	671	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	330	390	824	389	395	728	1347	-	-	1232	-	-
Mov Cap-2 Maneuver	330	390	-	389	395	-	-	-	-	-	-	-
Stage 1	701	656	-	688	649	-	-	-	-	-	-	-
Stage 2	575	640	-	693	652	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	17.64	12.77	0.1	1.09
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1347	-	-	330	530	389	703	1232	-	-
HCM Lane V/C Ratio	0.003	-	-	0.198	0.021	0.156	0.184	0.028	-	-
HCM Control Delay (s/veh)	7.7	-	-	18.6	11.9	16	11.3	8	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0.5	0.7	0.1	-	-

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	5	5	56	5	114	4	274	27	32	194	10
Future Vol, veh/h	60	5	5	56	5	114	4	274	27	32	194	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	5	5	61	5	124	4	298	29	35	211	11
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay, s/veh	10.5	10	14	11.3
HCM LOS	B	A	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	91%	0%	50%	0%	4%	0%	95%
Vol Right, %	0%	9%	0%	50%	0%	96%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	301	60	10	56	119	32	204
LT Vol	4	0	60	0	56	0	32	0
Through Vol	0	274	0	5	0	5	0	194
RT Vol	0	27	0	5	0	114	0	10
Lane Flow Rate	4	327	65	11	61	129	35	222
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.007	0.512	0.127	0.019	0.115	0.202	0.061	0.354
Departure Headway (Hd)	6.197	5.629	7.011	6.147	6.818	5.631	6.285	5.745
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	578	641	511	582	526	636	570	628
Service Time	3.927	3.359	4.756	3.892	4.558	3.37	4.017	3.477
HCM Lane V/C Ratio	0.007	0.51	0.127	0.019	0.116	0.203	0.061	0.354
HCM Control Delay, s/veh	9	14.1	10.8	9	10.4	9.8	9.4	11.6
HCM Lane LOS	A	B	B	A	B	A	A	B
HCM 95th-tile Q	0	2.9	0.4	0.1	0.4	0.8	0.2	1.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	5	5	56	5	114	4	274	27	32	194	10
Future Volume (veh/h)	60	5	5	56	5	114	4	274	27	32	194	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1856	1870	1856	1856	1856	1856	1870
Adj Flow Rate, veh/h	65	5	5	64	5	130	4	311	31	36	220	11
Peak Hour Factor	0.92	0.92	0.92	0.88	0.92	0.88	0.92	0.88	0.88	0.88	0.88	0.92
Percent Heavy Veh, %	2	2	2	3	2	3	2	3	3	3	3	2
Cap, veh/h	84	66	66	132	6	168	9	975	97	80	1112	56
Arrive On Green	0.05	0.08	0.08	0.07	0.11	0.11	0.01	0.59	0.59	0.05	0.63	0.63
Sat Flow, veh/h	1781	858	858	1767	59	1535	1781	1654	165	1767	1751	88
Grp Volume(v), veh/h	65	0	10	64	0	135	4	0	342	36	0	231
Grp Sat Flow(s),veh/h/ln	1781	0	1716	1767	0	1594	1781	0	1819	1767	0	1839
Q Serve(g_s), s	3.4	0.0	0.5	3.3	0.0	7.7	0.2	0.0	8.9	1.9	0.0	4.9
Cycle Q Clear(g_c), s	3.4	0.0	0.5	3.3	0.0	7.7	0.2	0.0	8.9	1.9	0.0	4.9
Prop In Lane	1.00		0.50	1.00		0.96	1.00		0.09	1.00		0.05
Lane Grp Cap(c), veh/h	84	0	132	132	0	175	9	0	1072	80	0	1167
V/C Ratio(X)	0.77	0.00	0.08	0.48	0.00	0.77	0.43	0.00	0.32	0.45	0.00	0.20
Avail Cap(c_a), veh/h	219	0	332	340	0	419	105	0	1072	397	0	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.1	0.0	40.1	41.6	0.0	40.5	46.4	0.0	9.7	43.5	0.0	7.1
Incr Delay (d2), s/veh	13.8	0.0	0.2	2.7	0.0	7.0	27.7	0.0	0.8	3.9	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.2	1.5	0.0	3.3	0.2	0.0	3.3	0.9	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.8	0.0	40.3	44.3	0.0	47.6	74.1	0.0	10.5	47.4	0.0	7.5
LnGrp LOS	E		D	D		D	E		B	D		A
Approach Vol, veh/h		75			199			346			267	
Approach Delay, s/veh		55.5			46.5			11.2			12.9	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	60.1	12.0	12.2	5.0	64.4	8.9	15.3
Change Period (Y+Rc), s	5.0	5.0	5.0	* 5	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	21.6	43.4	18.0	* 18	5.5	59.4	11.5	24.6
Max Q Clear Time (g_c+I1), s	13.9	10.9	5.3	2.5	2.2	6.9	5.4	9.7
Green Ext Time (p_c), s	0.0	2.0	0.1	0.0	0.0	1.3	0.1	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	23.4
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	75	190	331	257
Demand Flow Rate, veh/h	76	193	338	262
Vehicles Circulating, veh/h	313	374	107	71
Vehicles Exiting, veh/h	20	71	282	496
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	5.3	5.1	4.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	R	R	LTR	R	LTR	R
Assumed Moves	R	R	LT	R	LT	R
RT Channelized						
Lane Util	1.000	1.000	0.911	0.089	0.958	0.042
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	76	193	308	30	251	11
Cap Entry Lane, veh/h	1088	1033	1223	1297	1264	1337
Entry HV Adj Factor	0.986	0.984	0.981	0.967	0.979	1.000
Flow Entry, veh/h	75	190	302	29	246	11
Cap Entry, veh/h	1073	1017	1200	1253	1238	1337
V/C Ratio	0.070	0.187	0.252	0.023	0.198	0.008
Control Delay, s/veh	4.0	5.3	5.3	3.1	4.6	2.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	1	1	0	1	0

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	75	190	331	257
Demand Flow Rate, veh/h	76	193	338	262
Vehicles Circulating, veh/h	313	374	107	71
Vehicles Exiting, veh/h	20	71	282	496
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.3	5.9	5.5	4.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	R	R	R	R
Assumed Moves	R	R	R	R
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	76	193	338	262
Cap Entry Lane, veh/h	1003	942	1237	1283
Entry HV Adj Factor	0.986	0.984	0.979	0.980
Flow Entry, veh/h	75	190	331	257
Cap Entry, veh/h	988	927	1212	1258
V/C Ratio	0.076	0.205	0.273	0.204
Control Delay, s/veh	4.3	5.9	5.5	4.6
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	5	4	16	5	65	12	171	25	89	343	33
Future Vol, veh/h	40	5	4	16	5	65	12	171	25	89	343	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	5	4	17	5	71	13	186	27	97	373	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	799	823	391	795	828	199	409	0	0	213	0	0
Stage 1	584	584	-	226	226	-	-	-	-	-	-	-
Stage 2	215	239	-	569	602	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	304	308	658	306	307	842	1150	-	-	1357	-	-
Stage 1	497	498	-	777	717	-	-	-	-	-	-	-
Stage 2	788	707	-	507	489	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	251	283	658	274	281	842	1150	-	-	1357	-	-
Mov Cap-2 Maneuver	251	283	-	274	281	-	-	-	-	-	-	-
Stage 1	462	462	-	768	709	-	-	-	-	-	-	-
Stage 2	708	699	-	462	454	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	20.94	12.04	0.47	1.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1150	-	-	251	379	274	737	1357	-	-
HCM Lane V/C Ratio	0.011	-	-	0.173	0.026	0.063	0.103	0.071	-	-
HCM Control Delay (s/veh)	8.2	-	-	22.3	14.7	19	10.4	7.9	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0.2	0.3	0.2	-	-

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	5	4	16	5	65	12	171	25	89	343	34
Future Vol, veh/h	40	5	4	16	5	65	12	171	25	89	343	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	5	4	17	5	71	13	186	27	97	373	37
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay, s/veh	10.1	9.4	10.6	13.9
HCM LOS	B	A	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	87%	0%	56%	0%	7%	0%	91%
Vol Right, %	0%	13%	0%	44%	0%	93%	0%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	196	40	9	16	70	89	377
LT Vol	12	0	40	0	16	0	89	0
Through Vol	0	171	0	5	0	5	0	343
RT Vol	0	25	0	4	0	65	0	34
Lane Flow Rate	13	213	43	10	17	76	97	410
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.022	0.318	0.085	0.017	0.034	0.123	0.153	0.583
Departure Headway (Hd)	5.974	5.38	7.043	6.219	6.978	5.811	5.686	5.12
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	593	660	511	579	516	620	626	697
Service Time	3.771	3.177	4.748	3.924	4.68	3.513	3.466	2.899
HCM Lane V/C Ratio	0.022	0.323	0.084	0.017	0.033	0.123	0.155	0.588
HCM Control Delay, s/veh	8.9	10.7	10.4	9	9.9	9.3	9.5	14.9
HCM Lane LOS	A	B	B	A	A	A	A	B
HCM 95th-tile Q	0.1	1.4	0.3	0.1	0.1	0.4	0.5	3.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	4	16	5	65	12	171	25	89	343	34
Future Volume (veh/h)	40	5	4	16	5	65	12	171	25	89	343	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1856	1870	1856	1856	1856	1856	1870
Adj Flow Rate, veh/h	43	5	4	18	5	74	13	194	28	101	390	37
Peak Hour Factor	0.92	0.92	0.92	0.88	0.92	0.88	0.92	0.88	0.88	0.88	0.88	0.92
Percent Heavy Veh, %	2	2	2	3	2	3	2	3	3	3	3	2
Cap, veh/h	65	52	41	134	10	148	27	902	130	131	1061	101
Arrive On Green	0.04	0.05	0.05	0.08	0.10	0.10	0.02	0.57	0.57	0.07	0.64	0.64
Sat Flow, veh/h	1781	962	770	1767	101	1499	1781	1577	228	1767	1667	158
Grp Volume(v), veh/h	43	0	9	18	0	79	13	0	222	101	0	427
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1767	0	1601	1781	0	1805	1767	0	1826
Q Serve(g_s), s	2.1	0.0	0.4	0.8	0.0	4.2	0.6	0.0	5.4	5.0	0.0	9.9
Cycle Q Clear(g_c), s	2.1	0.0	0.4	0.8	0.0	4.2	0.6	0.0	5.4	5.0	0.0	9.9
Prop In Lane	1.00		0.44	1.00		0.94	1.00		0.13	1.00		0.09
Lane Grp Cap(c), veh/h	65	0	93	134	0	158	27	0	1032	131	0	1162
V/C Ratio(X)	0.66	0.00	0.10	0.13	0.00	0.50	0.47	0.00	0.22	0.77	0.00	0.37
Avail Cap(c_a), veh/h	210	0	363	376	0	488	130	0	1032	495	0	1162
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.4	0.0	40.2	38.5	0.0	38.1	43.6	0.0	9.3	40.6	0.0	7.7
Incr Delay (d2), s/veh	10.7	0.0	0.4	0.4	0.0	2.4	12.1	0.0	0.5	9.1	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.2	0.4	0.0	1.7	0.4	0.0	2.0	2.4	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.1	0.0	40.6	38.9	0.0	40.6	55.7	0.0	9.8	49.7	0.0	8.6
LnGrp LOS	D		D	D		D	E		A	D		A
Approach Vol, veh/h		52			97			235			528	
Approach Delay, s/veh		50.9			40.3			12.3			16.5	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	56.1	11.8	9.8	5.9	61.8	7.8	13.8
Change Period (Y+Rc), s	5.0	5.0	5.0	* 5	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	25.6	37.8	19.0	* 19	6.5	56.8	10.5	27.2
Max Q Clear Time (g_c+I1), s	7.0	7.4	2.8	2.4	2.6	11.9	4.1	6.2
Green Ext Time (p_c), s	0.2	1.2	0.0	0.0	0.0	2.7	0.0	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	19.9
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	5.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	52	93	226	507
Demand Flow Rate, veh/h	53	94	231	517
Vehicles Circulating, veh/h	496	247	148	35
Vehicles Exiting, veh/h	56	132	401	306
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	3.9	4.4	6.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	R	R	LTR	R	LTR	R
Assumed Moves	R	R	LT	R	LT	R
RT Channelized						
Lane Util	1.000	1.000	0.879	0.121	0.926	0.074
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	53	94	203	28	479	38
Cap Entry Lane, veh/h	932	1151	1178	1252	1307	1378
Entry HV Adj Factor	0.979	0.988	0.982	0.964	0.980	0.974
Flow Entry, veh/h	52	93	199	27	470	37
Cap Entry, veh/h	912	1138	1156	1207	1281	1342
V/C Ratio	0.057	0.082	0.172	0.022	0.366	0.028
Control Delay, s/veh	4.5	3.9	4.6	3.2	6.3	2.9
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	0	2	0

Intersection	
Intersection Delay, s/veh	5.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	52	93	226	507
Demand Flow Rate, veh/h	53	94	231	517
Vehicles Circulating, veh/h	496	247	148	35
Vehicles Exiting, veh/h	56	132	401	306
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.0	4.2	4.8	6.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	R	R	R	R
Assumed Moves	R	R	R	R
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	53	94	231	517
Cap Entry Lane, veh/h	832	1073	1187	1331
Entry HV Adj Factor	0.979	0.988	0.980	0.980
Flow Entry, veh/h	52	93	226	507
Cap Entry, veh/h	815	1060	1162	1305
V/C Ratio	0.064	0.088	0.195	0.388
Control Delay, s/veh	5.0	4.2	4.8	6.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	2

APPENDIX D

INTERSECTION AND QUEUE ANALYSIS WORKSHEETS – YEAR 2045 WITH WILLOW BEND

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	5	5	72	5	146	4	351	35	41	247	10
Future Vol, veh/h	60	5	5	72	5	146	4	351	35	41	247	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	5	5	78	5	159	4	382	38	45	268	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	756	791	274	770	778	401	279	0	0	420	0	0
Stage 1	363	363	-	409	409	-	-	-	-	-	-	-
Stage 2	393	428	-	360	368	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	325	322	765	318	328	649	1283	-	-	1140	-	-
Stage 1	656	625	-	619	596	-	-	-	-	-	-	-
Stage 2	632	584	-	658	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	231	308	765	297	314	649	1283	-	-	1140	-	-
Mov Cap-2 Maneuver	231	308	-	297	314	-	-	-	-	-	-	-
Stage 1	630	600	-	617	594	-	-	-	-	-	-	-
Stage 2	471	583	-	622	597	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	24.72	15.55	0.08	1.14
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1283	-	-	231	439	297	627	1140	-	-
HCM Lane V/C Ratio	0.003	-	-	0.282	0.025	0.263	0.262	0.039	-	-
HCM Control Delay (s/veh)	7.8	-	-	26.6	13.4	21.4	12.8	8.3	-	-
HCM Lane LOS	A	-	-	D	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.1	1	1	0.1	-	-

Intersection	
Intersection Delay, s/veh	16.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	5	5	72	5	146	4	351	35	41	247	10
Future Vol, veh/h	60	5	5	72	5	146	4	351	35	41	247	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	5	5	78	5	159	4	382	38	45	268	11
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay, s/veh	11.5	11.4	21.4	13.9
HCM LOS	B	B	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	91%	0%	50%	0%	3%	0%	96%
Vol Right, %	0%	9%	0%	50%	0%	97%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	386	60	10	72	151	41	257
LT Vol	4	0	60	0	72	0	41	0
Through Vol	0	351	0	5	0	5	0	247
RT Vol	0	35	0	5	0	146	0	10
Lane Flow Rate	4	420	65	11	78	164	45	279
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.008	0.698	0.14	0.021	0.16	0.28	0.083	0.478
Departure Headway (Hd)	6.558	5.987	7.704	6.834	7.348	6.148	6.695	6.159
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	600	462	520	486	581	533	581
Service Time	4.318	3.747	5.498	4.627	5.126	3.926	4.461	3.926
HCM Lane V/C Ratio	0.007	0.7	0.141	0.021	0.16	0.282	0.084	0.48
HCM Control Delay, s/veh	9.4	21.5	11.8	9.8	11.5	11.3	10.1	14.5
HCM Lane LOS	A	C	B	A	B	B	B	B
HCM 95th-tile Q	0	5.6	0.5	0.1	0.6	1.1	0.3	2.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	5	5	72	5	146	4	351	35	41	247	10
Future Volume (veh/h)	60	5	5	72	5	146	4	351	35	41	247	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1856	1870	1856	1856	1856	1856	1870
Adj Flow Rate, veh/h	65	5	5	82	5	166	4	399	40	47	281	11
Peak Hour Factor	0.92	0.92	0.92	0.88	0.92	0.88	0.92	0.88	0.88	0.88	0.88	0.92
Percent Heavy Veh, %	2	2	2	3	2	3	2	3	3	3	3	2
Cap, veh/h	84	88	88	128	6	206	9	936	94	92	1096	43
Arrive On Green	0.05	0.10	0.10	0.07	0.13	0.13	0.01	0.57	0.57	0.05	0.62	0.62
Sat Flow, veh/h	1781	858	858	1767	47	1546	1781	1653	166	1767	1773	69
Grp Volume(v), veh/h	65	0	10	82	0	171	4	0	439	47	0	292
Grp Sat Flow(s),veh/h/ln	1781	0	1716	1767	0	1592	1781	0	1819	1767	0	1842
Q Serve(g_s), s	3.5	0.0	0.5	4.4	0.0	10.1	0.2	0.0	13.4	2.5	0.0	7.0
Cycle Q Clear(g_c), s	3.5	0.0	0.5	4.4	0.0	10.1	0.2	0.0	13.4	2.5	0.0	7.0
Prop In Lane	1.00		0.50	1.00		0.97	1.00		0.09	1.00		0.04
Lane Grp Cap(c), veh/h	84	0	176	128	0	212	9	0	1030	92	0	1139
V/C Ratio(X)	0.77	0.00	0.06	0.64	0.00	0.81	0.43	0.00	0.43	0.51	0.00	0.26
Avail Cap(c_a), veh/h	188	0	321	329	0	426	94	0	1030	384	0	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.6	0.0	39.2	43.7	0.0	40.7	48.0	0.0	12.0	44.7	0.0	8.4
Incr Delay (d2), s/veh	13.9	0.0	0.1	5.3	0.0	7.1	27.8	0.0	1.3	4.4	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.2	2.1	0.0	4.3	0.2	0.0	5.2	1.2	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.4	0.0	39.3	48.9	0.0	47.8	75.8	0.0	13.3	49.0	0.0	8.9
LnGrp LOS	E		D	D		D	E		B	D		A
Approach Vol, veh/h		75			253			443			339	
Approach Delay, s/veh		56.8			48.2			13.8			14.5	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	59.8	12.0	14.9	5.0	64.8	9.1	17.9
Change Period (Y+Rc), s	5.0	5.0	5.0	* 5	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	21.0	43.4	18.0	* 18	5.1	59.8	10.2	25.9
Max Q Clear Time (g_c+I1), s	4.5	15.4	6.4	2.5	2.2	9.0	5.5	12.1
Green Ext Time (p_c), s	0.1	2.7	0.1	0.0	0.0	1.7	0.0	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.8
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	5.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	75	242	424	324
Demand Flow Rate, veh/h	76	247	433	330
Vehicles Circulating, veh/h	399	460	117	89
Vehicles Exiting, veh/h	20	90	358	618
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.3	6.4	5.8	5.2
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	R	R	LTR	R	LTR	R
Assumed Moves	R	R	LT	R	LT	R
RT Channelized						
Lane Util	1.000	1.000	0.910	0.090	0.967	0.033
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	76	247	394	39	319	11
Cap Entry Lane, veh/h	1012	960	1212	1286	1244	1317
Entry HV Adj Factor	0.986	0.979	0.981	0.974	0.980	1.000
Flow Entry, veh/h	75	242	386	38	313	11
Cap Entry, veh/h	997	941	1189	1253	1219	1317
V/C Ratio	0.075	0.257	0.325	0.030	0.256	0.008
Control Delay, s/veh	4.3	6.4	6.1	3.1	5.3	2.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	1	1	0	1	0

Intersection	
Intersection Delay, s/veh	6.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	75	242	424	324
Demand Flow Rate, veh/h	76	247	433	330
Vehicles Circulating, veh/h	399	460	117	89
Vehicles Exiting, veh/h	20	90	358	618
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.7	7.4	6.4	5.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	R	R	R	R
Assumed Moves	R	R	R	R
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	76	247	433	330
Cap Entry Lane, veh/h	919	863	1225	1260
Entry HV Adj Factor	0.986	0.979	0.980	0.981
Flow Entry, veh/h	75	242	424	324
Cap Entry, veh/h	905	845	1200	1236
V/C Ratio	0.083	0.286	0.354	0.262
Control Delay, s/veh	4.7	7.4	6.4	5.3
LOS	A	A	A	A
95th %tile Queue, veh	0	1	2	1

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	5	4	20	5	83	12	219	32	114	438	33
Future Vol, veh/h	40	5	4	20	5	83	12	219	32	114	438	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	225	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	5	4	22	5	90	13	238	35	124	476	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1009	1041	494	1008	1041	255	512	0	0	273	0	0
Stage 1	742	742	-	282	282	-	-	-	-	-	-	-
Stage 2	267	299	-	727	760	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	219	230	575	219	230	783	1053	-	-	1290	-	-
Stage 1	408	422	-	725	678	-	-	-	-	-	-	-
Stage 2	739	666	-	416	415	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	169	205	575	190	205	783	1053	-	-	1290	-	-
Mov Cap-2 Maneuver	169	205	-	190	205	-	-	-	-	-	-	-
Stage 1	368	382	-	716	670	-	-	-	-	-	-	-
Stage 2	640	658	-	368	375	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	30.7	14.03	0.39	1.58
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1053	-	-	169	288	190	675	1290	-	-
HCM Lane V/C Ratio	0.012	-	-	0.258	0.034	0.115	0.142	0.096	-	-
HCM Control Delay (s/veh)	8.5	-	-	33.6	18	26.4	11.2	8.1	-	-
HCM Lane LOS	A	-	-	D	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	0.1	0.4	0.5	0.3	-	-

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	5	4	20	5	83	12	219	32	114	438	34
Future Vol, veh/h	40	5	4	20	5	83	12	219	32	114	438	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	5	4	22	5	90	13	238	35	124	476	37
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay, s/veh	10.8	10.4	12.8	21.3
HCM LOS	B	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	87%	0%	56%	0%	6%	0%	93%
Vol Right, %	0%	13%	0%	44%	0%	94%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	251	40	9	20	88	114	472
LT Vol	12	0	40	0	20	0	114	0
Through Vol	0	219	0	5	0	5	0	438
RT Vol	0	32	0	4	0	83	0	34
Lane Flow Rate	13	273	43	10	22	96	124	513
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.023	0.438	0.092	0.018	0.045	0.167	0.205	0.771
Departure Headway (Hd)	6.372	5.776	7.603	6.774	7.462	6.279	5.964	5.409
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	562	625	471	528	480	571	603	672
Service Time	4.104	3.508	5.354	4.525	5.208	4.024	3.687	3.132
HCM Lane V/C Ratio	0.023	0.437	0.091	0.019	0.046	0.168	0.206	0.763
HCM Control Delay, s/veh	9.3	13	11.1	9.7	10.6	10.3	10.2	24
HCM Lane LOS	A	B	B	A	B	B	B	C
HCM 95th-tile Q	0.1	2.2	0.3	0.1	0.1	0.6	0.8	7.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	4	20	5	83	12	219	32	114	438	34
Future Volume (veh/h)	40	5	4	20	5	83	12	219	32	114	438	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1856	1870	1856	1856	1856	1856	1870
Adj Flow Rate, veh/h	43	5	4	23	5	94	13	249	36	130	498	37
Peak Hour Factor	0.92	0.92	0.92	0.88	0.92	0.88	0.92	0.88	0.88	0.88	0.88	0.92
Percent Heavy Veh, %	2	2	2	3	2	3	2	3	3	3	3	2
Cap, veh/h	65	51	41	132	8	147	27	886	128	164	1099	82
Arrive On Green	0.04	0.05	0.05	0.07	0.10	0.10	0.02	0.56	0.56	0.09	0.64	0.64
Sat Flow, veh/h	1781	962	770	1767	81	1517	1781	1577	228	1767	1705	127
Grp Volume(v), veh/h	43	0	9	23	0	99	13	0	285	130	0	535
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1767	0	1597	1781	0	1805	1767	0	1832
Q Serve(g_s), s	2.2	0.0	0.5	1.1	0.0	5.5	0.7	0.0	7.6	6.6	0.0	13.5
Cycle Q Clear(g_c), s	2.2	0.0	0.5	1.1	0.0	5.5	0.7	0.0	7.6	6.6	0.0	13.5
Prop In Lane	1.00		0.44	1.00		0.95	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	65	0	92	132	0	155	27	0	1014	164	0	1181
V/C Ratio(X)	0.67	0.00	0.10	0.17	0.00	0.64	0.48	0.00	0.28	0.79	0.00	0.45
Avail Cap(c_a), veh/h	164	0	340	345	0	479	106	0	1014	441	0	1181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	41.5	39.9	0.0	40.0	45.0	0.0	10.5	40.9	0.0	8.2
Incr Delay (d2), s/veh	11.2	0.0	0.5	0.6	0.0	4.3	12.2	0.0	0.7	8.2	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.2	0.5	0.0	2.3	0.4	0.0	2.9	3.2	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.0	0.0	42.0	40.6	0.0	44.3	57.2	0.0	11.2	49.1	0.0	9.5
LnGrp LOS	E		D	D		D	E		B	D		A
Approach Vol, veh/h		52			122			298			665	
Approach Delay, s/veh		52.8			43.6			13.2			17.2	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	56.7	11.9	9.9	5.9	64.4	7.8	14.0
Change Period (Y+Rc), s	5.0	5.0	5.0	* 5	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	23.6	41.4	18.0	* 18	5.5	59.4	8.5	27.6
Max Q Clear Time (g_c+I1), s	8.6	9.6	3.1	2.5	2.7	15.5	4.2	7.5
Green Ext Time (p_c), s	0.3	1.7	0.0	0.0	0.0	3.6	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	20.6
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	6.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	52	117	286	637
Demand Flow Rate, veh/h	53	119	292	650
Vehicles Circulating, veh/h	634	300	175	40
Vehicles Exiting, veh/h	56	167	512	379
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.1	4.3	5.0	7.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	R	R	LTR	R	LTR	R
Assumed Moves	R	R	LT	R	LT	R
RT Channelized						
Lane Util	1.000	1.000	0.877	0.123	0.942	0.058
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	53	119	256	36	612	38
Cap Entry Lane, veh/h	828	1100	1149	1224	1301	1373
Entry HV Adj Factor	0.979	0.982	0.981	0.972	0.981	0.974
Flow Entry, veh/h	52	117	251	35	600	37
Cap Entry, veh/h	811	1081	1128	1190	1277	1337
V/C Ratio	0.064	0.108	0.223	0.029	0.470	0.028
Control Delay, s/veh	5.1	4.3	5.2	3.3	7.7	2.9
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	0	3	0

Intersection	
Intersection Delay, s/veh	6.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	52	117	286	637
Demand Flow Rate, veh/h	53	119	292	650
Vehicles Circulating, veh/h	634	300	175	40
Vehicles Exiting, veh/h	56	167	512	379
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.9	4.7	5.5	7.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	R	R	R	R
Assumed Moves	R	R	R	R
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	53	119	292	650
Cap Entry Lane, veh/h	723	1016	1154	1325
Entry HV Adj Factor	0.979	0.982	0.980	0.981
Flow Entry, veh/h	52	117	286	637
Cap Entry, veh/h	708	998	1132	1299
V/C Ratio	0.073	0.117	0.253	0.491
Control Delay, s/veh	5.9	4.7	5.5	7.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	3

APPENDIX E

FIGURE 4C-103(CA), MUTCD

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

COUNT DATE _____

_____ _____ _____ _____ CALC _____ DATE _____
DIST CO RTE PM CHK _____ DATE _____

Major St: SR 86 Critical Approach Speed _____ mph
Minor St: Countryside Road Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... [X]
or
In built up area of isolated community of < 10,000 population..... [ ] } **RURAL (R)**

[ ] **URBAN (U)**

(Based on Estimated Average Daily Traffic - See Note)

URBAN X RURAL

CONDITION A - Minimum Vehicular Volume

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1	1
2 or More	1
2 or More	2 or More
1	2 or More
10,450	2,700

Minimum Requirements EADT

Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Urban	Rural	Urban	Rural
8,000	5,600	2,400	1,680
9,600	6,720	2,400	1,680
9,600	6,720	3,200	2,240
8,000	5,600	3,200	2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street
1	1
2 or More	1
2 or More	2 or More
1	2 or More

Vehicles Per Day on Major Street (Total of Both Approaches) / Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)

Urban	Rural	Urban	Rural
12,000	8,400	1,200	850
14,400	10,080	1,200	850
14,400	10,080	1,600	1,120
12,000	8,400	1,600	1,120

Combination of CONDITIONS A + B

Satisfied _____ Not Satisfied X

No one condition satisfied, but following conditions fulfilled 80% or more..... _____ (A) _____ (B)

2 CONDITIONS 80% | 2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

EXHIBIT Q

Notice of Public Hearing

NOTICE OF PUBLIC HEARING & SCHEDULED HEARING DATE

This notice is to advise you, the recipient of this notice, that the EC 1-24 Willow Bend Subdivision Annexation to the City of El Centro will be considered by the Imperial County Local Agency Formation Commission (LAFCo) and will be heard on the date and time listed below. As an interested person or agency, you may comment on this annexation by submitting written documentation to LAFCo or appearing at the public hearing. You are not required to attend this meeting; it is simply for your information.

Meeting Date:	February 27, 2025
Meeting Time:	09:30 a.m.
Meeting Location:	El Centro Board Chambers 1275 W. Main Street, El Centro, CA 92243
Description:	Public Hearing and related action to consider the EC 1-24 Willow Bend Subdivision Annexation to the City of El Centro
Staff Contact:	Tyler Salcido, LAFCo Executive Officer 1122 W. State Street, Suite D, El Centro, CA 92243 (760) 353-4115 tylers@iclafco.com www.iclafco.com
Project ID and Name:	EC 1-24 Willow Bend Subdivision Annexation
Project APN:	054-370-012
Project Applicant:	Martin D. Coyne, Willow Bend Homes, LLC
Project Location:	Southwest Corner of HWY 86 and Countryside Drive in El Centro, CA
Project Description:	The project is the annexation of approximately 37.05 acres to the City of El Centro to bring 120 budget-friendly (not low-income) single-family residential homes to the community at the Willow Bend Subdivision. The community will also have a 1.37-acre park with a bus stop.

EXHIBIT R

Draft LAFCo Resolution 2025-XX

IMPERIAL LOCAL AGENCY FORMATION COMMISSION

February 27, 2025

RESOLUTION #2025-XX OF THE LOCAL AGENCY FORMATION COMMISSION OF THE COUNTY OF IMPERIAL APPROVING THE WILLOW BEND SUBDIVISION ANNEXATION TO THE CITY OF EL CENTRO, ENTITLED EC 1-24, APN (054-370-012).

RESOLVED, by the Local Agency Formation Commission of the County of Imperial, State of California, that:

WHEREAS, a proposal for the annexation of uninhabited territory to the City of El Centro within the sphere of influence in Imperial County was filed with this Commission and the Executive Officer of this Commission pursuant to Title 5, Division 3, commencing with Section 56000 of the Government Code; and

WHEREAS, the owners of land within a ½ mile radius of the proposed annexation have been made aware of the annexation by mail and have been given the opportunity to comment and support or oppose the annexation; and

WHEREAS, the Executive Officer of LAFCo has reviewed and prepared a report on the proposed annexation; and

WHEREAS, the Executive Officer's report on the proposed annexation contains the factors required by Section 56668 of the Government Code for a review of a proposal; and

WHEREAS, on February 27, 2025, the Commission met, discussed, and voted to approve the Willow Bend Subdivision Annexation to the City of El Centro, entitled EC 1-24, APN (054-370-012); and

WHEREAS, the City of El Centro and the Imperial County provided LAFCO with the following documentation authorizing the annexation:

- City Resolution # 25-09 approving the annexation
- City Resolution # 24-98 approving a master tax and fiscal impact agreement
- City Resolution # 25-07 adopting an addendum to EIR
- City Ordinance # 25-01 amending the zoning map
- City Resolution # 25-08 revising and updating conditions
- Imperial County Minute Order # 26 approving a master tax sharing and fiscal impact agreement
- Imperial County Resolution # 2024-148 approving a master tax sharing and fiscal impact agreement
- Imperial County master tax sharing and fiscal impact agreement

NOW, THEREFORE, BE IT DETERMINED, ORDERED AND RESOLVED as follows:

1. Certify the CEQA document as prepared and certified by the City of El Centro.

2. Make the finding that this project with the conditions imposed herein (or as modified) complies with the provisions of the Cortese-Knox-Hertzberg Reorganization Act of 2000 and the Imperial LAFCo policy and procedures.

3. Make the findings pursuant to Government Code Section 56375 that:
   A. The project has been pre-zoned under the City of El Centro's current zoning ordinance.

   B. The project is prohibited from being "re-zoned" for two years following annexation recordation.

DRAFT

C. The project is contiguous to the City of El Centro, does not create an island, and is a logical extension of the city within the sphere of influence, and an urban plan area.

4. The annexation is approved subject to the following conditions:
   A. The petitioner(s) shall provide LAFCo with the following items to complete the processing of the annexation:
      i. One (1) Mylar annexation map prepared and signed by a California-licensed surveyor, size 18x26 inches, approved by the Imperial County Surveyor & the City Public Works Director.
      ii. One (1) copy of the Mylar annexation map and a PDF copy.
      iii. A check made payable to the State Board of Equalization as required by statute.
      iv. A check made payable to LAFCo as determined by the Executive Officer to fully offset the cost of processing the application, including all costs incurred by the county or city departments charged with the responsibility to review any portion of this project.
      v. A letter from the applicant (petitioner) agreeing to the terms and conditions of the LAFCo approval and waiving all rights to an appeal and rights to seek reconsideration of the approval decision, unless the petitioner can show that a technical error occurred that would have or could have altered the decision of the LAFCo.

   B. The City of El Centro shall provide LAFCo with the following items to complete the processing of the annexation:
      i. A letter agreeing to the terms and conditions of the LAFCo approval and waving all rights to an appeal and rights to seek reconsideration of the approval decision, unless the city can show that a technical error occurred that would have or could have altered the decision of the LAFCo.
      ii. A city boundary map & legal description prepared and signed by a California-licensed surveyor, size 18x26 inches, depicting the new annexation as part of the overall city boundary within 90 days of the LAFCo approval, as well as a PDF copy.
      iii. A letter from the City Public Works Director approving the Mylar annexation map.

   C. The Imperial County shall provide LAFCo with the following items to complete the processing of the annexation:
      i. A letter from the Imperial County Surveyor approving the Mylar annexation map.

   D. The City of El Centro shall notify LAFCo and the county of any proposed change of zone within the boundary area at least 90 days before any such council hearing if such is requested prior to the termination of 24 months from the annexation recordation. If the city does change the zone or the envisioned land use analyzed within this land use process in the future, and it affects any tax split agreements with other agencies, then the city shall be required to make the appropriate adjustments with the county.

   E. The city shall not enter this property into any type of “redevelopment” program or such other program that would adversely change the fiscal impacts or in any way affect the fiscal impacts or tax-sharing agreements with other agencies. If the city following the annexation and after recordation does change the project to change the fiscal information/outcome upon which LAFCo and/or other agencies relied, the city shall be required to fund any deficit that may occur as a result of their change.

PASSED, ADOPTED, AND APPROVED this **27th** day of **February 2025**, by the following roll call votes:

AYES:

NAYES:

ABSTAINED:

ABSENT:

_____

Jesus Escobar, Chair

DRAFT

EXHIBIT S

Conditions of Approval Changes

	Original Condition	Proposed Condition
1	The project shall include the development of a maximum of 134 single-family residential lots with average minimum of lot sizes of 7,200 square feet. The residences located on lots 129-134 shall be limited to a single story.	The project shall include the development of a maximum of 120 single-family residential lots with an average minimum lot size of 6,000 square feet. **Comments:** The condition was modified due to a reduction in the number lots proposed by the applicant.
2	Building permits shall not be issued for any new construction related to the project until verification from the elementary and high school districts is received, certifying that the State mandated school impact mitigation fees have been paid or addressed as otherwise provided or authorized by law.	Building permits shall not be issued for any construction related to the project until verification from the elementary and high school districts is received, certifying that the State mandated school impact mitigation fees have been paid or addressed as otherwise provided or authorized by law. **Comments:** No changes.
3	Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (4.9%), or provide the appropriate Traffic Impact Fee(TIF), towards the provision of a westbound right-turn lane and a second northbound left-turn lane at the westbound ramp of Highway 86 and Interstate 8.	Removed **Comments:** Since the project was first approved, a westbound right-turn lane was constructed. This condition may be removed as a traffic study determined the level of service at the intersection is acceptable without the construction of a second northbound left-turn lane.
4	Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment(4.6%), or provide the appropriate Traffic Impact Fee (TIF), towards the provision of two eastbound right-turn lanes and a second southbound left-turn lane at the eastbound ramp of Highway 86 and Interstate 8.	Removed **Comments:** This condition may be removed as a traffic study determined the level of service at the intersection is acceptable without the construction two eastbound right-turn lanes and a second southbound left-turn lane.
5	Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (4.7%), or provide the appropriate Traffic Impact Fee (TIF), towards the construction of a second eastbound left-turn lane at the intersection of Highway 86 and Wake Avenue.	Removed **Comments:** The second eastbound turn lane was installed by the City of El Centro in 2024.

	Original Condition	Proposed Condition
6	Prior to the recordation of the final map, the applicant shall construct a raised median for full turning movement with southbound acceleration and deceleration lanes with a left turn in pocket and left turn at Highway 86 and Horne Road. (as per attached Exhibit A-1), subject to a credit for other traffic impact fees or reimbursement from other benefited projects in the area, at the City's option.	Removed **Comments:** The traffic study determined levels of service would be acceptable and the condition to construct the raised median and reconfigure the lane may be removed.
7	Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (13.8%), or provide the appropriate Traffic Impact Fee (TIF), towards the construction of a right turn in/right turn out island from Willow Bend Drive at Highway 86.	Removed **Comments:** The condition may be removed since a median island was already installed that restricts turning movements to right turn in/right turn out for the project's access/egress.
8	Prior to the recordation of the final map, the applicant shall pay the City a fair share payment (1.5%), or provide the appropriate Traffic Impact Fee (TIF), towards the signalization of the Highway 86 and west McCabe Road intersection as well as the provision of a dedicated eastbound and westbound left turn pockets.	Removed **Comments:** Since the project was first approved in 2007 the intersection has been signalized. The condition may be removed since the traffic study determined levels of service would be acceptable, without the installation of dedicated eastbound and westbound turn pockets.
9	Prior to the recordation of the final map, the applicant shall pay the City a fair share payment (5.6%), or provide the appropriate Traffic Impact Fee (TIF), towards the widening of Highway 86 between Wake Avenue and Interstate 8 to six lanes.	Removed **Comments:** This condition was removed as acceptable levels of service were calculated under near term conditions. Furthermore, Condition 10 now includes the widening of SR-86 (4th Street) to four-lane arterial standards along the property frontage consistent with the General Plan.

	Original Condition	Proposed Condition
10	Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (2. 7%), or provide the appropriate Traffic Impact Fee (TIF), towards the widening of Highway 86 between McCabe Road and the project site to four lanes along the project frontage.	Prior to the recording of the first final map, the applicant shall complete or provide security for the widening of Highway 86 (4th Street) to a four-lane right-of-way width along the project frontage prior to recording of the first final map. The widening, including any required deceleration and acceleration lanes north and south of the development frontage, shall be completed prior to the issuance of the 60th certificate of occupancy, as determined by the approved Caltrans transportation study or other Caltrans requirements. The No. 2 southbound lane shall merge into the No. 1 southbound lane such that the Countryside Drive and Highway 86 intersection transitions to a single southbound lane at the intersection. **Comments:** Traffic analysis of this segment determined that widening may be removed from the project access between Countryside Drive and McCabe Road. Widening is still required between Willow Bend Drive and Countryside Drive. The modification was required to provide additional detail of the work provided and a timeframe of when improvements should be completed.
11	Prior to the recordation of the final map, the applicant shall either pay the City a fair share payment (5. 7%), or provide the appropriate Traffic Impact Fee (TIF), towards the widening of Highway 86 between Danenberg Drive and Wake Avenue to four lanes.	Removed **Comments:** This condition has been removed as the traffic study calculated acceptable levels of service under near-term conditions without widening SR-86.

	Original Condition	Proposed Condition
12	Prior to the issuance of the first certificate of occupancy, the applicant shall signalize the Highway 86 and Countryside intersection.	Prior to the issuance of the 1st certificate of occupancy, and contingent upon approval by Caltrans, the applicant shall complete improvements to the intersection at Highway 86(4th Street) and Countryside Drive to provide full directional access to the development. Final intersection improvements shall be designed and constructed in accordance with the results of the Caltrans transportation study and shall be completed no later than the issuance of the 60th certificate of occupancy, or as determined by the approved Caltrans Transportation Study. **Comments:** Highway 86 (4th Street) is under the jurisdiction of Caltrans and requires additional review to determine the final intersection design. The modification was required to provide alternatives to the intersection design and a timeframe of when improvements should be completed.
13	Prior to issuance of a grading permit, the applicant shall provide construction contracts which specify that all construction equipment shall be equipped with mufflers and other suitable noise attenuation devices.	Prior to the issuance of a grading permit, the applicant shall provide construction contracts to the Community Development Director that specify that all construction equipment shall be equipped with mufflers and other suitable noise attenuation devices. **Comments:** No changes.
14	Prior to issuance of a grading permit, the applicant shall notify residents within 100 feet of the project site regarding the construction schedule of the proposed project. All notices shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.	Prior to the issuance of a grading permit, the applicant shall notify residents within 100 feet of the project's site regarding the construction schedule of the proposed project. All notices shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints. **Comments:** No changes.

	Original Condition	Proposed Condition
15	Prior to issuance of a grading permit, the applicant shall erect a sign, legible at a distance of 50 feet, posted at the construction site. The sign shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.	Prior to issuance of a grading permit, the applicant shall erect a sign, legible at a distance of 50 feet, posted at the construction site. The sign shall indicate the dates and durations of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints. **Comments:** No changes.
16	Prior to the recordation of the final map the applicant shall be required to enter into an agreement with the City for the payment of a fair share cost to mitigate the operation and maintenance impacts to fire and police services caused by the approval of the project. The description of the security for the agreement and the method of payment shall be included in the agreement.	The applicant agrees to pay standard Police and Fire Impact fees as part of building permit issuance unless deferred as approved by the City of El Centro. **Comments:** This condition was modified to allow for the payment of impact fees to be deferred, consistent with City's development impact and capacity fee deferral program.
17	Prior to the first final inspection, the existing Date Drain abutting the western boundary of the project site shall be pipelined, undergrounded and landscaped in accordance with the specifications of the Imperial Irrigation District (IID). In addition, the private delivery canal located along the southern boundary of the project site shall be removed.	Access to the Date Drain by the public shall be secured with a four-foot high three rail wood fence along the western project site boundary. Fencing shall be installed prior to the completion of Grass Street/6th Street. The applicant shall coordinate with the Imperial Irrigation District for maintenance access requirements. **Comments:** The modification to this condition is needed as the requirement to underground the Date Drain is no longer needed. Additional details on how to control public access are included in the modified condition.

	Original Condition	Proposed Condition
18	Prior to the issuance of building permits, a trunk sewer line shall be provided along the eastern boundary of the project adjacent to Highway 86 (outside Caltrans' right-of-way) extending to the southern boundary, as per city standards.	Prior to the issuance of the first certificate of occupancy, a trunk sewer line shall be installed on Carl Street to connect to the existing lift station at Highway 86 (4th Street) and Willow Bend Drive. The trunk sewer line may be constructed within the right-of-way within the development (Carl Street) or adjacent to Highway 86 (4th Street). The Countryside Drive sewer line shall be sized and placed to allow connection from the development at the west. The developer shall be reimbursed for any additional costs incurred due to upsizing by the development to the west. **Comments:** The modification provides an alternative route for the trunk sewer line and also requires the upsizing Countryside Drive sewer line to accommodate future development to the west.
19	A six (6') foot high solid decorative block/masonry or stucco wall shall be provided along the eastern boundary of lots 1-14 and 129, the western boundary of lots 32 and 134, and the northern boundary of lots 129-134.	A six (6) foot high solid decorative block/masonry wall shall be provided along the western Highway 86 right-of-way line (eastern boundary of lots 1-14) and along the property lines abutting the park (eastern boundary of lots 81 and 72 and western boundary of lots 82 and 71). A vinyl or composite fencing shall be installed along the southern project boundary (southern boundary of lots 14-32 and western boundary of lot 32). **Comments:** The modification was required as the original tentative subdivision map's lot numbers have change. It also provides alternative fencing material for certain areas of the subdivision.
20	The proposed storm water retention basin for the project site shall be developed in accordance with the City's design standards for retention basins.	The proposed stormwater retention basin for the project site shall be developed in accordance with the City's design standard for retention basins. This requires a wrought iron fence with pilasters along the perimeter of the basin abutting and visible from the public right of way. **Comments:** The modification provides more detail for design standards of the retention basin.

	Original Condition	Proposed Condition
21	Prior to the close of the sale of the thirteenth lot, applicant shall establish a Lighting/Landscaping Maintenance Assessment District for the project in order to pay for the maintenance of any lighting, landscaping, and Park/Recreation facilities, including graffiti abatement, within the public right-of-way, IID easements, retention basin, park and multi-use trail.	Prior to the issuance of the thirteenth certificate of occupancy, the applicant shall establish a Lighting and Landscape Maintenance District (LLMD) for the project. The LLMD shall pay for the maintenance of any lighting, landscaping, park, and recreation facilities, including graffiti abatement, within the public right-of-way, IID easement, retention basin and the park. **Comments:** Modifications to this condition were incorporated to provide a timeline of when the LLMD needed to be established.
22	Prior to grading permit, the applicant and City of El Centro shall be required to conduct a preconstruction survey no more than 30 days-prior to ground disturbing activity to ensure that owl burrows have not become established within the impact area. Should a burrowing owl move into the area prior to construction then mitigation should consist of passive relocation with a one-way door to avoid direct impacts to any burrowing owl on site. Passive relocation should be conducted during the non-breeding season (Sep 1-Jan 31) to ensure active nests are not lost as a result of owl exclusion. The methodology for owl relocation should follow the guidelines set forth in the CDFG Staff Report on Burrowing Owl Mitigation.	Prior to the grading permit, the applicant and the City of El Centro shall be required to conduct a preconstruction survey no more than 30 days prior to ground disturbing activity to ensure that owl burrows have not become established within the impact area. Should a burrowing owl move into the area prior to construction then mitigation should consist of passive relocation within a one-way door to avoid direct impacts to any burrowing owl on site. Passive relocation should be conducted during the non-breeding season (Sep.1-Jan.31) to ensure active nests are not lost as results of owl exclusion. The methodology for owl relocation should follow the guidelines set forth in the CDFG Staff Report on Burrowing Owl Mitigation. **Comments:** No changes.
23	In the event of the discovery of buried cultural resources, project activities in the vicinity of the resources shall be temporarily halted. A qualified archaeologist shall be consulted to assess the significance of the resource and to provide proper management recommendations (e.g., resource avoidance or data recovery excavations).	In the event of the discovery of buried cultural resources, project activities in the vicinity of the resources shall be temporarily halted. A qualified archaeologist shall be consulted to access the significance of the resource and to provide proper management recommendations (e.g., resource avoidance or data recovery excavation). **Comments:** No changes.

	Original Condition	Proposed Condition
24	Prior to issuance of building permit and during construction, if human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resource Code Section 5097.98. The County Coroner shall be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner shall notify the NAHC, which would determine and notify and Most Likely Descendent (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.	Prior to issuance of building permit and during construction, if human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resource Code Section 5097.98. The County Coroner shall be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner shall notify the NAHC, which determine and notify and Most Likely Descendent (MLD). With the permission of the landowner of his/her authorized representative, the MLD may inspect the site of the discovery. The MLD may recommend scientific removal and nondestructive analysis of human and items associated with Native American burials. **Comments:** No changes.
25	The project shall be required to comply with regional rules, including the ICAPCD Rule VIII - Fugitive Dust Rules as well as ICAPCD CEQA Handbook Measures for Construction equipment and Fugitive PM10 control, that assist in reducing short-term air pollutant emissions. Applicable dust suppression techniques are summarized below. Implementation of these dust suppression techniques will reduce the fugitive dust generation (and thus the PM10 component).	The project shall be required to comply with regional rules, including the ICAPCD Rule VIII - Fugitive Dust Rules as well as ICAPCD CEQA Handbook Measures for Construction equipment and Fugitive PM10 control, that assist in reducing short-term air pollutant emissions. Applicable dust suppression techniques are summarized below. Implementation of these dust suppression technique will reduce the fugitive dust generation (and thus the PM 10 component). **Comments:** No changes.
26	The applicant shall be responsible for any costs associated with right-of-way acquisition, if necessary. In the event the acquisition of right-of-way is needed, applicant shall enter into an agreement with the City prior to the approval of the final map to pay for the costs of acquiring off-site real property interests and to complete the improvements required herein at such time as the City acquires an interest in the real property that will permit the improvements to be made by the applicant.	The applicant shall be responsible for any costs associated with right-of-way acquisition for the purposes of ingress or egress to the project site along Willow Bend Drive and Countryside Drive, if necessary to accommodate required off-site improvements. **Comments:** Modifications to this condition were incorporated to condense the language that was previously approved.

	Original Condition	Proposed Condition
27	Prior to the approval of the final subdivision map, grading plan or implementing permit, a site specific drainage study and retention basin design shall be conducted by a registered civil engineer and submitted for review and approval by the City.	Prior to the approval of the final subdivision map, grading plan, or permit issuance, a site-specific retention basin design shall be conducted by a registered civil engineer and submitted for review and approval by the City. **Comments:** No changes.
28	Relocation and underground plans for canals and drains shall be designed to maintain existing flow rates and structure capacity to the satisfaction of the City and Imperial Irrigation District.	The construction of Countryside Drive crossing over the IID Date Drain must be completed prior to the issuance of the 80th certificate of occupancy. The threshold for this condition may be extended prior to the issuance of the 100th certificate of occupancy if circumstances beyond the applicant's control occur that delay this improvement, as approved by the City Engineer and the Community Development Director. The road crossing shall consist of two travel lanes, with no parking lanes, and shall include curb, gutter, and sidewalks on each side. City participation on all costs related to the IID drain construction and Countryside Drive improvements will be three hundred twenty-five thousand dollars, through a reimbursement agreement between City and applicant. **Comments:** Modifications to this condition were made since only the segment where Countryside Drive crosses the Date Drain will be undergrounded. Additional details and a timeframe of when improvements should be completed were also included.

	Original Condition	Proposed Condition
29	The project shall provide a 1.6 acre park in accordance with City's specifications. In-lieu park fees shall be paid for any park area located within the IID easement.	The applicant shall construct or provide security for a 1.3-acre improved park. The park shall include a multi-use grass field, park lighting, hard surface court, multi-use path, picnic, and playground area. The park is to be completed prior to 50% of the certificates of occupancy are issued. The developer shall provide park renderings and construction plans and cost estimates to the City of El Centro for review prior to filing of the first final map. Park development impact fees shall be waived by the City if park costs are higher than the subdivisions' park development impact fees to the satisfaction of the Community Development Director. **Comments:** Originally there was potential to incorporate a park area over the IID Drain underground. As that is no longer the plan, a dedicated park area was included in the new subdivision map.
30	The project shall provide the following minimum building setbacks: front yard, twenty (20') feet; side yards, five (5 ') feet on one side and ten (10') feet on the other side; exterior side yard, fifteen (15') feet; and rear yard, five (5') feet for single story and twenty-five (25') feet for two story.	The project shall provide the minimum building setbacks in accordance with the R1-Single Family Residential Zone development standards. **Comments:** Minor modifications were included to reflect the Residential Zone Development standards at the time of construction.
31	Prior to the first final inspection of each phase of development, all street dedications and off-site improvements (curb, gutter, sidewalk, and paving) shall be provided in accordance with the City's Subdivision Ordinance including parkways not less than 6.5 feet wide, measured from the face of the curb to the outside edge of the sidewalk.	Prior to the issuance of the first certificate of occupancy of each phase of development, all street dedications and off-site improvements (curb, gutter, sidewalk, and paving) for each phase shall be provided in accordance with the City's Subdivision Ordinance. **Comments:** Minor modification were included to simplify the original condition.

	Original Condition	Proposed Condition
32	Utilities shall be provided in accordance with the City's Master Water/Sewer Plan. The applicant may enter into a reimbursement agreement with the City for any oversizing of water or sewer lines that may be required.	Utilities shall be provided in accordance with the City's Master Water/Sewer Plan. The applicant may enter into reimbursement agreement with the City for any oversizing of water or sewer lines that may be required. **Comments:** No changes.
33	Prior to the first final inspection, the applicant shall provide a minimum of two trees per lot within the parkway strip. Said trees shall be selected from the City's tree list and consist of a variety of trees. Street themes shall be provided.	Prior to the issuance of the certificate of occupancy of each residence, the applicant shall provide a minimum of one tree within the parkway strip on Countryside Drive only and one tree within the front yard landscaped area per lot. Said trees shall be selected from the City's list and consist of variety of trees. The remaining lots shall provide two trees in the front yard. **Comments:** Minor modifications were included to change the language from final inspection, to certificate of occupancy. In addition, language was incorporated to specify location of tree's in areas with a parkway and areas without parkways.
34	Prior to the issuance of each building permit, the applicant shall pay the appropriate development impact and sewer/water capacity fees.	Prior to the issuance of each building permit, the applicant shall pay the appropriate development impact and sewer and water capacity fees unless deferred to prior to the issuance of a certificate of occupancy in compliance with Ordinance 21-03 and subject to the approval of the City Manager. Payment must clear prior to the issuance of a certificate of occupancy. **Comments:** Modifications were made to the condition to defer fee's until the issuance of a certificate of occupancy.

	Original Condition	Proposed Condition
35	Fire hydrants markers and water mains shall be provided in accordance with the Fire Department's specifications. All fire hydrants shall be on a looped water system and shall be in service before any combustible construction begins.	Fire hydrants markers and water mains shall be provided in accordance with the Fire Department's specifications. Fire hydrants shall be on a looped water system. Any combustible construction shall not begin until a fire hydrant is in service within 150 feet of construction activity. Applicant shall provide a phasing plan to the Engineering Division showing compliance with this condition prior to the issuance of the certificate of compliance. **Comments:** Modifications were made to this conditions to provide more descriptive language and require a phasing plan of when work will be completed.
36	Grading and drainage plans shall be submitted to the City for review and approved prior to approval of the final map.	Grading and drainage plans shall be submitted to the City for review and approval prior to the approval of the final map. **Comments:** No changes.
37	The project shall comply with all applicable provisions of the California Code of Regulations Title 24 (ADA).	The project shall comply with all applicable provisions of the California Code of Regulations Title 24 (ADA). **Comments:** No changes.
38	Developer shall coordinate project flood protection improvements with current efforts of the Imperial Irrigation District and other public agencies to provide regional flood protection facilities, if applicable.	The developer shall work directly with IID to obtain an encroachment permit for project related improvements on IID system facilities. **Comments:** Modifications were made to update on current IID efforts.

	Original Condition	Proposed Condition
39	Pursuant to Section 66474.9 of the California Government Code, the applicant shall defend, indemnify, and hold harmless the City of El Centro, its agents, officers and employees to attack, set aside, void, or annul, the approval of the Planning Commission concerning the tentative subdivision map, which action is brought within the time period provided for in California Government Code Section 66499.3 7. However, the City of El Centro shall promptly notify the applicant/subdivider of any claim, action, or proceeding and that the City shall cooperate fully in defense.	Pursuant to Section 66474.9 of the California Government Code, the applicant shall defend, indemnify, and hold harmless the City of El Centro, its agents, officers and employees to attack, set aside, void, or annul, the approval of the Planning Commission concerning the tentative subdivision map, which action is brought within the time period provided for in California Government Code Section 66499.37. However, the City of El Centro shall promptly notify the applicant/subdivider of any claim, action or proceeding and that the City shall cooperate fully in defense. **Comments:** No changes.
40	Except as noted above, all conditions shall be met prior to the recordation of the final map.	Except as specified herein, all conditions applicable to a final map phase, as determined by the City Engineer, shall be met before its last certificate of occupancy is issued unless otherwise noted. **Comments:** Modifications were made to this condition to change language for meeting conditions to prior to certificate of occupancy to be consistent with changes made to other conditions.
41	The project shall comply with applicable staff comments labeled Exhibit A of the Planning Commission staff report and all other applicable Federal, State and local codes, ordinances and resolutions.	Applicable offsite improvements shall be completed or secured to the satisfaction of the City Engineer prior to the recordation of each final map. **Comments:** Condition modifications were incorporated to simplify the language of the condition.
42	The project shall provide a 20" foot multi-use trail with a split rail fence at its center along the northern boundary and a 10-foot multi-use trail along the western boundary of the project site.	Removed **Comments:** This condition was removed as a dedicated park area will be constructed.

	Original Condition	Proposed Condition
43		Public landscaping improvements shall be installed along the northern side of Willow Bend Drive, West side of Carl Street, South of lot 13, North side of Lot 1, and West and East side of Grass (6th) Street in the side yards of the noted locations and homes. Public landscaping improvements shall be included in the lighting and landscape maintenance district. **Comments:** This condition was added to specify publicly maintained landscaped areas of the project.
44		A school bus loading area shall be installed in front of the park area, unless otherwise determined by the school districts that the location would be unfeasible for a school bus loading area. **Comments:** This condition was added to account for the relocation of the community park.