Draft
Environmental Impact Report for Brookfield Project

State Clearinghouse SCH #2005022082

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Acronyms and Abbreviations

μ/m^3	micrograms per cubic meter
μg/m	micrograms per cubic meter
ABAG	Association of Bay Area Governments
ADT	average daily automobile trips
Alternative 1	No-Project Alternative
Alternative 2	Access Alternative
Alternative 3	Assisted Living/Care Senior Complex Alternative
ARB	California Air Resources Board
BMP	best management practice
Business Plan Act	Hazardous Materials Release Response Plans and Inventory Act of 1985
Cal Wate	California Water Service Company
Cal-EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
City	City of Dixon
CNEL	community noise equivalent level
CO	carbon monoxide
Corps	U.S. Army Corps of Engineers
County	Solano County
County Ag Dept	Solano County Agricultural Commissioner
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CVRWQCB	Central Valley RWQCB
CWA	Clean Water Act
dB	decibel
dBA	A-Weighted Decibel
DFG	California Department of Fish and Game
DOC	California Department of Conservation
DRCD	Dixon Resource Conservation District
DSMWS	Dixon Solano Municipal Water Service
DWR	California Department of Water Resources

EC	electromagnetic conductivity
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
HD	High Density (for Seniors)
HRI	Historic Resource Inventory
HWCA	Hazardous Waste Control Act
I-80	Interstate 80
LAFCO	Local Agency Formation Commission
LCC	Land Capability Classification
LD	Low Density
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
LIM	Land Inventory and Monitoring
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
L_{xx}	percentile-exceeded sound level
MBTA	Migratory Bird Treaty Act
MDH	Medium Density-High
MDL	Medium Density–Low
mgd	million gallons per day
MOU	memorandum of understanding
mph	miles per hour
msl	mean sea level
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OES	Office of Emergency Services
ONC	Office of Noise Control
PM10	particulate matter 10 microns or less in diameter
PM2.5	particulate matter 2.5 microns or less in diameter
PMR	Planned Multiple Residential
Porter-Cologne	Porter-Cologne Water Quality Control Act of 1969
ppm	parts per million
Project	Brookfield-Bertolero Project

RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SID	Solano Irrigation District
SIP	State Implementation Plan
State Water Board	State Water Resources Control Board
SVAB	Sacramento Valley Air Basin
SWPPP	stormwater pollution prevention plan
TACs	toxic air contaminants
TMDL	total maximum daily load
TRB	Transportation Research Board
USC	United States Code
VELB	valley elderberry longhorn beetle
WDRs	waste discharge requirements
Williamson Act	California Land Conservation Act of 1965
YSAQMD	Yolo-Solano County Air Quality Management District

Executive Summary

Purpose of this Environmental Impact Report

The California Environmental Quality Act (CEQA) requires public agencies to evaluate the potential adverse environmental impacts of their projects. If the evaluation finds that the project may have a significant impact on the environment, then the agency must prepare an Environmental Impact Report (EIR). CEQA is primarily concerned with identifying and addressing those project impacts that are *significant*. An EIR usually discusses impacts that are less than significant in much less detail than impacts that are expected to be significant.

When an impact is determined to be significant, CEQA requires the public agency to identify in the EIR feasible actions (called mitigation measures) that would reduce or avoid each of those impacts. These mitigation measures must be fully enforceable either by the agency preparing the EIR, or some other agency with jurisdiction over the project.

The EIR discloses to the public and the agency's decision makers the significant impacts of the project, mitigation measures that would reduce or avoid the impacts, alternatives to the project that would reduce or avoid one or more of the impacts, and those impacts that cannot be reduced below the level of significance. The EIR itself neither approves nor denies the project. The basic purpose of the EIR is to provide information. Approving or denying the project is the responsibility of the public agency, based in part on the environmental impact information made available in the EIR.

Project Description

This EIR analyzes the Brookfield Project (Project)—a proposed residential development on approximately 94 acres located on the east side of State Route (SR) 113, south of the Country Faire subdivision in the City of Dixon's (City's) sphere of influence. The easterly projection of Parkway Boulevard would define the southern boundary of the site. The proposal includes a senior citizen complex of approximately 120 units, and up to 401 single-family residential units, in a variety of lot and home sizes. The proposed configuration of land uses and location are illustrated in Figure ES-1.

Table ES-1. Proposed Land Uses

Village Number	Developed Acreage	Proposed GP Designation	Number of Residential Units
1. Cottages	11.7	Medium Density–Low	101
2. 5,000-square-foot lots	3.0	Medium Density–Low	19
3. 5,000-square-foot lots	12.8	Medium Density–Low	77
4. 7,000-square-foot lots	16.5	Low Density	68
5. 10,000-square-foot lots	16.3	Low Density	53
6. Alley Loaded	10.6	Medium Density–Low	83
7. Seniors Complex	6.1	High Density–Senior	120
Totals	**77.0**		**521**

As part of the Project, the developer would dedicate 40 acres of land, and install facilities to serve the new Dixon High School, including roads and a high volume domestic water well. These improvements were discussed and their impacts analyzed in the EIR approved for the Dixon High School project in 2004. The well would provide water service to the Project, the new high school, and other portions of the City. Assistance to the school would also include site grading to prepare the school site for construction.

New street improvements to serve the proposed subdivision would include the following:

- Approximately 2,700 linear feet of Parkway Boulevard from South 1st Street (SR 113) to the Project's easterly boundary and another 1,540 feet along the southern boundary of the Project. This would also serve the new high school.
- Approximately 1,580 linear feet of north-south residential collector street between the extension of Parkway Boulevard and the high school (this would serve as the primary road access for the new high school).
- Approximately 1,540 linear feet of residential collector street along the shared boundary of the Project and high school sites.
- Approximately 1,580 linear feet of residential collector street along the eastern boundary of the Project.
- Internal roads to serve the subdivision itself.

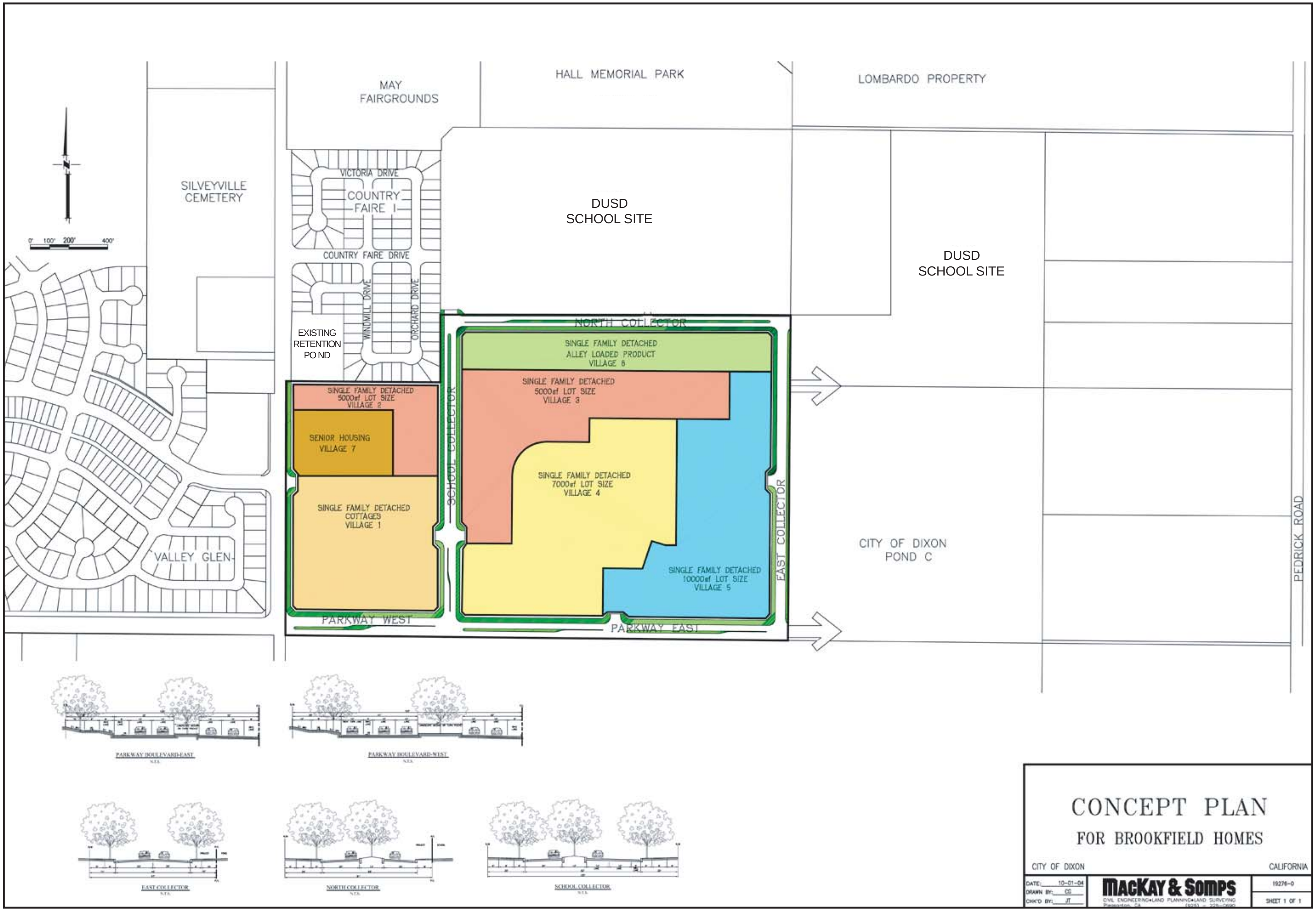

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Figure ES-1
Concept Plan for Brookfield Homes

Proposed Approvals

The proposed Project would need several approvals from the City and other California agencies, including the following:

- General Plan Amendment: The current *Dixon General Plan* designation of *Future Residential* (80 percent Single Family/20 percent Multiple Family) is proposed to be amended to *High Density—Seniors* (1,500–1,999 square feet per unit), *Low-Density* (7,000–19,999 square feet per unit) and *Medium-Density—Low* (3,000–6,999 square feet per unit) designations. State law requires subdivisions of property to be consistent with the general plan designations (Government Code Section 664473.5). The proposed general plan amendment would be subject to consideration by the Planning Commission, with final approval by the City Council.
- Development Agreement: The developer proposes to enter into a *development agreement* with the City. The development agreement will describe the public improvements to be installed, developer's commitments to coordination with Dixon USD, affordable housing, project phasing, Residential Development Allotments for the Project, and other matters. The development agreement will also help to implement the Residential Development Allotments available to this property. This agreement would be subject to consideration by the Planning Commission, with final approval by the City Council.
- Prezoning: The developer proposes that the City *prezone* the site *Planned Multiple Residential* (PMR). Prezoning is for lands that are currently outside the City Limits. Once such land is annexed, the prezoning would become the City's zoning for the site. This proposal would be subject to consideration by the Planning Commission, with final approval by the City Council. The PMR zoning designation was chosen for its flexibility. That zone allows residential development at a number of different densities and housing types.
- Tentative Subdivision Map: The applicant will submit a tentative subdivision map dividing the property into residential lots and a lot for the seniors complex for consideration by the City. The tentative map proposal would be subject to review by the Planning Commission, with final approval by the City Council. The City Council would review and approve the final map after all conditions of the tentative map have been met. At the current time, the subdivision map is expected to create 5,000 square-foot, 7,000 square-foot, and 10,000 square foot lots, as well as cottage lots
- Conditional Use Permit: Under the PMR zone, the senior project is required to obtain a conditional use permit. This would be applied for once the land is annexed. A conditional use permit is subject to consideration by the Planning Commission.
- Design Review: The Project would be subject to design review consideration by the City Planning Commission prior to construction.
- Annexation: The Solano County Local Agency Formation Commission will consider a proposal to annex the Project site into the Dixon City Limits.

Other permitting agencies may include Caltrans, to allow street connections to SR 113, the Dixon-Solano Water Service Agency, for water lines and connections, the Regional Water Quality Control Board, for stormwater permits and for sewer connections, and the Dixon Resource Conservation District, for work affecting Lateral 2, if any. In addition, the Dixon Regional Watershed Drainage Joint Powers Authority will be advised of any work near Lateral 2.

Environmental Setting

The proposal site is located in Solano County. It is designated on the *Solano County General Plan* for agricultural use. However, the site is within the sphere of influence of the City of Dixon and is identified as lands suitable for future annexation to the city. The City has designated the site for future residential development on its general plan.

The site consists of agricultural land that is currently being cultivated with row crops. The Lateral 2 drainage channel of the Dixon Resource Conservation District runs north-south along the eastern side of the proposal site.

The proposal site is adjoined by agricultural land on its south side. The land is in row crops. The Country Faire subdivision, consisting of single-family residences, is north and west of the site. The site of the approved new Dixon High School is north and east of the proposal. The City's future storm water detention Pond C is also east of the site.

There are no known archaeological resources on the proposal site; however, the Bloom House, an early farm home, is culturally significant.

The Project site is not currently served by utilities. However, there is a City sewer trunk main running along the eastern edge of the proposal site, and Lateral 2 would provide storm drainage conveyance. The site is currently outside of the Dixon Solano Municipal Water Service (DSMWS) water service area and does not have a domestic water supply. Service by the DSMWS is being proposed as part of this Project, as is construction of a water well which would be dedicated to the DSMWS.

Impacts and Mitigation Measures

Project impacts and mitigation measures are described in detail in Chapter 4 of this EIR. Table ES-2 is a summary of the impacts that would occur as a result of the proposed Project, and their levels of significance.

Alternatives to the Project

CEQA requires that an EIR examine project alternatives. One of these is the *no-project* alternative, or what might be expected to occur on the project site if the project is not implemented. The EIR also examines three alternatives to the Project that meet most or all of the objectives while substantially reducing one or more of its significant effects.

These alternatives are discussed below.

Alternative 1 (No-Project)

Under the No-Project Alternative 1, the proposed Project would not be built.

The proposal site is located within the City of Dixon's sphere of influence, in a several-hundred-acre area that has been designated as "Future Residential – FR (After 2010)" by the *Dixon General Plan*. The City intends to annex and permit the development of its sphere of influence within the post-2010 time frame, according to the general plan. As a result, under the Alternative 1, the site would likely be annexed and developed as residential subdivisions within the next 10–20 years. Assuming a mix of 80 percent single-family, lower density (Low-Density: average 3.1 dwelling units/gross acre) and 20 percent multiple-family, higher density (Medium Density High: average 13.6 dwelling units/gross acre), the site would accommodate approximately 489 dwelling units. Of these, approximately 233 would be single-family and 256 would be multiple-family dwellings (City of Dixon 1993).

This assumes that development would occur at between the minimum and maximum allowable density in the Low Density (LD) and Medium Density-High (MDH) general plan designations. Allowable densities within those general plan designations range from 1.64 to 4.67 dwellings/gross acre and from 10.9 to 16.34 dwellings/gross acre, respectively (City of Dixon 1993).

The Alternative 1 further assumes that access to future residential development of the site will be from SR 113 by way of the extension of Parkway Boulevard.

Alternative 2 (More Senior Housing)

Under Alternative 2, the cottage residential development west of the north-south collector would be limited to detached, single-family senior housing units in an age-restricted community. No change would otherwise be made to the type of units or density. Otherwise, all other aspects would be the same as the proposed Project. The multiple unit Senior Facility would remain as proposed. The purpose of this alternative would be to reduce traffic generation, thereby reducing congestion along SR 113 at peak hours.

This Alternative's impacts would be similar to those of the proposed Project, however, it would generate less traffic than the proposal and result in lesser air quality impacts. An age-restricted project would be expected to have increased demand for emergency medical services, reduced police calls, and an increased demand on the senior center for recreation.

Alternative 3 (Larger Lots)

Under Alternative 3, the single-family residential development east of the north-south connector (i.e., Villages 3, 4, 5, and 6) would consist solely of 10,000 square-foot lots. In contrast, the Project proposes a mixture of lot sizes, from 5,000 square-feet to 10,000 square-feet in area. Under Alternative 3, the number of lots (and associated residences) within this portion of the Project would be 212, rather than the 281 lots currently being proposed. This would potentially reduce the level of traffic on the school collector road during peak hours.

This Alternative's impacts would be similar to those of the proposed Project, however, it would generate less traffic than the proposal and result in lesser air quality impacts.

Alternative 4 (Larger Water Supply Facility)

Alternative 4 would provide water storage, as well as a new high capacity domestic water well, for the Project site. Water storage would be provided by two above-ground tanks, each holding from 750,000 to 1 million gallons. The well and tank site would be located east of the Project site on a portion of the DUSD high school farm site. The tanks would be approximately 35 feet in height and 80 feet in diameter. This alternative would provide more reliable volume and water pressure to the proposed Project, high school, and other areas within the City's sphere of influence.

Known Areas of Controversy

An EIR must disclose topics of known controversy. A public scoping meeting was held in the City of Dixon on March 14, 2005, for the purpose of asking the public its views on this project. No members of the public attended the meeting or offered any comments. Two agencies responded to the NOP: Caltrans and the Native American Heritage Commission. Their comments have been considered in the preparation of this Draft EIR. Based on the scoping meeting and the responses received to the Notice of Preparation circulated for this Project, there are no areas of known controversy.

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Aesthetics:			
Impact 4.1-1: Obstruct or Adversely Affect Scenic Vistas or Damage Scenic Resources	Significant	Mitigation Measure 4.1-1a: Implement Project Landscaping Plan to Provide a Visual Buffer and to Improve Aesthetics Mitigation Measure 4.1-1b: Design and Construct Buildings to be Compatible with Local Character Mitigation Measure 4.1-2: Apply Minimum Lighting Standards	Less than Significant
Impact 4.1-2: Permanent Changes in Light and Glare	Significant	Mitigation Measure 4.1-1a: Implement Project Landscaping Plan to Provide a Visual Buffer and to Improve Aesthetics Mitigation Measure 4.1-1b: Design and Construct Buildings to be Compatible with Local Character Mitigation Measure 4.1-2: Apply Minimum Lighting Standards	Less than Significant
Impact 4.1-3: Conflict with Local Visual Policies	Significant	Mitigation Measure 4.1-1a: Implement Project Landscaping Plan to Provide a Visual Buffer and to Improve Aesthetics Mitigation Measure 4.1-1b: Design and Construct Buildings to be Compatible with Local Character Mitigation Measure 4.1-2: Apply Minimum Lighting Standards	Less than Significant
Impact 4.1-4: Substantially Damage Scenic Resources, Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings along a Scenic Highway During Construction and Operation	Less than Significant	None Required	—
Agricultural Resources			
Impact 4.2-1: Consistency of Proposed Project with Applicable Plans and Policies	Less than Significant	None Required	—
Impact 4.2-2: Loss of Prime Farmland	Significant and Unavoidable	Mitigation Measure 4.2-2: Provide Compensatory Agricultural Land Protection	Significant and Unavoidable

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 4.2-3 Conflict with Existing Zoning for Agricultural Use or Williamson Act Contracts	No Impact	None Required	—
Impact 4.2-4: Conflict with Agricultural Uses on Nearby Properties	Less than Significant	None Required	—
Air Quality			
Impact 4.3-1: Temporary Increase in Construction-Related Emissions during Grading and Construction Activities	Significant and Unavoidable	Mitigation Measure 4.3-1: Implement NO_x-Reducing Construction Practices Mitigation Measure 4.3-2: Implement PM10-Reducing Construction Practices	Significant and Unavoidable
Impact 4.3-2: Increase in ROG, NO_x, and PM10 Emissions During Project Operation	Less than Significant	None Required	—
Impact 4.3-3: Increase in Local CO Concentrations at Nearby Intersections	Less than Significant	None Required	—
Biological Resources			
Impact 4.4-1: Direct and Indirect Impacts on Intermittent Drainage due to Project Construction	Significant	Mitigation Measure 4.7-2a: Comply with NPDES General Construction Permit	Less than Significant
Impact 4.4-2: Loss or Disturbance of Nesting Swainson's Hawk and Removal of Potential Swainson's Hawk Foraging Habitat	Potentially Significant	Mitigation Measure 4.4-2a: Conduct a Preconstruction Survey for Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors Mitigation Measure 4.4-2b: Implement the DFG Guidelines for Swainson's Hawk Mitigation	Less than Significant
Impact 4.4-3: Disturbance of Potential Burrowing Owl Nesting Habitat	Potentially Significant	Mitigation Measure 4.4-3: Conduct a Preconstruction Survey for Active Burrowing Owl Burrows and Implement the DFG Guidelines for Burrowing Owl Mitigation	Less than Significant

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 4.4-4: Potential Loss or Disturbance of Tree- and Ground-Nesting White-Tailed Kite, Northern Harrier, Loggerhead Shrike, and Non-Special-Status Migratory Birds and Raptors)	Potentially Significant	Mitigation Measure 4.4-2a: Conduct a Preconstruction Survey for Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors	Less than Significant
Cultural Resources			
Impact 4.5-1: Physical Alteration of Lateral 2	Less than Significant	None Required	—
Impact 4.5-2: Physical Alteration of the Bloom House	Significant and Unavoidable	None Feasible	Significant and Unavoidable
Impact 4.5-3: Damage or Destruction of Archaeological Resources	Significant	Mitigation Measure 4.5-3: Retain Qualified Archaeologist(s) to Prepare a Discovery Program for Archaeological Resources and Survey the Project Area Prior to Construction	Less than Significant
Impact 4.5-4: Damage or Destruction of Native American Burials	Significant	Mitigation Measure 4.5-3: Retain Qualified Archaeologist(s) to Prepare a Discovery Program for Archaeological Resources and Survey the Project Area Prior to Construction Mitigation Measure 4.5-4: Stop Work and Make Proper Notifications if Human Remains are Inadvertently Discovered during Construction	Less than Significant
Geology & Soils			
Impact 4.6-1: Expose People and Structures to Risk of Loss, Injury, or Death from Earthquakes, Groundshaking, or Seismic-Related Ground Failure	Less than Significant	None Required	—
Impact 4.6-2: Result in Soil Erosion and/or Loss of Topsoil	Less than Significant	None Required	—
Impact 4.6-3: Be Located on Expansive Soil	Less than Significant	None Required	—

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 4.6-4: Expose Employees and Public to Hazardous Materials During Construction	Significant	Mitigation Measure 4.6-4: Conform with Air Quality Control Measures for Construction Activities Mitigation Measure 4.7-2b: Implement a Spill Prevention and Control Program	Less than Significant
Impact 4.6-5: Expose Residents to Pesticide Drift from Surrounding Agricultural Lands	Significant	Mitigation Measure 4.6-5: Advise Pedestrians and Bicyclists of Spraying Activities	Less than Significant
Hydrology and Water Quality			
Impact 4.7-1: Substantially Deplete Groundwater from New Well Field Installation	Less than Significant	None Required	—
Impact 4.7-2: Impacts to Surface Water Quality and Groundwater Quality Due to Construction-Related Earth-Disturbing Activities and Construction-Related Hazardous Materials	Significant	Mitigation Measure 4.7-2a: Implement a Spill Prevention and Control Program Mitigation Measure 4.7.2b: Implement Measures to Maintain Groundwater or Surface Water Quality	Less Than Significant
Impact 4.7-3: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including Changes that Result in Substantial Erosion or Siltation On- or Off-Site	Less than Significant	None Required	—
Impact 4.7-4: Expose People or Structures to a Significant Risk of Loss, Injury or Death Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam	Less Than Significant	None Required	—
Impact 4.7-5: Place Housing or Structures in a 100-Year Flood Hazard Zone	Significant	Mitigation Measure 4.7-5: City of Dixon to Ensure Storm Drainage Capacity Sufficient	Less than Significant

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 4.7-6: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including Changes that Substantially Increase the Rate of Surface Runoff that Causes Flooding On- or Off-Site, Creating or Contributing to an Existing Local or Regional Flooding Problem	Less than Significant	None Required	—
Impact 4.7-7: Create or Contribute to Runoff that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff	Less than Significant	None Required	—
Impact 4.7-8: Create Project Discharges that Would Create or Contribute to Known Water Quality Problems	Less than Significant	None Required	—
Land Use and Planning			
Impact 4.8-1: Physical Division of an Established Community	Less than Significant	Mitigation Measure 4.8-1: Well Abandonment	Less than Significant
Impact 4.8-2: Conflict with Solano County and Dixon General Plans	No Impact	None Required	—
Impact 4.8-3: Conflict with Solano LAFCO Standards and Procedures	No Impact	None Required	—
Impact 4.8-4: Conflict with Existing Land Uses in the Project Area	Less than Significant	None Required	—

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Noise			
Impact 4.9-1: Exposure of Existing Residential Uses and Future Residential Uses on the Project Site from Grading and Building Construction Activities	Significant	Mitigation Measure 4.9-1a: Employ Noise-Reducing Construction Practices Mitigation Measure 4.9-1b: Prepare a Noise Control Plan Mitigation Measure 4.9-1c: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program Mitigation Measure 4.9-1d: Locate Construction Equipment as Far Away from Residences as Feasible	Less Than Significant
Impact 4.9-2: Exposure of Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels	Less Than Significant	None Required	—
Impact 4.9-3: Exposure of Offsite, Noise-Sensitive Land Uses to Increased Traffic Noise	Less Than Significant	None Required	—
Impact 4.9-4: Exposure of New Noise-Sensitive Land Uses to Traffic Noise	Less Than Significant	None Required	—
Impact 4.9-5: Exposure of New Noise-Sensitive Land Uses to Noise from the Future Dixon High School	Significant and Unavoidable	Refer to mitigation identified in the Dixon High School EIR Mitigation Measure 4.9-5: Notify Potential Buyers of Residents of Potential Noise from School Activities	Significant and Unavoidable
Public Utilities and Services			
Impact 4.10-1: Increased Demand for Fire Protection Services	Significant and Unavoidable	—	Significant and Unavoidable
Impact 4.10-2: Increased Demand for Law Enforcement Services	Less than Significant	None Required	—
Impact 4.10-3: Increased Demand for Landfill Space	Less Than Significant	None Required	—

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 4.10-4: Increased Demand for Water Services	Less Than Significant	None Required	—
Impact 4.10-5: Disturbance of the Existing Irrigation Pipeline at the Project Site During Construction Activities	Significant	Mitigation Measure 4.10-5: Relocate the Weyand Lateral B Pipeline	Less Than Significant
Impact 4.10-6: Increased Demand for Sewer/Wastewater Services	Less Than Significant	None Required	—
Impact 4.10-7: Increased Demand for Stormwater Drainage Facilities	Less Than Significant	None Required	—
Impact 4.10-8: Disruption of Sewer/Wastewater Service	Significant	Mitigation Measure 4.10-8: Coordinate Construction Activity with Service and Utility Providers and Dixon Public Works Department.	Less Than Significant
Impact 4.10-9: Disruption of Fire Protection and Law Enforcement Service	Significant	Mitigation Measure 4.10-9: Prepare a Traffic Management Plan and Coordinate with Public Service Providers	Less Than Significant
Impact 4.10-10: Increased Demand for Electricity and Gas	Less Than Significant	None Required	—
Traffic			
Impact 4.11-1: Implementation of Project Will Add Traffic to the Pitt School Road/West A Street Intersection	Significant	Mitigation Measure 4.11-1: Pay Fair Share of Signalization at the Pitt School Road/West A Street Intersection	Less Than Significant
Impact 4.11-2. Implementation of the Project Will Add Traffic to the South 1st Street/Chestnut Street Intersection	Significant	Mitigation Measure 4.11-2: Pay Fair Share of Signalization at the South 1st Street/Chestnut Street Intersection	Less Than Significant
Impact 4.11-3. Implementation of the Project Will Add Traffic to the South 1st Street/Valley Glen Drive Intersection	Significant	Mitigation Measure 4.11-3: Pay Fair Share of Signalization at the South 1st Street/Valley Glen Drive Intersection	Less Than Significant

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 4.11-4. Implementation of the Project Could Result in Safety Conflicts for Pedestrians, Cyclists and Motorists	Significant	Mitigation Measure 4.11-4a: Implement Traffic Calming Measures to Reduce Traffic Speeds Along the Collector Roadways Mitigation Measure 4.11-4b: Construct Pedestrian and Bicycle Facilities to Reduce Safety Conflicts	Less Than Significant
Impact 4.11-5. Implementation of the Project Will Add Traffic to the Parkway Boulevard/School Collector Intersection	Less Than Significant	None Required	—
Impact 4.11-6. Implementation of the Project Will Add Traffic to the South 1st Street/Parkway Boulevard Intersection	Significant	Mitigation Measure 4.11-6: Add Signal Phase Overlap for The Westbound Right Turn Lane	Less Than Significant
Population and Housing			
Impact 4.12-1: Directly or Indirectly Induce Population Growth	Less than Significant	None Required	—
Impact 4.12-2: Displace an Existing Housing Units and Residents	Less than Significant	None Required	—
Parks and Recreation			
Impact 4.13-1: Increased Use of Existing Parks or Recreational Facilities	Less than Significant	None Required	—
Impact 4.13-2: Include Recreational Facilities or Require Construction or Expansion of Recreational Facilities	No Impact	None Required	—
Cumulative Impacts			
Impact 6.1-1: Increased Night Light and Glare	Cumulatively considerable	Mitigation Measure 4.1-2: Apply Minimum Lighting Standards	Cumulatively considerable
Impact 6.1-2: Conversion of Farmland	Cumulatively considerable	None feasible	Cumulatively considerable

Impact	Significance without Mitigation	Mitigation Measure	Significance with Mitigation
Impact 6.1-3: Loss of Swainson's Hawk and Burrowing Owl Habitat	Cumulatively considerable	Mitigation Measure 4.4-2b: Implement the DFG Guidelines for Swainson's Hawk Mitigation Mitigation Measure 4.4-3: Conduct a Preconstruction Survey for Active Burrowing Owl Burrows and Implement the DFG Guidelines for Burrowing Owl Mitigation	Cumulatively considerable
Impact 6.1-4: Contribution to Groundwater Degradation at Dixon's Wastewater Treatment Plant	Cumulatively considerable	None feasible	Cumulatively considerable
Impact 6.1-5: The 1st Street/A Street Intersection Will Operate at LOS F	Cumulatively considerable	None feasible	Cumulatively considerable
Impact 6.1-6: Future Growth in the City Will Cause the South 1st Street/Chestnut Street Intersection to Operate at LOS F	Cumulatively considerable	Mitigation Measure 4.11-2: Pay Fair Share of Signalization	Less than cumulatively considerable
Impact 6.1-7: Future Traffic Will Decrease the Level of Service at the 1st Street/Cherry Street Intersection to LOS D (29.9 seconds) in the a.m. Peak Hour	Cumulatively considerable	None feasible	Cumulatively considerable
Impact 6.1-8: Congestion at the 1st Street/Country Faire Drive Intersection	Cumulatively considerable	Cumulative Mitigation Measure 6.1-8: Pay Fair Share of Signalization	Less than cumulatively considerable
Impact 6.1-9: Congestion at the 1st Street/Parkway Blvd Intersection	Cumulatively considerable	Cumulative Mitigation Measure 6.1-9: Pay Fair Share of Additional Turn Lane	Less than cumulatively considerable
Impact 6.1-10: Congestion at the 1st Street/Midway Road Intersection	Cumulatively considerable	Cumulative Mitigation Measure 6.1-10: Pay Fair Share of Signalization.	Less than cumulatively considerable
Impact 6.1-11: Congestion at the Pitt School Road/West A Street Intersection	Cumulatively considerable	Mitigation Measure 4.11-1: Pay Fair Share of Signalization	Less than cumulatively considerable

Chapter 1
Introduction

Introduction

The California Environmental Quality Act

CEQA requires public agencies to evaluate the potential adverse environmental impacts of their projects. If the evaluation finds that the Brookfield Project may have a significant impact on the environment, then the agency must prepare an EIR for the Project.

CEQA is primarily concerned with identifying and addressing those project impacts that are *significant*. A significant impact is one that exceeds the accepted level of severity.

An EIR must identify the feasible actions (called mitigation measures) that would reduce or avoid each of the project's significant impacts. These mitigation measures must be fully enforceable either by the agency preparing the EIR, or some other agency with jurisdiction over the project. In addition, the EIR must also examine feasible alternatives to the proposed project that would meet most or all of its objectives while substantially reducing or avoiding one or more of its significant impacts.

The purpose of the EIR is to disclose to the public and the agency's decision-makers the significant impacts of the project, mitigation measures that would reduce or avoid those impacts, alternatives to the project that would reduce or avoid one or more of the impacts, and those impacts that cannot be reduced below the level of significance. The EIR itself neither approves or denies the project.

The EIR provides information about the project and its expected environmental impacts. Approving or denying the project is the responsibility of the public agency, based on the environmental impact information made available in the EIR and other factors.

Environmental Impact Report

The Project and Proponents

This EIR is being prepared for a residential project consisting of several components. The Project is described in detail in Chapter 2, but here is a brief summary. The proposed Project would involve the construction of approximately 401 single-family homes, ranging in size from 1,600 to 4,000 square feet, and a 120-unit senior housing complex. Overall density of the single family homes would be approximately 5.7 dwelling units per acre; and for the senior housing, approximately 20 dwelling units per acre (not including areas set aside for roads). Related improvements would include construction of a high-volume water well for the Dixon-Solano Municipal Water Service to provide water service to the Project, related water supply pipelines to the new Dixon High School and the Valley Glen subdivisions, and extension of Parkway Boulevard eastward from SR 113 to provide access to the Project. Additional roads will be installed to serve both the high school and the proposed subdivision.

The approvals necessary for the Project include: Dixon General Plan Amendment, City Prezoning, City conditional use permit, City tentative subdivision map, City development agreement, and annexation of the site to the City by the Solano County Local Agency Formation Commission (LAFCO).

This EIR will examine the impacts of these proposed activities. It will also examine, at a lesser level of detail, alternatives to the Project.

EIR Organization

The Brookfield Project EIR is organized as follows:

Executive Summary summarizes the findings of the EIR, the significant impacts and mitigation measures, and alternatives analyzed.

Chapter 1, *Introduction* discusses CEQA and the role of an EIR

Chapter 2, *Project Description* comprehensively describes the Project being analyzed in the EIR.

Chapter 3, *Environmental Setting* describes the physical environment on and near the sites that would be affected by the proposed Project.

Chapter 4, *Impacts and Mitigation Measures* identifies the significant impacts that would result from the proposed Project and feasible, enforceable mitigation measures that would reduce of avoid those impacts.

Chapter 5, *Alternatives* examines the impacts of alternatives to the Project that would attain its objectives with less environmental impact. The alternatives consist of no-project (future development of the site as residential land), More Senior Housing, Larger Lots, and Larger Water Supply.

Chapter 6, *Cumulative and Growth-Inducing Impacts* identifies the cumulative significant impacts to which the Project would contribute and the extent to which the Project might be considered growth inducing.

Chapter 7, *References* lists the references (studies, books, individuals) consulted during the preparation of the EIR.

Chapter 8, *List of Preparers* lists the people who helped write this EIR.

Public Review

As required by CEQA, the draft EIR for this Project will be made available for review and comment for a period of at least 45 days. Copies will be sent to the State Clearinghouse in Sacramento for circulation to interested state agencies and copies will be sent directly to local agencies. Copies will also be available for review by members of the public at the City of Dixon City Hall during normal working hours.

Please submit any written comments on the EIR to:

Ms. Rebecca Van Buren, AICP
Community Development Director
City of Dixon
City Hall
600 East A Street
Dixon, CA 95620
e-mail: rvanburen@ci.dixon.ca.us

Final EIR

After the end of the draft EIR's public review period, the City will prepare a Final EIR for consideration by the Planning Commission and City Council in conjunction with the proposed development. The Final EIR will include the draft EIR, and the following:

- comments received on the draft EIR,
- written responses to the comments,
- list of commenters, and
- revisions to the EIR, including revisions made in response to the comments.

The City Council will review and consider the Final EIR before it takes action on the proposed Project. The Final EIR will also be used by the LAFCO during its consideration of the proposed annexation.

Chapter 2

Project Description

Introduction

This EIR examines the proposed Brookfield residential project and related infrastructure improvements. The general location of the project in relationship to the City of Dixon is shown in Figure 2-1.

Location and Existing Surroundings

The Project site consists of approximately 94 acres located on the east side of SR 113, south and east of the existing Country Faire subdivision, and north of the extension of Parkway Boulevard. The new campus of Dixon High School will adjoin the site's northern and eastern boundaries. Lands to the south of the site support intensive agricultural use. Lateral 2, the Dixon Resource Conservation District's drainage ditch, runs along the eastern site boundary. The City's future Pond C storm drainage facility will be located directly east of Lateral 2 and the Project site.

The Project site lies within the unincorporated area of Solano County. However, it is within the City's sphere of influence (Figure 2-2) and is currently designated on the *Dixon General Plan* as "Future Residential–FR (After 2010)." The site is currently designated A-40 (Exclusive Agriculture) on the *Solano County General Plan* and is zoned Intensive Agriculture. It is presently being farmed. The site contains an existing natural gas well that began producing in January 2004. The natural gas well is scheduled for abandonment in 2006. As discussed in Chapter 3, *Environmental Setting*, well operations, maintenance, and abandonment are regulated by the Division of Oil, Gas, and Geothermal Resources. The requirements of the Public Resources Code and California Code of Regulations will ensure that the well site is cleaned up and properly plugged upon abandonment.

Project Characteristics

The Project would involve the construction of approximately 400 homes, ranging in size from approximately 1,600 to 4,000 square feet on lots of varying sizes, and a 120-unit senior citizen complex. The seniors complex may include assisted living/care. Approximately 70.9 acres of the site would be developed as single-family residential lots (27.5 acres of Medium Density–Low Residential and 43.4 acre of Low Density Residential) and approximately 6.1 acres would be for the senior complex (High Density-Senior). The proposed land use designations are listed below in Table 2-1. Overall density of the single family homes would be approximately 5.7 dwelling units per acre (not counting roads); of the senior housing, approximately 20 dwelling units per acre (du/ac).

The City has entered a Memorandum of Understanding (MOU) with Brookfield for residential housing allocations for the Project beginning in 2008 under Dixon's Measure B growth management system (grading and other site preparation activities would occur prior to 2008, but no home sales would be allowed until that time). The single-family residential component of the Project will *flex* the 2013 allocations such that 300 of those allocations would be spread out over the years 2009–2012. The Project's remaining allocations would come from the years 2008, 2013, and 2014. Pursuant to City Ordinance 03-002, senior housing (including assisted living facilities) is exempt from the allocation system under Measure B and is therefore the 120 senior units do not require an allocation. Under this agreement, 12 percent of the proposed Project is to consist of affordable housing. The details of the affordable housing component, such as the location of affordable units, will be established in the Development Agreement and an affordable housing agreement to be entered into by the City and Project applicant.

Table 2-1 lists the number of proposed residences, by "village."

Table 2-1. Proposed Land Uses

Village Number	Developed Acreage	Proposed GP Designation	Number of Residential Units
1. Cottages	11.7	Medium Density–Low	101
2. 5,000-sq ft lots	3.0	Medium Density–Low	19
3. 5,000- sq ft lots	12.8	Medium Density–Low	77
4. 7,000- sq ft lots	16.5	Low Density	68
5. 10,000- sq ft lots	16.3	Low Density	53
6. Alley Loaded	10.6	Medium Density–Low	83
7. Seniors Complex	6.1	High Density–Senior	120
Totals	**77.0**		**521**

Note: This assumes 10 % of the gross site within each village will be used for roads. Centerline of road is used to establish boundaries between villages. The assumed density of Medium Density-Low is 8 dwelling units per acre (du/ac), Low Density (7,000) is 5.6 du/ac, and Low Density (10,000) is 4 du/ac.

Figure 2-3 illustrates the conceptual land use plan of the Project and shows the approximate locations of the single-family and senior housing components. The

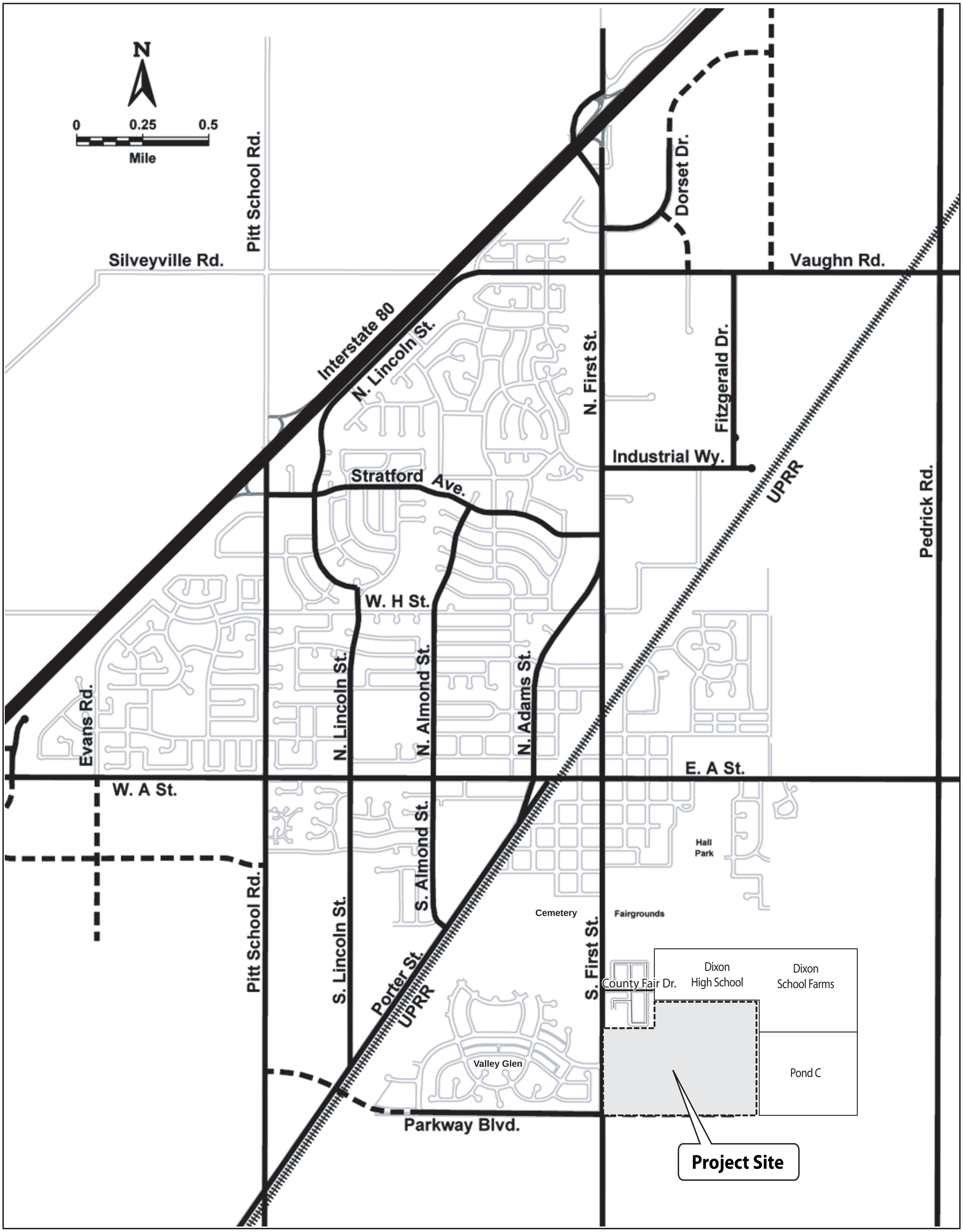

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Figure 2-1
Project Vicinity

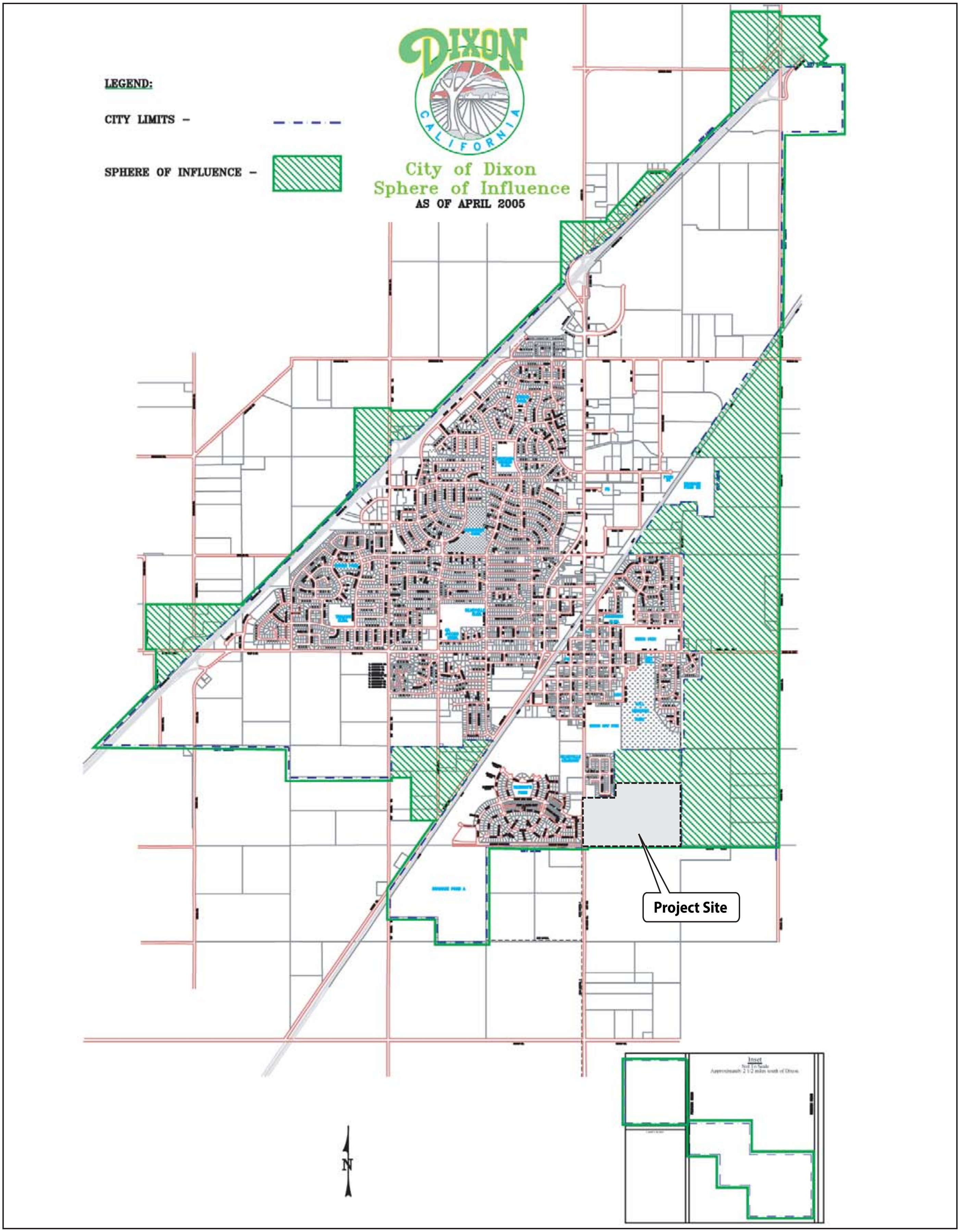

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Figure 2-2
Dixon Sphere of Influence

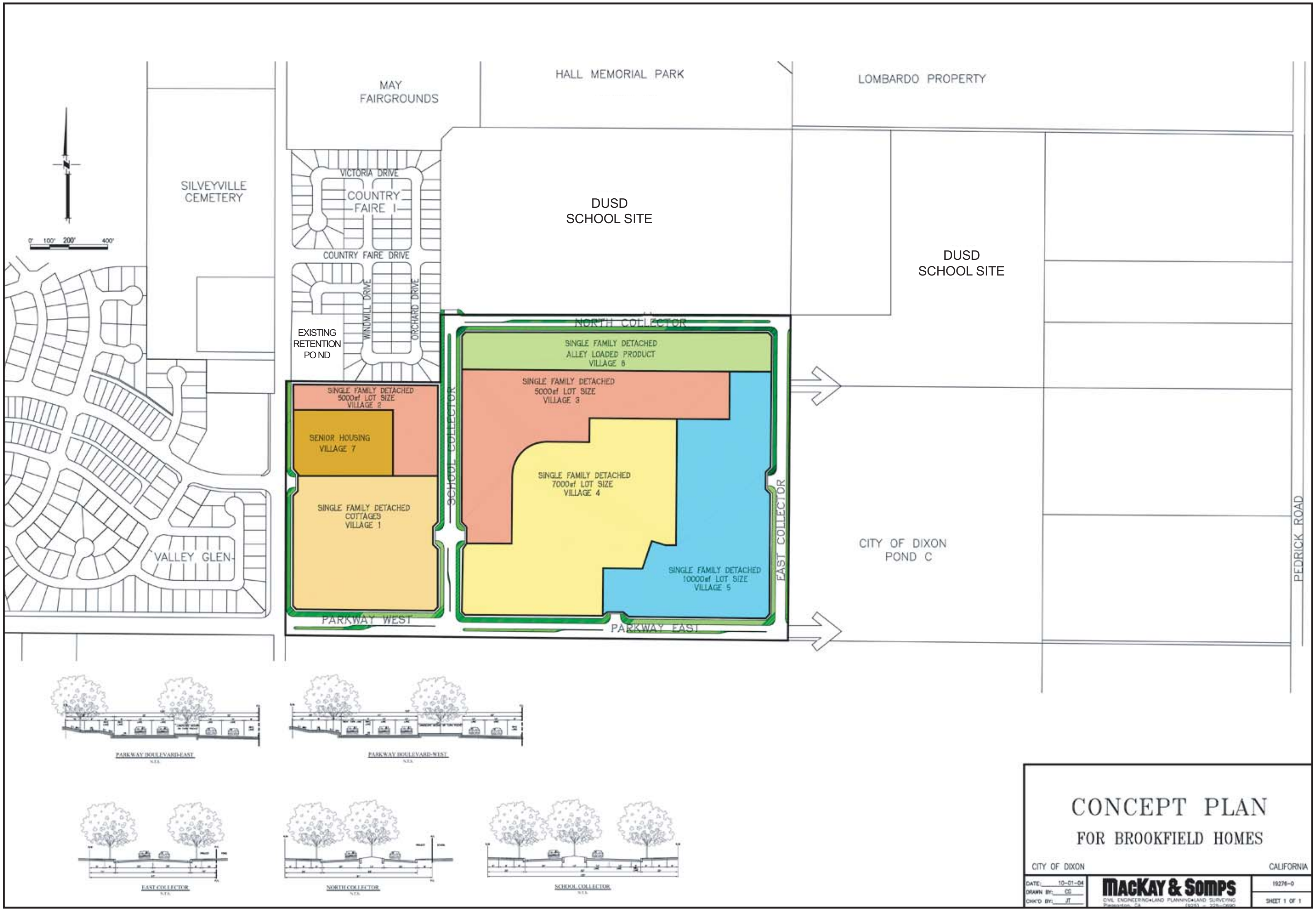

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Figure 2-3
Concept Plan for Brookfield Homes

proposed single-family areas reflect a variety of housing types and lot sizes. The *cottage* residential units south of the proposed seniors complex would be the smallest of the residences being proposed as part of the Project. The “alley loaded” lots south of the future Dixon High School campus would have alleys behind them to provide access to the garages located behind each of the homes. As a result, there would be no driveways or garages fronting on the east-west collector road that will adjoin the school and potential traffic conflicts will be reduced. Where the site adjoins the future Pond C stormwater detention basin, the Project would create estate-sized lots a minimum of 10,000 square feet in area. The senior housing would be considered multi-family in nature. The environmental analysis undertaken for this project assumes that development will occur as described in Table 2-1.

As part of the Project, the developer would facilitate the installation of facilities to serve the new High School, including roads, other utilities, and a water well. These improvements were discussed and their general impacts analyzed in the EIR approved for the new high school project in 2004. Assistance to the school would also include the donation of 40 acres and grading to prepare the site for school construction.

New street improvements to serve the proposed subdivision would include the following:

- Approximately 2,700 linear feet of Parkway Boulevard from South 1st Street (SR 113) to the Project’s easterly boundary and another 1,540 feet along the southern boundary of the Project. This would also serve the new high school.
- Approximately 1,580 linear feet of north-south residential collector street between the extension of Parkway Boulevard and the high school (this would serve as the primary road access for the new high school).
- Approximately 1,540 linear feet of residential collector street along the shared boundary of the Project and high school sites.
- Approximately 1,580 linear feet of residential collector street along the eastern boundary of the Project.
- Internal streets to serve the subdivision itself.
- Traffic signals on all approaches of the intersection of SR 113 and Parkway Boulevard, as well as necessary turn lanes.
- Turn lanes and traffic signal at the intersection of the future Parkway Boulevard and the north-south school collector street.

The Project would be responsible for installation of the full-width of Parkway Boulevard, minus sidewalk on the south side. This would include two travel lanes and a bicycle lane in each direction, with a landscaped median in between. Parkway Boulevard would narrow after the north-south collector road that will provide access to the high school. The proposed tentative subdivision map includes a right-of-way for Parkway Boulevard from SR 113 to the eastern edge of the proposal site.

Internal streets would include two north-south collectors, and east-west collector adjoining the Dixon High School site, and smaller streets. Street widths and design would be set out in the tentative subdivision map that would be considered by the City.

Other Project-related improvements would include construction of a high-volume water well for the Dixon-Solano Municipal Water Service adjacent to the Project site (see Figure 2-4). The well would provide water service to the Project, the new high school, and other portions of the City. Domestic water pipelines would be installed to the Project site, high school, and Valley Glen subdivisions. Pursuant to Dixon-Solano Municipal Water Service specifications, the water well would have a minimum production capacity of 1,800 gallons per minute. Installation of the water well is described in the City of Dixon's Capital Improvement Program as a project for year 2006.

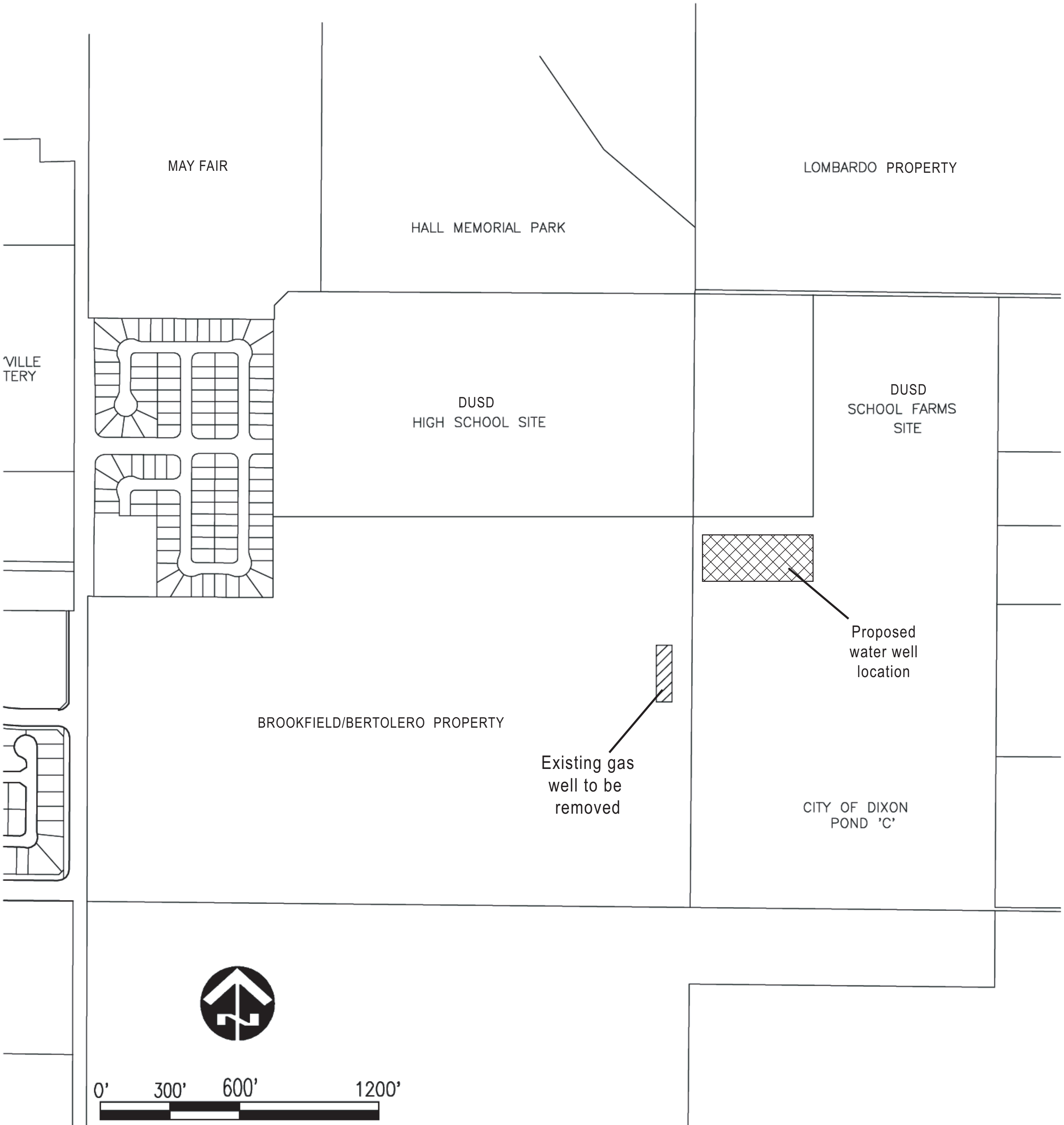
The proposal site is not currently served with sewer or storm drainage facilities. These services would be extended from the City after annexation of the Project site. Sewer lines would be extended from the existing trunk main that runs north-south along the eastern Project boundary. Storm drainage would be directed to the City's new Pond C facility east of the Project. This connection would be accomplished by boring and jacking a drainage pipe under Lateral 2 and into Pond C. Wet and dry utilities would be installed beneath the proposed new roadways. The Project would also drain stormwater from the Country Faire subdivision, allowing its existing retention pond to be removed and the parcel developed. The site is underlain by the Solano Irrigation District's Weyan Lateral B, an irrigation pipeline that would need to be relocated.

Project construction would occur in multiple phases, ending in 2014. First, the overall site would be graded to prepare it for home sites. This would also include grading of the new high school site. This phase is expected to take up to four months. Second, infrastructure improvements such as roads, stormwater drainage system, and underground utilities would be installed. Third, construction on individual lots within each phase would take place starting in 2008, consistent with Dixon's Measure B Residential Development Allotment process.

Proposed Approvals

The proposed Project would need several approvals from the City and other California agencies, including the following:

- General Plan Amendment: The current *Dixon General Plan* designation of Future Residential (80 percent Single Family/20 percent Multiple Family) is proposed to be amended to High Density–Seniors (1,500–1,999 square feet per unit), Low-Density (7,000–19,999 square feet per unit) and Medium-Density–Low (3,000–6,999 square feet per unit) designations. State law requires subdivisions of property to be consistent with the general plan designations (Government Code Section 664473.5). The proposed general



Dixon, California

04716.04 Admin EIR (3-05)

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Figure 2-4
Approximate Water Well Location

plan amendment would be subject to consideration by the Planning Commission and final approval by the City Council.

- Development Agreement: The developer proposes to enter into a development agreement contract with the City. The development agreement will describe the public improvements to be installed, developer's commitments to coordination with Dixon Union School District, affordable housing, project phasing, and Residential Development Allotments for the Project, among other items. The development agreement will also help to implement the Residential Development Housing Allotments available to this property. This agreement would be subject to consideration by the Planning Commission, with final approval by the Dixon City Council.
- Prezoning: The developer proposes that the City *prezone* the site Planned Multiple Residential (PMR). Prezoning is for lands that are currently outside the city limits. Once such land is annexed, the prezoning would become the City's zoning for the site. This proposal would be subject to consideration by the Planning Commission and final approval by the Dixon City Council. The PMR zoning designation was chosen for its flexibility. That zone allows residential development at a number of different densities and housing types.
- Conditional Use Permit: Under the PMR zone, the senior project is required to obtain a conditional use permit. This would be applied for once the land is annexed. A conditional use permit is subject to consideration by the Planning Commission.
- Tentative Subdivision Map: The applicant will submit a tentative subdivision map dividing the property into residential lots and a parcel for the seniors complex for consideration by the City. The tentative map proposal would be subject to review by the Planning Commission, with final approval by the City Council. The City Council would review and approve the final map after all conditions of the tentative map have been met. At the current time, the subdivision map is expected to create 5,000-square foot, 7,000-square foot, 10,000-square foot, and cottage lots
- Design Review: The Project would be subject to design review consideration by the City Planning Commission prior to construction.
- Annexation: The Solano County LAFCO will consider a proposal to annex the Project site into the Dixon City Limits.

In addition, if the Project is approved, it will require future permits from Caltrans to allow street connections to SR 113, approvals for water lines and connections from the Dixon-Solano Water Service Agency, storm water permits and approval of new sewer connections from the Regional Water Quality Control Board, a Section 404 permit from the U.S. Army Corps of Engineers if there is work along the Lateral 2 ditch (this permit would not be required if there is no dredge or fill of Lateral 2), and approval of work on Lateral 2 (if any) from the Dixon Resource Conservation District.

Project Objectives

The Project has the following objectives:

- Develop a well-designed residential neighborhood consisting of several types of single-family residential units and a senior living/care facility that incorporates smart growth elements for the residential areas with particular focus on pedestrians, traffic calming street designs, and generous use of street trees.
- Contribute to the City's available housing stock to address the City's share of regional housing needs, including the development of workforce (i.e., affordable) and senior housing.
- Dedicate land for and construct necessary infrastructure and utilities to serve the new Dixon High School to significantly reduce the cost to the Dixon Unified School District (DUSD).
- Provide for various infrastructure improvements that would benefit both the Project and the community. These would include: public roadway improvements to serve the new high school, wet and dry utilities within those roadways, a new high volume water well facility to serve the southeastern portion of the City, and drainage facilities to collect and convey storm water runoff to the City's future Pond C detention basin.

Previously Analyzed Project Components

In 2004, the DUSD and City of Dixon certified a Final EIR for both the new Dixon High School and the City's Pond C drainage detention basin. That EIR analyzed the potential impacts of the extension of Parkway Boulevard from SR 113 and the north-south collector necessary to connect the new high school campus to SR 113. The EIR also considered the impacts of construction of the new high school, including the impacts of grading and impacts on biological resources along Lateral 2 (i.e., burrowing owls). In addition, the 2004 EIR considered the growth-inducing impacts that would result from installation of the proposed high-capacity water well and the roadways necessary to access the school site.

Chapter 3

Environmental Setting

The *environmental setting* for a given resource area represents the physical environment of the Project site and in the surrounding area. This chapter describes the environmental and regulatory settings for the Project at the time the notice of preparation was released for public review. The regulatory setting is included in order to discuss those regulations that will affect or be affected by the Project.

The environmental impacts of the Project, described in Chapter 4, *Impacts and Mitigation Measures*, are determined on the basis of the changes to the environmental setting that would occur if the project were built. In general, a change that would result in a substantial adverse change in the environmental setting is considered a significant impact.

3.1 Aesthetics

3.1.1 Concepts and Terminology

Identifying a project area's visual resources and conditions involves three steps:

1. objective identification of the visual features (visual resources) of the landscape;
2. assessment of the character and quality of those resources relative to overall regional visual character; and
3. determination of the importance to people, or sensitivity, of views of visual resources in the landscape;

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (Federal Highway Administration 1983). Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (U.S. Bureau of Land Management 1980). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features (U.S. Forest Service 1974; Federal Highway Administration 1983). The appearance of the landscape is described in terms of the dominance of each of these components.

Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by Federal Highway Administration, employing the concepts of vividness, intactness, and unity (Federal Highway Administration 1983), which are described below.

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, and in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

Viewer Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1983). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middle ground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic region or types of terrain, the standard foreground zone is 0.25–0.5 mile from the viewer, the middle ground zone from the foreground zone to 3–5 miles from the viewer, and the background zone is from the middle ground to infinity (U.S. Forest Service 1974).

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure, people engaging in recreational activities such as hiking, biking, or camping, and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service 1974; Federal Highway Administration 1983; U.S. Soil Conservation Service 1978). Commuters and nonrecreational travelers have generally fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (U.S. Soil Conservation Service 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have very little significance in mountainous terrain.

3.1.2 Physical Setting

Visual Character of Region

The Project is located in unincorporated Solano County, within the sphere of influence of the City of Dixon, in the southern portion of the Sacramento Valley, approximately 19 miles southwest of Sacramento. The Project region, as discussed in this section, is considered the area within a 30-mile radius of the Project location. The region primarily consists of agricultural land uses with the urban core of Sacramento anchoring the northeastern boundary. Although much of the region is in agricultural production, there has been and continues to be an increasing trend in the conversion of agricultural land to urban and suburban land uses. This trend is evident around the outskirts of Sacramento, such as in Natomas to the north and Elk Grove to the south. Many of the small, agrarian communities in this region, such as Dixon, are experiencing similar growth.

Agricultural land in the region, planted predominantly with row crops, stretches for miles. A patchwork of fields separates the urban center of Sacramento from smaller, outlying cities. These fields offer expansive views that, when haze is at a minimum, extend to the Sierra Nevada foothills to the east and Vaca Mountains to the west. These landscape views are strongly characteristic of the Sacramento Valley and have contributed to the region’s identity.

Growth, radiating out from the cities’ cores, is reducing the amount of agricultural land in the region and closing the gap between the Sacramento metropolitan region and smaller, outlying cities. This is changing the visual character from rural to suburban. The smaller cities, including Dixon, are typified by a growing core of residential, commercial, and some industrial land uses with agricultural fields surrounding the city outskirts.

A mix of developed and natural landscapes characterizes the region. The landscape pattern is influenced by development spreading from existing city cores and the major roadways in the region. Water features in the greater region include the Sacramento and American Rivers and their tributaries, Sacramento Deep Water Ship Channel, Yolo Bypass (when flooded), numerous north Sacramento River–San Joaquin River Delta sloughs, and smaller local irrigation ditches.

Visual Character of Project Vicinity

The Project vicinity is defined as the area within 0.5 mile of the Project site. As described below under *Land Use and Planning*, the site is currently in agricultural production. Hall Memorial Park, north of the site, is a recreational base for Dixon and the surrounding communities. Residential communities (the Country Faire subdivision), both new and established, are adjacent to the park and bordering the western boundary of the site. The Dixon May Fairgrounds are northwest of the Project site, between the Country Faire subdivision and Hall Memorial Park. Agricultural fields are around the remaining perimeter of the site, outside the city limits.

State Route 113 runs north-south through the vicinity and is a main thoroughfare through Dixon. A Street runs perpendicular to SR 113 and is a main east-west corridor through Dixon. The existing Dixon High School and Dixon City Hall are located along this roadway. Uses North of East A Street, along SR 113, include residential, commercial, and light industrial, then transition to all residential south of East A Street. The historic, tree-lined main street of downtown Dixon is located along this two-lane portion of SR 113. South of the downtown area, homes face the tree-lined highway and are set back with front yards and sidewalks.

The fairgrounds act as a transition zone between older and newer communities located farther south in the vicinity. Newer communities have not been designed to meld with the older communities (with respect to layout, architectural style, and streetscaping) and are separated from the highway and surrounding areas by privacy/noise walls. Silveyville Cemetery, located across from the Country Faire subdivision, provides an open space area vegetated with mature trees.

New development is occurring on the outskirts of Dixon, as in the rest of the Project region, transposing agricultural fields into suburban areas. This alters the agrarian visual character of the Project vicinity to one visually analogous to newly developed areas within the Sacramento metropolitan region.

Viewer Groups and Viewer Response

Key viewpoints, shown in Figure 3.1-1, have been chosen for their representation of the landscape within which they are located and those viewers affected.

Residents of Dixon

Residents within the city limits are the primary viewer group that has direct views of the Project site. Older, more established neighborhoods are located north of the fairgrounds and north and northeast of the park. Views from these more established neighborhoods to the site are limited to the foreground and their immediate surroundings by newer developments, the park, and the fairgrounds. Residences located on the southernmost edge of the established neighborhoods, directly adjacent to and east of the park, that have second stories may have middle- and background-views towards the site. These residences also have 6- to 7-foot-high chain link fences with slats to screen views and densely vegetated buffers along fence lines (Figure 3.1-2, Photo 2). Upon completion, the proposed Dixon High School and Brookfield residential Project would limit views to the foreground for these residents.

Residents with the most direct views of the Project site are primarily those in newer developments. The Country Faire subdivision is located directly adjacent to the northeast corner of the site, and the new Valley Glen neighborhood is located directly west of the site and SR 113. Residents in Country Faire have limited views to the site. Homes that abut the site are oriented with the rear of the buildings facing the site and the fronts toward the residential street. A concrete privacy fence, approximately 6 feet tall, is installed along the length of the development, bordering the agricultural fields, separating the Country Faire residents from the Project site. Their views to the site are also screened by vegetation in residents’ backyards. A few residents have views to the site from overlooking second-story windows (Figure 3.1-2, Photo 1).

Valley Glen residents that are located along SR 113 are separated from the roadway by a soundwall. These homes are located at a slightly higher elevation than the Project site, as evident from the retaining wall along SR 113, and have higher second stories with more windows facing the site. Because this is a newly constructed subdivision, homes lack mature vegetation that provides screening (Figure 3.1-2, Photo 2).

Country Faire and Valley Glen residents are the most likely to be affected by the proposed Project. The conversion of agricultural fields to a housing development will decrease the amount of open space directly surrounding the communities. A significant amount of open space will remain through agricultural fields to the south and east of the site. Dixon residents are likely to have a moderate to moderately high sensitivity to visual changes at the Project site.

Residents of Farmsteads

Four single-family homes on farmsteads have views to the site from along Pedrick Road. Most of these residences have vegetation planted around their perimeters for shade in the open fields and for privacy. One residence lacks views to the Project site because it is separated from the site by an orchard. One residence, set back from Pedrick Road, is located closer to the site and lacks a dense vegetated buffer around it; this home is most likely to be affected by visual changes. Residents with views to the west can see the city’s edge and Vaca Mountains across the fields, in the background (Figure 3.1-3, Photo 3). Farmstead residents are likely to have moderate sensitivity to visual changes at the Project site.

Recreationists

Recreationists include fairground and park users, residents who use the agricultural fields, and cyclists on local roadways. Fairground users visit the facility for focused events such as the Dixon May Fair, specialized nonprofit and community organization events, and family reunions and birthday parties (Dixon May Fair 2003). Most visitors of the fairgrounds are, therefore, mainly aware of their immediate surroundings. The fairgrounds are bordered by the park and residences, limiting recreationists views to the foreground. Limited middle ground views may exist to the Project site; however, views would be limited to the foreground upon completion of the proposed Dixon High School, and the Project site would not be visible from the fairgrounds.

Many Dixon residents use the park, and like fairground users, recreational activities (e.g., participating in sporting events, parents watching their children) generally keep users of the park focused on their immediate surroundings. Park users presently have foreground, middle ground, and background views to the south, over flat agricultural fields, which include the Project site. Like fairground users, views would be limited to the foreground upon completion of the proposed Dixon High School, and the Project site would not be visible.

Fairground and park users are likely to be moderately sensitive to visual changes at the Project site. The Country Faire and Valley Glen residents are somewhat

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Figure 3.1-1
Key Viewpoints

Photo 1. Looking west towards Country Faire from the northern edge of the project site. This photo depicts the orientation of residences with backs towards the site, concrete slat privacy fence, and small number of residences having limited views to the project site from second-story windows.

Photo 2. Looking west from the project site, across SR 113, towards the southeast corner of Valley Glen. This photo depicts the soundwall and retaining wall along SR 113, higher elevation of Valley Glen homes in relation to the project site, second stories windows facing the site, and lack of mature vegetation to provide visual screening.

Figure 3.1-2
Representative Photographs of the Project Area

Photo 3. Looking west towards the project site from Pedrick Road. This photo depicts farmstead residences' views. Most residences have vegetation planted around their perimeters limiting views to the site. Some residents have views of the city's edge and Vaca Mountains, across the fields, in the background. Distance from the site would make visual changes indistinguishable.

Photo 4. Looking east from the Valley Glen main entrance, across SR 113, towards the project site. This photo depicts the existing intersection of the Valley Glen entrance with SR 113. Roadway users would be more or less intensely focused on turning onto SR 113, or on slowing down and turning from SR 113 onto local streets, depending on traffic volumes at the intersection.

Figure 3.1-3
Representative Photographs of the Project Area

accustomed to the conversion of agricultural field through the recently completed and ongoing construction at Valley Glen.

Cyclists using local roadways are more likely to regard the natural and built surroundings as a holistic visual experience. However, they are likely to have low to moderate visual sensitivity due to focus on roadway and traffic conditions.

As an overall viewer group, recreationists have moderate visual sensitivity to changes at the Project site.

Roadway Users

Viewers who frequently travel SR 113 and Pedrick Road generally possess low visual sensitivity to their surroundings. The passing landscape becomes familiar to these viewers and their attention is typically not focused on the passing views. At standard roadway speeds, views are of short duration and roadway users are fleetingly aware of surrounding traffic, road signs, their immediate surroundings within the automobile, and other visual features.

This viewer group also includes drivers using the intersections with SR 113 from the Valley Glen development (Figure 3.1-3, Photo 4). Depending on traffic, these viewers have low to moderate sensitivity to their surroundings because their focus is concentrated on turning onto SR 113, or on slowing down and turning from SR 113 onto local streets.

3.1.3 Regulatory Setting

Federal and State

There are no specific federal or state regulations that apply to the visual resources associated with this Project.

Local

Solano County General Plan

The Project area will be under Solano County (County) jurisdiction until the site is annexed to the City.

The *Solano County General Plan* (1980, as amended 1995) identifies the Dixon Ridge area, along Interstate 80 (I-80) between Vacaville and Davis, as a significant visual corridor, which “acts as a community buffer. These provide natural barriers between communities which help form and protect the individual character and identity of each community.” The Dixon Ridge area was selected for inclusion because it “comprises a large portion of the County’s prime intensive agricultural area. The Vaca Mountains and English Hills provide a visual backdrop to this area."

The Project area is located approximately 2 miles east of I-80 and is not visible from the freeway. Therefore, these general plan policies are not relevant.

City of Dixon General Plan

The Project area is not currently under the jurisdiction of the City of Dixon. However, the *Dixon General Plan* (City of Dixon 1993) has the area designated as *Future Residential*. Should the annexation of the Project area be approved, the following policies are likely to be relevant to the proposed Project:

Urban Development and Community Design

Historic Preservation, Community Design, and Appearance Policies:

> 19. The City shall actively promote the beautification of Dixon by acquiring easement or development rights for open space, planting street trees, and landscaping public rights-of-way.
>
> 23. The City shall consider the establishment of a system of open space buffers to help to define the boundary of Dixon.

City of Dixon Zoning Ordinance

The Project area is not currently under the jurisdiction of the City of Dixon, but is proposed to be annexed into the City in the near future. Although the Project area is not included in the City Zoning Ordinance, project planning in compliance with the ordinance will help to maintain the character of the City as it grows. The developer is proposing rezoning from Solano County zoning of A-40 (Exclusive Agriculture) to City of Dixon PMR zoning. Rezoning to PMR would require the developer to comply with Sections 12.12A (PMR District) and 12.26 of the City zoning ordinance. 12.12A includes measures to protect visual resources and reduce negative visual impacts.

Ordinances set forth in Section 12.26 Screening and Landscaping Regulations also apply to the Project and are consistent with Section 12.12A.04, which requires reference to Section 12.26. "The purpose of these provisions is to prescribe standards for screening, fences, walls, and landscaping within the City of Dixon for the conservation and protection of property, the assurance of safety and security, the enhancement of privacy, the control of dust, the abatement or attenuation of noise, and the improvement of the visual environment, including the provision of a neat appearance in keeping with neighborhood character (12.26.01)." Note that sections 12.26.04 Standards Applicable to Required Screening, 12.26.05 Height Standards Applicable to Required Screening, 12.26.06 Measurement of Height of Screening, 12.26.07.D.1-3 Required Landscaping, and 12.26.09 Standards Applicable to Required Landscaping include specific standards for design and planting that should be referred to during the planning process.

3.2 Agriculture

3.2.1 Physical Setting

Solano County is located in California's Central Valley, a region known for its agricultural productivity. In 1997, out of 530,030 total acres, Solano County had 362,102 acres, or about 68.3 percent of its total lands, under agricultural production. Dixon is a small, compact city in the northeastern corner of the county, surrounded by agricultural lands. The Project area is currently used as cropland, and agricultural lands border it on two sides.

Land Use and Zoning

As discussed below under *Land Use and Planning*, the Project area is designated in the Solano County General Plan as A-40 (Exclusive Agriculture) and the site is zoned Intensive Agriculture. The Project site is actively farmed. Wells provide irrigation water to the area. The Project site is not under an agricultural preservation contract with the County or City pursuant to the California Land Conservation Act of 1965 (Williamson Act) (Figure 3.2-1).

There is an existing natural gas well located on the eastern side of the Project site. Initial gas well pressure in January 2004 was approximately 2700 psi. In January 2005, the well pressure had declined to approximately 680 pounds per square inch (psi), which is approximately the operating pressure in the gas delivery pipeline the well is connected to. With this, gas output production from the well ceased. The well operator, Slawson Exploration Company, Inc, then installed a compressor on a neighboring gas well (not on the Brookfield-Bertolero property) connected to the same delivery pipeline. This increased the subject well's pressure to approximately 840 psi.

The well operator anticipates that gas production from the subject well will cease in late 2006. The well will then be *abandoned* (i.e., closed) in conformance with California's regulations for well operations (Public Resources Code Section 3200, et sec). Public Resources Code Section 3208 provides, in part that:

> "A well is properly abandoned when it has been shown, to the satisfaction of the [State Oil and Gas] supervisor, that all proper steps have been taken to isolate all oil-bearing or gas-bearing strata encountered in the well, and to protect underground or surface water suitable for irrigation or farm or domestic purposes from the infiltration or addition of any detrimental substance and to prevent subsequent damage to life, health, property, and other resources.".

Agricultural Land Classification

Farmland quality refers to the ability of land to support various types and intensities of crop or livestock production. Factors that affect farmland quality include the physical and chemical composition of soils, topography, climate, and availability of irrigation water. Various assessment tools are used to evaluate these factors and characterize farmland quality, including the:

- Land Capability Classification (LCC) system developed by the Natural Resources Conservation Service (NRCS),
- Storie Index ratings of soils, and
- Important Farmland mapping system employed by the California Department of Conservation (DOC) as part of its Farmland Mapping and Monitoring Program (FMMP).

The Project area's farmland quality using these assessment tools is discussed below.

Land Capability Classification

The LCC system classifies soils with respect to their general limitations to cultivation, based on physical characteristics such as drainage, water-holding capacity, erosion hazard, and flood hazard. Factors beyond the soil's characteristics, such as availability of water for irrigation, climate, and distance from markets, are not considered. The definitions of the capability classes are listed below.

- Class I soils have few limitations that restrict their use.
- Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Class IV soils have very severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Class V soils are not likely to erode but have other limitations that are impractical to remove and limit their use.
- Class VI soils have severe limitations that make them generally unsuitable for cultivation.
- Class VII soils have very severe limitations that make them unsuitable for cultivation.
- Class VIII soils and landforms have very severe limitations that make them unsuitable for cultivation.

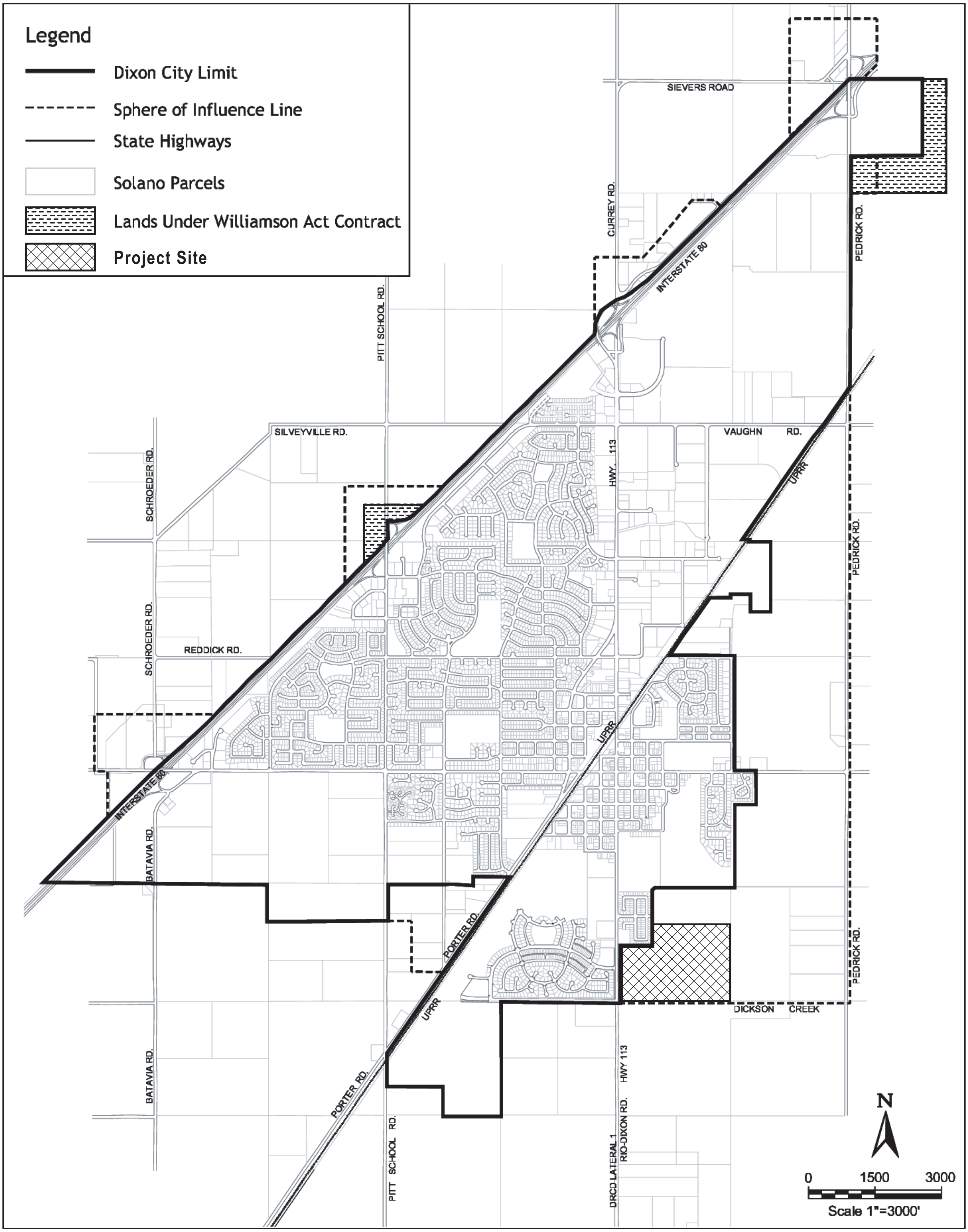

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Figure 3.2-1
Williamson Act Lands

As discussed below under *Geology and Hazards*, the primary soil types in the Project area are Brentwood clay loam (0–2 percent slopes) and Yolo silty clay loam. The capability class of both soil types is Class I-1 (17); “1” indicates that the soil is subject to an actual or potential erosion hazard, while “17” denotes that the soil is located in Land Resource Area 17 in Solano County (U.S. Soil Conservation Service 1977).

Storie Index

The Storie Index expresses, on a scale of 1–100, the relative suitability of a soil for general intensive agricultural use. A soil’s rating is based on factors such as soil depth, surface texture, subsoil characteristics, drainage, relative salinity or alkalinity, and relief. Again, factors beyond the soil’s characteristics are not considered.

Soils with ratings of 80–100 are considered excellent and well suited to general intensive agriculture. Soils with ratings of 60–79 are considered good and well suited to agriculture, although not as desirable as soils with higher ratings. Soils with ratings of 40–59 are fairly well suited to agriculture, soils rated 20–39 are poorly suited, and soils rated 10–19 are very poorly suited. Ratings of less than 10 are given to soils and land types not suited to agriculture. The Storie Index rating for Brentwood clay loam (0–2 percent slopes) is 81, and the rating for the Yolo silty clay loam is 90 (U.S. Soil Conservation Service 1977).

Important Farmland

Maps of Important Farmlands are prepared by DOC as part of its FMMP. Important Farmland maps are prepared periodically for most of the state’s agricultural areas based on information from NRCS soil survey maps, Land Inventory and Monitoring (LIM) criteria developed by NRCS, and land use information mapped by the California Department of Water Resources (DWR). These criteria generally are expressed as definitions that characterize the land’s suitability for agricultural production, physical and chemical characteristics of the soil, and actual land use. Important Farmland maps generally are updated every 2 years.

The Important Farmland mapping system incorporates eight mapping categories: five relating to farmlands and three associated with lands used for nonagricultural purposes. The five farmland mapping categories are summarized below.

- **Prime Farmland:** Lands with the combination of physical and chemical features best able to sustain long-term production of agricultural crops. The land must be supported by a developed irrigation water supply that is dependable and of adequate quality during the growing season. It also must have been used for the production of irrigated crops at some time during the 4 years before mapping data were collected.

- **Farmland of Statewide Importance:** Lands with agricultural land use characteristics, irrigation water supplies, and physical characteristics similar to those of Prime Farmland but with minor shortcomings, such as steeper slopes or less ability to retain moisture.
- **Unique Farmland:** Lands with lesser-quality soils used for the production of California's leading agricultural cash crops. These lands usually are irrigated but may include nonirrigated orchards or vineyards as found in some of the state's climatic zones.
- **Farmland of Local Importance:** Lands of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land:** Lands in which the existing vegetation is suited to the grazing of livestock.

The Project site is identified as Prime Farmland on the FMMP maps and is surrounded by Prime Farmland.

3.2.2 Regulatory Setting

Federal and State Regulations

Gas Well

Gas well drilling, operations, maintenance and abandonment (closure) are regulated by the Division of Oil, Gas, and Geothermal Resources in the California Department of Conservation pursuant to authority granted by Public Resources Section 3106. One of the charges for the Supervisor of Oil and Gas within the Division under Section 3106 is to oversee wells "so as to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas, or reservoir energy, and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances."

Additional requirements for operations, maintenance, and abandonment are established under Chapter 4, Division 2, Title 14 of the California Code of Regulations. Section 1775 of Title 14 provides that during well operations:

> (a) Oilfield wastes, including but not limited to oil, water, chemicals, mud, and cement, shall be disposed of in such a manner as not to cause damage to life, health, property, freshwater aquifers or surface waters, or natural resources, or be a menace to public safety. Disposal sites for oilfield wastes shall also conform to State Water Resources Control Board and appropriate California Regional Water Quality Control Board regulations.
>
> (b) Dumping harmful chemicals where subsequent meteoric waters might wash significant quantities into freshwaters shall be prohibited. Drilling mud shall not

> be permanently disposed of into open pits. Cement slurry or dry cement shall not be disposed of on the surface.
>
> (c) Unused equipment and scrap attendant to oilfield operations shall be removed from a production or injection operations area and/or stored in such a manner as to not cause damage to life, health, or property, or become a public nuisance or a menace to public safety. Trash and other waste materials attendant to oilfield operations shall be removed and disposed of properly.

Regulations beginning with Section 1723 of Title 14 require that the well casing of an abandoned well shall be cut off at least 5 feet below the surface of the ground and the hole plugged at the surface with at least a 25-foot cement plug. Section 1776 requires that: "in conjunction with well plugging and abandonment operations, any auxiliary holes, such as rat holes, shall be filled with earth and compacted properly; all construction materials, cellars, production pads, and piers shall be removed and the resulting excavations filled with earth and compacted properly to prevent settling; well locations shall be graded and cleared of equipment, trash, or other waste materials, and returned to as near a natural state as practicable. Well site restoration must be completed within 60 days following plugging and abandonment of the well."

As referenced above, Public Resources Code Section 3200, et seq. sets out the basic regulations for well operations. This includes performance standards for closing a well under Section 3208 and the following additional requirements:

> **3228.** Before abandoning any well in accordance with methods approved by the supervisor or the district deputy, and under his or her direction, the owner or operator shall isolate all oil-bearing or gas-bearing strata encountered in the well and shall use every effort and endeavor to protect any underground or surface water suitable for irrigation or domestic purposes from the infiltration or addition of any detrimental substances.
>
> **3229.** Before commencing any work to abandon any well, the owner or operator shall file with the supervisor or the district deputy a written notice of intention to abandon the well. Abandonment shall not proceed until approval is given by the supervisor or the district deputy. If the supervisor or the district deputy does not give the owner or operator a written response to the notice of intention within 10 working days, the proposed abandonment shall be deemed to have been approved and the notice of intention shall for the purposes of this chapter be deemed a written report of the supervisor. If abandonment operations have not commenced within one year of receipt of the notice of intention, the notice of intention shall be deemed canceled.

The Division of Oil, Gas, and Geothermal Resources is also authorized to require the abandonment of inactive wells under the Public Resources Code.

Agriculture

There are no specific federal or state regulations that apply to the agricultural resources associated with this Project.

Local Regulations

Solano County General Plan

The following elements of the *Solano County General Plan* (1980, as amended 1995) provide the policy framework for agriculture in Solano County.

> Policy 1. Preserve and maintain essential agricultural lands including intensive agricultural areas comprised of high quality soils and irrigated lands and extensive agricultural with unique or significant dryland farming or grazing activities.
>
> Policy 2. In essential agricultural areas, the County shall encourage the formation and retention of agricultural parcels of sufficient size to be maintained as farmable unit. Farmable units are defined as the size of parcels a farmer would consider leasing or purchasing for different agricultural purposes as follows:
>
>> 160-acre minimum parcel size for non-irrigated lands.
>>
>> 80-acre minimum parcel size for irrigated lands.
>>
>> 40-acre minimum parcel size where “highly productive” irrigated parcels are demonstrated to exist.
>
> Policy 3. Urban development shall be confined to patterns which do not conflict with essential agricultural lands.
>
> Policy 4. Rural and suburban development shall be confined to non-essential marginal agricultural lands with a low capability of agricultural production and in a manner which minimizes conflicts with surrounding agricultural activities.
>
> Policy 10. Lands within the “Agriculture” designations as shown on the Land Use and Circulation Map adopted by the Board of Supervisors on December 19, 1980 as readopted and reaffirmed by the voters of Solano County in Proposition A in June, 1984, and as amended subsequently consistent with Proposition A, may be redesignated to a more intensive agricultural designation, or to a rural residential designation (with a maximum density of one unit per 2.5 to 10 acres) if and only if the Board of Supervisors makes each other following findings:
>
>> That the approval will not constitute part of, or a encourage, a piece-meal conversion of a larger agricultural area to residential or other non-agricultural uses, and will not alter the stability of land use patterns in the area;
>>
>> That no land proposed for redesignation is prime agricultural land as defined pursuant to California Government Code Section 5122 (the California Land Conservation Act of 1965, also known as the Williamson Act);
>>
>> That the subject land is unsuitable for agriculture due to terrain, adverse soil conditions, drainage, flooding, parcel size or other physical factors,

> such that it has no substantial market or rental value under the "agriculture" designation;
>
> That the use and density proposed are compatible with agricultural uses and will not interfere with accepted farming practices;
>
> That the land is immediately adjacent to existing comparably developed areas and the applicant for the redesignation has provided substantial evidence that the Fire District, School District, County Sheriff and County Transportation Department have adequate capacity to accommodate the development and provide it with adequate public services; and
>
> That annexation to a city or incorporation is not appropriate or possible based on the following factors: nearby cities' designated sphere of influence boundaries, cities' general plan growth limits and projections, and comprehensive annexation plans.
>
> All redesignations pursuant to this policy shall be limited to a maximum of 160 acres for any other landowner in any calendar year. Landowners with any unity of interest are considered one landowner for purposes of this limitation.

In general, it is the County's policy to direct urban land uses to cities or the unincorporated lands within the City's designated urban limits in order to preserve agricultural land elsewhere.

City of Dixon General Plan

The following statements of the *Dixon General Plan* (City of Dixon 1993) provide the policy framework for agriculture in Dixon.

> Policy 1. The City shall preserve agricultural lands and prevent their premature conversion to urban uses.
>
> Policy 2. The City shall protect existing agriculturally-related operations from potential land use conflicts.

Solano Local Agency Formation Commission Standards and Procedures

The Solano County LAFCO is the agency with jurisdiction over annexations and changes in cities' spheres of influences within Solano County. (The Solano County LAFCO is described in more detail below under *Land Use and Planning*.) Standard 9 of the Solano County LAFCO Standards and Procedures gives guidance for approving annexation and urban growth that is relevant to agricultural resources. Standard 9 states:

> Urban growth shall be guided away from prime agricultural land unless such action would not promote planned, orderly, and efficient development for the agency. Development of existing vacant or non-prime agricultural lands within the agency limits should be encouraged before any proposal is approved for urbanization outside of the agency limits (Solano LAFCO 1999).

This standard and its applicability to the proposed Project is discussed under the *Land Use and Planning* sections of Chapters 3 and 4 of this document.

3.3 Air Quality

This section discusses federal and state ambient air quality standards and existing air quality conditions in the Project area, identifies sensitive receptors in the Project area, and describes the overall regulatory framework for air quality management in California and the region. Information presented in this section is based in part on communication with the Yolo-Solano County Air Quality Management District (YSAQMD).

3.3.1 Physical Setting

Climate and Meteorological Conditions

The proposed Project is located in the Yolo-Solano County Air Quality Management District. Yolo-Solano County is located in the Sacramento Valley Air Basin (SVAB), which includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, Yolo, and parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. To the south is the San Joaquin Valley Air Basin.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During the winter, the North Pacific storm track intermittently dominates valley weather, and fair weather alternates with periods of extensive clouds and precipitation. Also characteristic of winter weather in the valley are periods of dense and persistent low-level fog, which is most prevalent between storms. The frequency and persistence of heavy fog in the valley diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is between 20 to 115°F, with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

In general, the prevailing wind in the Sacramento Valley is from the southwest due to marine breezes flowing through the Carquinez Strait. The Carquinez Strait is the major corridor for air moving into the Sacramento Valley from the west. Incoming airflow strength varies daily with a pronounced diurnal cycle. Influx strength is weakest in the morning and increases in the evening hours. Associated with the influx of air through the Carquinez Strait is the *Schultz Eddy*.

The Schultz Eddy is an eddy formed when incoming marine air is diverted by mountains on the valley's western side. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 miles per hour (mph). This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

The SVAB's climate and topography contribute to the formation and transport of photochemical pollutants throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants, resulting in high pollutant concentrations near the ground surface. Generally, the lower the inversion base height from the ground and the greater the temperature increase from base to top, the more pronounced the inhibiting effect of the inversion will be on pollutant dispersion. Consequently, the highest concentrations of photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest because of more intense sunlight and the lower altitude of daytime inversion layers. Surface inversions (those at altitudes of 0–500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000–2,000 feet above sea level) are most common in the summer.

Federal and State Ambient Air Quality Standards

Existing air quality conditions in the Project area can be characterized in terms of the ambient air quality standards that California and the federal government have established for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). The pollutants of greatest concern in the Dixon area are carbon monoxide (CO), ozone, and particulate matter 10 microns or less in diameter (PM10), which is inhalable. Table 3.3-1 shows the state and federal standards for a variety of pollutants.

Existing Air Quality Conditions in Dixon

The State of California has designated the Yolo-Solano County portion of the SVAB as being in non-attainment for ozone and in non-attainment for PM10. However, Yolo-Solano County is in attainment for CO. The EPA has designated the Yolo-Solano County portion of the SVAB as being in extreme non-attainment for ozone and in attainment for PM10 and CO. CO is considered is be in a moderate condition maintenance area. The existing air quality conditions in the proposed Project area can be characterized by monitoring data collected in the region. Air quality monitoring data for the last three years (2002–2004) are presented in Table 3.3-2. The nearest air quality monitoring stations to the Project area are the UC Davis monitoring station, which monitors for ozone and CO, and the Gibson Road monitoring station in Woodland, which monitors for

PM10 and PM2.5 (particulate matter 10 microns or less in diameter). Dixon experienced occasional violations of the state ozone standard during the 3-year monitoring period. The federal CO standards were not violated. The state CO standards was violated. The state 24-hour PM10 standard was violated occasionally however, the federal PM10 standard of 20 micrograms per cubic meter (µg/m^3) was never exceeded.

Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, called reactive organic gases (ROG), and oxides of nitrogen (NO_x) react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem.

Ozone is a regional pollutant. Because photochemical reactions take time to occur, high ozone levels often occur downwind of the emission source. Because the predominant wind direction in the Sacramento Valley is from the south, Yolo-Solano County is a receptor of regional pollutants, such as ozone, from the Sacramento area. Ozone conditions in Yolo-Solano County therefore result from a combination of locally generated emissions and transported emissions.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period.

Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials.

Particulate emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic and construction equipment, and secondary aerosols formed by reactions in the atmosphere.

The federal and state AAQS for particulate matter apply to two classes of particulates: PM2.5 and PM10. The state PM10 standards are 50 micrograms per cubic meter (µ/m^3) as a 24-hour average and 20 µ/m^3 as an annual geometric

Table 3.3-1. Ambient Air Quality Standards Applicable in California

			Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria	
Pollutant	Symbol	Average Time	California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
		8 hours	NA	0.08	NA	157	NA	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA
Nitrogen dioxide	NO_2	Annual average	NA	0.053	NA	100	NA	If exceeded
		1 hour	0.25	NA	470	NA	If exceeded	
Sulfur dioxide	SO_2	Annual average	NA	0.03	NA	80	NA	If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	NA	655	NA	NA	NA
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA
Vinyl chloride	C_2H_3Cl	24 hours	0.010	NA	26	NA	If equaled or exceeded	NA
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA
Inhalable particulate matter	PM10	Annual geometric mean	NA	NA	20	NA	If exceeded	NA
		Annual arithmetic mean	NA	NA	NA	50	NA	If exceeded
		24 hours	NA	NA	50	150	If exceeded	If average 1% over 3 years is exceeded
	PM2.5	Annual geometric mean	NA	NA	12	NA	If exceeded	NA
		Annual arithmetic mean	NA	NA	NA	15	NA	If exceeded
		24 hours	NA	NA	NA	65	NA	If average 2% over 3 years is exceeded
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year
		30 days	NA	NA	1.5	NA	If equaled or exceeded	NA

Notes: All standards are based on measurements at 25ºC and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
NA = not applicable.

Table 3.3-2. Ambient Air Quality Monitoring Data from the UC Davis and Gibson Road, Woodland Monitoring Stations

Pollutant Standards	2002	2003	2004
Ozone (O_3) UC Davis			
Maximum 1-hour concentration (ppm)	0.121	0.098	0.092
Maximum 8-hour concentration (ppm)	0.088	0.082	0.075
Number of Days Standard Exceeded			
NAAQS 1-hour (>0.12 ppm)	0	0	0
CAAQS 1-hour (>0.09 ppm)	3	2	0
NAAQS 8-hour (>0.08 ppm)	2	0	0
Carbon Monoxide (CO) UC Davis			
Maximum 8-hour concentration (ppm)	1.4	0.8	1.0
Maximum 1-hour concentration (ppm)	1.9	3.3	1.6
Number of Days Standard Exceeded			
NAAQS 8-hour (≥9.0 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0
Particulate Matter (PM_{10})[a] Gibson Road, Woodland			
National maximum 24-hour concentration (μg/m^3)	82.0	55.0	72.0
National second highest 24-hour concentration (μg/m^3)	79.0	50.0	52.0
State maximum 24-hour concentration (μg/m^3)	86.0	55.0	73.0
State second highest 24-hour concentration (μg/m^3)	78.0	51.0	53.0
National[b] annual average concentration (μg/m^3)	26.8	20.7	–
State[c] annual average concentration (μg/m^3)	27.3	–	–
Number of Days Standard Exceeded			
NAAQS 24-hour (>150 μg/m^3)[d]	0	0	0
CAAQS 24-hour (>50 μg/m^3)[d]	6	2	2
Particulate Matter (PM2.5) Gibson Road, Woodland			
Maximum 24-hour concentration (μg/m^3)	69.0	31.0	31.0
Second highest 24-hour concentration (μg/m^3)	34.0	30.0	29.0
National [b] annual average concentration (μg/m^3)	10.7	8.4	–
State[c] annual average concentration (μg/m^3)	–	8.4	–
Number of Days Standard Exceeded			
NAAQS 24-hour (>65 μg/m^3)	1	0	0

Notes: CAAQS = California Ambient Air Quality Standards.
NAAQS = National Ambient Air Quality Standards.
NA = Insufficient data available to determine the value.

[a] Measurements usually collected every six days.
[b] National annual average based on arithmetic mean.
[c] State annual average based on geometric mean.

Based on an estimate of how many days concentrations would have been greater than the standard.

Sources: California Air Resources Board 2005; U.S. Environmental Protection Agency 2005.

mean. The federal PM10 standards are 150 μ/m^3 as a 24-hour average and 50 μ/m^3 as an annual arithmetic mean. The federal PM2.5 standards are 15 μ/m^3 for the annual average and 65 μ/m^3 for the 24-hour average. On June 20, 2002, the California Air Resources Board (ARB) adopted a new annual PM2.5 standard of 12 μg/m^3.

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, whereas the federal 1-hour standard is 35 ppm. Both state and federal standards for the 8-hour averaging period are 9 ppm.

Toxic Air Contaminants

Although AAQS exist for criteria pollutants, no ambient standards exist for toxic air contaminants (TACs). Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, the ARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor called a Hazard Index is used to evaluate risk. In the early 1980s, the ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807) (Tanner 1983) created California’s program to reduce exposure to air toxics. The Air Toxics “Hot Spots” Information and Assessment Act (AB 2588, Connelly 1987) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Sensitive Land Uses

For the purposes of air quality analysis, sensitive land uses are defined as locations where people reside or where the presence of pollutant emissions could adversely affect the use of the land. Sensitive land uses in the vicinity of the Project site are listed below and shown in Figure 3.3-1.

North Side

- Residential subdivision to the northwest
- Proposed Dixon High School

East Side

- Isolated single-family residents

West Side

- Existing Country Faire and Valley Glen Residential subdivisions

3.3.2 Regulatory Setting

Federal Regulations

The federal Clean Air Act, enacted in 1970 and amended twice thereafter (including the 1990 amendment), establishes the framework for modern air pollution control. The act directs the U.S. Environmental Protection Agency (EPA) to establish ambient air standards for six pollutants: ozone, CO, lead, nitrogen dioxide, particulate matter, and sulfur dioxide. The standards are divided into primary and secondary standards; the former are set to protect human health within an adequate margin of safety and the latter to protect environmental values, such as plant and animal life.

The Clean Air Act requires states to submit a State Implementation Plan (SIP) for areas in non-attainment for federal air quality standards. The SIP, which is reviewed and approved by EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to denial of federal funding and permits. In cases where the SIP is submitted by the state but fails to demonstrate achievement of the standards, EPA is directed to prepare a federal implementation plan.

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Figure 3.3-1
Location of Sensitive Land Uses

State Regulations

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the California Air Resources Board and local air pollution control districts. State standards are to be achieved through district-level air quality management plans that are incorporated into the SIP.

The California Clean Air Act requires local and regional air pollution control districts that are not attaining one or more of the state ambient air quality standards for ozone, CO, sulfur dioxide, or nitrogen dioxide to expeditiously adopt plans specifically designed to attain these standards. Each plan must be designed to achieve an annual five percent reduction in district-wide emissions of each non-attainment pollutant or its precursors.

Recently enacted amendments to the California Clean Air Act impose additional requirements designed to ensure an improvement in air quality within the next five years. More specifically, local districts with moderate air pollution that did not achieve "transitional non-attainment" status by December 31, 1997, must implement the more stringent measures applicable to districts with serious air pollution.

Local Regulations

The air quality management agencies of direct importance in Solano County include EPA, ARB, and the Yolo-Solano County AQMD. EPA has established federal ambient air quality standards for which ARB and the Yolo-Solano County AQMD have primary implementation responsibility. ARB and the Yolo-Solano County AQMD are also responsible for ensuring that state ambient air quality standards are met. The Yolo-Solano County AQMD is also responsible for implementing strategies for air quality improvement and recommend mitigate measure for new growth and development.

3.4 Biology

This chapter provides setting and general information on biological resources (e.g., vegetation, wildlife, wetlands) located in the Project area. A discussion of federal, state, and local laws, policies, and regulations that influence biological resources is also presented in this chapter.

3.4.1 Physical Setting

A previously prepared Biological Resource Evaluation of the Project area (Biosearch and Ted Winfield & Associates 2004) was the main source of information used to document existing physical conditions in the Project area.

This information was supplemented with data gathered during a January 21, 2005 field visit conducted by Jones & Stokes wildlife biologist, Angela Alcala, botanist/wetlands ecologist, Lisa Webber, and a survey conducted in August 2003 for the DUSD project adjacent to the Project area.

The approximately 94-acre Project area is located on the east side of SR 113 about one mile south of its intersection with A Street. The Project area is bordered by SR 113 (South First Street) to the west; agricultural land to the south; Lateral 2, the Dixon Resource Conservation District’s drainage ditch along the eastern site boundary; and a residential subdivision and agricultural field to the north. Surrounding land uses consist of residential areas forming the town of Dixon to the north and west and actively cultivated agricultural fields to the south and east. The agricultural field that borders the Project area to the north is the future location of the new Dixon High School. Athletic fields, a school farm, and a detention basin will be constructed within an agricultural field that borders the Project area to the east.

The Project area supports primarily agricultural fields, although an intermittent drainage within Lateral 2 forms the eastern boundary of the site and a farmhouse and its grounds are located at the northwest corner, along SR 113. The biological communities that occur on the site are described below. A list of plant and wildlife species observed in the Project area is provided in Appendix A. The locations of biological resources on the sites are shown on Figure 3.4-1.

Intermittent Drainage

Intermittent drainages have a well-defined bed and bank and convey runoff for short periods during and after rainfall or flow continuously through the wet season. Lateral 2 is an intermittent drainage that is part of an agricultural drainage system constructed by the DRCD in the 1960s (Curry, pers. comm.). Lateral 2 is approximately 30 feet wide from top-of-bank to top-of-bank and 8 feet wide at the channel bottom. Based on a fringe of wetland vegetation and evidence of shelving, the ordinary high water mark for the drainage appears to be approximately 15 feet across. Lateral 2 is incised to approximately 10 feet deep.

The Lateral 2 channel is unlined for most of its length in the Project area and supports non-native annual grassland species along the banks and in the bed of drier sections of the drainage. Seasonal wetland species occur along the bottom edge of the bank within wetter sections of the drainage. The strip of seasonal wetland vegetation has potential to be considered a jurisdictional wetland by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act (CWA), but functions as part of the intermittent stream and has not been separately delineated.

Ruderal vegetation is routinely controlled on the top of the banks of Lateral 2. Dominant species found on the banks of Lateral 2 include wild oat, Italian ryegrass, yellow star-thistle, Russian thistle, and sorghum. The seasonally wet margin of the drainage bed supports species such as curly dock, nutsedge, and

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Figure 3.4-1
Biological Resources

bearded sprangletop. The section of Lateral 2 in the northern portion of the Project area carried water during the field survey, while the southern was dry.

The value of intermittent drainages as wildlife habitat varies with the duration and intensity of water flow. During the wet season, intermittent drainages are used by a variety of wildlife species. Mammals such as raccoons and opossum use the habitats for drinking and washing their food. Shorebirds and waterfowl may use intermittent drainages for resting or foraging, whereas these habitats may serve as travel corridors for amphibians, invertebrates, or other highly aquatic wildlife. No wildlife species were observed in or adjacent to the intermittent drainage (Lateral 2) in the Project area during the January 2005 field survey. However, several ground squirrel and small rodent-sized burrows were observed within the earth berms along this drainage.

Agricultural Field

The Project area predominantly consists of agricultural lands (planted with grain in January 2005) that are currently in production. Unvegetated, two-foot-wide irrigation ditches cross the agricultural fields from east to west and north to south. Corn, alfalfa, tomato, and other row crops are commonly grown in the region. Dirt roads surround each field in the Project area. Ruderal vegetation occurs sporadically in the fields and at the edges, but is routinely controlled around the perimeter of the agricultural fields and in the irrigation ditches. A few juniper trees are also present along an agricultural ditch at the southeast corner of the Project area.

Depending on the crop pattern and the proximity to native habitats, agricultural lands can provide relatively high-value habitat for wildlife, particularly as foraging habitat. Raptors use row and grain crop agricultural lands for foraging because several species of common rodents are found in agricultural fields. Raptor species observed foraging in and adjacent to the Project area during the January 2005 field survey included American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and burrowing owl (*Athene cunicularia*). Agricultural habitats also provide foraging and resting habitat for migrating and wintering waterfowl and shorebirds, especially during the winter months.

Developed/Landscaped

A farmhouse and associated outbuildings and landscaping are located in the extreme northwest corner of the Project area along SR 113. Landscaping and grounds surrounding the farmhouse include numerous trees, including a large valley oak (approximately 2 feet in diameter at breast height) and horticultural species such as pepper tree, orange, olive, various shrubs, and herbaceous flowers.

Special-Status Species

Special-status species are plants and animals that are legally protected under the California Endangered Species Act (CESA), the federal Endangered Species Act (ESA), or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants and animals are species in the following categories:

- species listed or proposed for listing as threatened or endangered under ESA (50 Code of Federal Regulations [CFR] 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]);
- species that are candidates for possible future listing as threatened or endangered under ESA (69 FR 24876, May 4, 2004);
- species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5);
- species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants considered by CNPS to be “rare, threatened, or endangered in California” (Lists 1B and 2, available at www.cnps.org/rareplants/inventory/6thEdition/htm);
- plants listed by CNPS as plants about which more information is needed to determine their status, and plants of limited distribution (Lists 3 and 4, available at www.cnps.org/rareplants/inventory/6thEdition/htm), which may be included as special-status species on the basis of local significance or recent biological information;
- animal species of special concern to California Department of Fish and Game (DFG) (Remsen 1978 [birds], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]); or
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [amphibians and reptiles]).

The following sections discuss special-status species that have been documented in the Project area and identify additional special-status species that have the potential to occur in the Project area.

Special-Status Plants

Special-status species with potential to occur in the Project vicinity were identified by reviewing existing survey information and the California Natural Diversity Database (2004) species list obtained for the Project region. Only those species that occur at low elevations in annual grassland and/or seasonally wet habitats were considered further. The following special-status plant species have potential to occur in habitats in the Project vicinity:

- Ferris's milkvetch (*Astragalus tener* var. *ferrisiae*)
- alkali milkvetch (*Astragalus tener* var. *tener*)
- heartscale (*Atriplex cordulata*)
- brittlescale (*Atriplex depressa*)
- San Joaquin saltbush (*Atriplex joaquiniana*)
- vernal pool smallscale (*Atriplex persistens*)
- recurved larkspur (*Delphinium recurvatum*)
- dwarf downingia (*Downingia pusilla*)
- fragrant fritillary (*Fritillaria liliacea*)
- adobe-lily (*Fritillaria pluriflora*)
- Boggs Lake hedge-hyssop (*Gratiola heterosepala*)
- Carquinez goldenbush (*Isocoma arguta*)
- legenere (*Legenere limosa*)
- Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*)
- Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)
- Colusa grass (*Neostapfia colusana*)
- Crampton's tuctoria (*Tuctoria mucronata*)

The only special-status plant species from this list documented within 5 miles of the Project area is alkali milkvetch (CNDDB 2004). Based on the January 21, 2005 field visit, it is apparent that the site is subjected to on-going agricultural activities that disrupt and remove all vegetation within the fields. The farmhouse area is actively landscaped and disturbed by vehicle and equipment movement. No suitable habitat for special-status plants is present in the agricultural fields or around the farmhouse. Due to the lack of natural conditions, there is a low potential for any of these special-status plants to occur within the Project area.

Special-Status Wildlife

Based on a review of existing information (including the Biological Resource Evaluation prepared for the proposed Project by Biosearch and Ted Winfield & Associates [2004]), species lists obtained from the USFWS, and species distribution and habitat requirements data, the following 14 special-status wildlife species were identified as having the potential to occur within the Project area.

- Conservancy fairy shrimp (*Branchinecta conservatio*) – Federally Endangered
- Vernal pool fairy shrimp (*Branchinecta lynchi*) – Federally threatened
- Vernal pool tadpole shrimp (*Lepidurus packardi*) – Federally threatened
- Valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) – Federally threatened
- Delta green ground beetle (*Elaphrus virdis*) – Federally threatened
- California tiger salamander (*Ambystoma californiense*) – Federally proposed as threatened
- Western spadefoot (*Scaphiopus hammondii*) – DFG “species of special concern”
- Giant garter snake (*Thamnophis gigas*) – State and Federally threatened
- Western pond turtle (*Clemmys marmorata*) – DFG “species of special concern”
- Swainson’s hawk (*Buteo swainsoni*) – State threatened
- White-tailed kite (*Elanus leucurus*) - DFG “fully protected species”
- Western burrowing owl – DFG “species of special concern”
- Northern harrier – DFG “species of special concern”
- Loggerhead shrike (*Lanius ludovicianus*) - DFG “species of special concern”

No elderberry shrubs, the host plant for VELB, were located within 100 feet of the Project area during the January 2005 field survey; therefore, VELB would not occur in the Project area and would not be affected by the Project.

No seasonal wetlands (e.g., vernal pools and seasonal swales) that would provide potential habitat for Conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Delta green ground beetle, western spadefoot, and California tiger salamander occur in the Project area; therefore, these species would not be affected by the Project.

One historic museum record for California tiger salamander exists within a ten-mile radius from the Project area. This occurrence was recorded in 1953 and the species is believed to be extirpated from this site (CNDDB 2004). Lateral 2 drains stormwater from the City of Dixon and agricultural runoff into the Dixon Main Drain and eventually into Hass Slough. Within the Central Valley of California, California tiger salamander aquatic breeding sites consist of vernal pools and seasonal ponds, in addition to stock ponds for cattle, sheep, and horses (USFWS 2003). Drainage canals do not provide suitable breeding habitat for California tiger salamander because these resources frequently contain predatory fish and conduct heavy water flows during storm events. Therefore, Lateral 2 in the Project area would not provide suitable aquatic breeding habitat for California tiger salamanders.

Two known occurrences of giant garter snake were recorded in 1987, between 7 and 9 miles southeast from the Project area (CNDDB 2004). Habitat at these locations consisted of agricultural canals with cattail and tule along their margins, surrounded by pastures and cultivated fields, and contained water during late summer. Lateral 2 in the Project area occurs at the northern edge of the Dixon Resource Conservation District's drainage system. Lateral 2 within the Project area was dry during the January 2005 field survey and did not support emergent vegetation. The giant garter snake requires a permanent or semi-permanent water source that is hydrologically connected to known populations of the species. Lateral 2 would not provide a suitable migration corridor for giant garter snake because the canal primarily collects and drains stormwater runoff during the winter rainy season, when giant garter snakes are inactive and aestivating in upland sites. No additional water sources or flooded rice fields occur in the Project area.

Western pond turtles also require a permanent to semi-permanent water source. Based on Lateral 2 conditions described above, Lateral 2 would not provide suitable aquatic habitat for western pond turtle.

Several trees in the northwest corner of the Project area provide suitable nesting habitat for tree-nesting migratory birds and raptors. Suitable burrowing habitat for burrowing owls was observed within the earth berm along Lateral 2 and along an agricultural ditch that borders the southern portion of the Project area. Agricultural fields in the Project area could provide potential foraging habitat for several special-status birds and raptors including the white-tailed kite, Swainson's hawk, burrowing owl, northern harrier, and loggerhead shrike.

Based on the presence of suitable habitat for Swainson's hawk, burrowing owl, and northern harrier, and the potential for the Project to affect these species, a brief discussion on each of these species is provided below.

Swainson's Hawk

Swainson's hawk is state-listed as threatened. Swainson's hawk migrates annually from wintering areas in South America to breeding locations in northwestern Canada, western United States, and Mexico. In California, Swainson's hawk nests throughout the Central Valley in large trees in riparian corridors, and in isolated trees located in or adjacent to agricultural fields. Its breeding season extends from late March through late August, with peak activity from late May through July (England et al. 1997). In the Central Valley, Swainson's hawk forages in large, open agricultural habitats, including alfalfa and hay fields (California Department of Fish and Game 1994). The breeding population in California has declined by an estimated 91 percent since 1900; this is attributed to the loss of riparian nesting habitats and the conversion of native grassland and woodland habitats to agriculture and urban development (California Department of Fish and Game 1994).

Swainson's hawks have been observed foraging in the Project area and vicinity during previous field surveys conducted for the adjacent new high school project (Jones & Stokes 2004). The CNDDB (2004) has recorded numerous (30+) Swainson's hawk nest sites within a 10-mile radius from the Project area. The closest record exists along the west side of Highway 113, within 0.25 mile from the Project area (CNDDB 2004). This nest site location is shown on Figure 3.4-1. Agricultural lands (low-growing low crops) in the Project area provide suitable foraging habitat for Swainson's hawks nesting within a ten-mile radius from the Project area (California Department of Fish and Game 1994). A large oak tree containing a stick nest is located near a farmhouse in the northwest corner of the Project area and provides a potential nest site for Swainson's hawk.

Western Burrowing Owl

Western burrowing owl is designated as a state species of special concern. Western burrowing owl is found throughout much of California in annual and perennial grassland, desert, and arid scrubland (California Department of Fish and Game 1995). It can also be found in vacant lots in residential areas, along railroad ballast, along dirt roads, and on canal levees. The presence of burrows is the most critical requirement for western burrowing owl habitat; the species uses burrows excavated by ground squirrels and badgers, as well as artificial burrows such as cement culverts, debris piles, or openings under roads (California Department of Fish and Game 1995). Its breeding season extends from March through August, peaking in April and May (Zeiner et al. 1990).

The CNDDB (2004) has recorded several burrowing owl breeding and wintering nest sites within a 10-mile radius from the Project area. During the 2000/2001 winter season, one active burrowing owl wintering burrow site was identified along Lateral 2 just north of the Project area during a burrowing owl survey conducted for the South Dixon Sewer Trunk Project (Moore Biological 2001). During the January 2005 field survey, a burrowing owl was observed standing on a dirt pile along a dirt access road in the southern portion of the Project area. One active burrow was identified along an agricultural ditch along the southern boundary of the Project area. This burrow was located just outside the Project area. Evidence of burrowing owl found at this burrow included whitewash and small owl pellets (prey remains). The location of the burrowing owl burrow and owl sighting is shown on Figure 3.4-1. Representative photos of the burrowing owl burrow observed adjacent to the Project area is provided as Figure 3.4-2. Although evidence of burrowing owls was observed during the January 2005 field survey, a protocol-level burrowing owl survey was not conducted in the Project area at the time of this survey, therefore, the Project area has the potential to contain additional burrowing owl burrows.

3.4.2 Regulatory Setting

This section describes the federal, state, and local plans, policies, and laws relevant to biological resources in the Project area.

Photo 1

Photo 2

Figure 3.4-2
Photos of Burrowing Owl Burrow Located within Berm Adjacent to the Southern Boundary of the Project Area

Federal Regulations

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Regulation of Waters of the United States, Including Wetlands

The Corps and the EPA regulate the discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. Waters of the United States include wetlands and lakes, rivers, streams, and their tributaries. Wetlands are defined for regulatory purposes as areas

> inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3).

Project proponents must obtain a permit from the Corps for all discharges of fill material into waters of the United States, including wetlands, before proceeding with a proposed action. This would include work within Lateral 2. The Corps may either issue an individual permit or general permits on a program level (more likely an individual permit, if federally listed species are associated with the waters of the United States). General permits are prior-authorized and issued to cover similar activities that are expected to cause only minimal individual and cumulative adverse environmental effects.

Nationwide permits are a type of general permit that cover specific fill activities. Nationwide permits have a set of general conditions that must be met for the permits to apply to a project, as well as specific conditions that apply to each nationwide permit.

The following conditions would need to be met as part of the Section 404 permitting process:

- Procurement of Section 401 water quality certification from the Regional Water Quality Control Board (RWQCB);
- Procurement of Section 402 National Pollutant Discharge Elimination System (NPDES) permit from the RWQCB. The NPDES program regulates the discharge of pollutants from a point source (pipe, ditch, well, etc.) to waters of the U.S. and is required for grading areas of more than one acre;
- Compliance with ESA, involving consultation with USFWS, if the project is likely to jeopardize the continued existence of a threatened or endangered species or its critical habitat; and
- Compliance with the requirements of Section 106 of the National Historic Preservation Act.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires consultation with USFWS when the waters of any stream or other body of water are proposed, authorized, permitted, or licensed to be impounded, diverted, or otherwise controlled or modified under a federal permit or license (16 United States Code [USC] 661-667[e]). Most USFWS comments on applications for permits under Section 404 of the Clean Water Act are conveyed to the Corps through the consultation process required by this coordination act.

USFWS provides advisory comments and recommends mitigation measures to avoid impacts on wetlands or modify activities that may directly affect wetlands. Mitigation recommended by USFWS may include restoring or creating habitat to avoid a net loss of wetland functions and values. Although consultation with USFWS is required, the Corps is not required to implement USFWS recommendations.

Federal Migratory Bird Treaty Act, Executive Order 13186

The Migratory Bird Treaty Act (MBTA) (16 USC 703–711) prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the act, *take* is defined as the action of or attempt to “pursue, hunt, shoot, capture, collect, or kill.” This act applies to all persons and agencies in the United States, including federal agencies.

Executive Order 13186 for Conservation of Migratory Birds (January 11, 2001) requires that any project with federal involvement address impacts of federal actions on migratory birds. The order is designed to assist federal agencies in their efforts to comply with the MBTA, and does not constitute any legal authorization to take migratory birds. The order also requires federal agencies to work with USFWS to develop a memorandum of understanding (MOU). Protocols developed under the MOU must promote the conservation of migratory bird populations through the following means:

- avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- restore and enhance habitat of migratory birds, as practicable; and
- prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

State Regulations

California Environmental Quality Act

CEQA is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. A project normally has a significant environmental impact on biological resources if it substantially affects a rare or endangered species or the habitat of that species; substantially interferes with the movement of resident or migratory fish or wildlife; or substantially diminishes habitat for fish, wildlife, or plants. The State CEQA Guidelines define rare, threatened, or endangered species as those listed under CESA and ESA, as well as any other species that meets the criteria of the resource agencies or local agencies—for example, the DFG-designated “species of special concern” and CNPS-listed species. The State CEQA Guidelines state that the lead agency preparing an EIR must consult with and receive written findings from DFG concerning project impacts on species that are listed as endangered or threatened. The effects of a proposed Project on these resources are important in determining whether the Project has significant environmental impacts under CEQA.

California Endangered Species Act

California implemented the CESA in 1984. The act prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state’s definition of *take*. Under CESA, take is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include harm or harass. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. DFG administers the act and authorizes take through Section 2081 agreements (except for species designated as fully protected). Within the Project area one species, Swainson’s hawk, is protected under CESA. Mitigation to avoid and minimize impacts to Swainson’s hawk would be implemented as part of the Project and therefore a Section 2081 take authorization is not anticipated.

California State Wetlands Conservation Policy

The Governor of California issued an executive order on August 23, 1993, that created a California State Wetlands Conservation Policy. This policy is being implemented by an interagency task force that is jointly headed by the State Resources Agency and the California Environmental Protection Agency (Cal-EPA). The policy has three goals (Cylinder et al. 1995):

- to ensure no overall net loss and a long-term net gain in wetlands acreage and values in a manner that fosters creativity, stewardship, and respect for private property;
- to reduce the procedural complexity of state and federal wetlands conservation program administration; and
- to encourage partnerships that make restoration, landowner incentives, and cooperative planning the primary focus of wetlands conservation.

State Regional Water Quality Control Board

Water Code Section 13260 requires "any person discharging waste, or proposing to discharge waste, in any region that could affect the *waters of the state* to file a report of discharge (an application for waste discharge requirements)." Under the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne) definition, the term *waters of the state* is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Although all waters of the United States that are within the borders of California are also waters of the state, the converse is not true (i.e., in California, waters of the United States represent a subset of waters of the state). Thus, California retains authority to regulate discharges of waste into any waters of the state, regardless of whether the Corps has concurrent jurisdiction under Section 404.

California Fish and Game Code

Streambed Alteration Agreement

DFG has jurisdictional authority over wetland resources associated with rivers, streams, and lakes under California Fish and Game Code, Section 1602. DFG has the authority to regulate all work under the jurisdiction of the State of California that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.

In practice, DFG marks its jurisdictional limit at the top of the stream or lake bank or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries, as defined by Section 404, sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1600 may encompass a larger area than those regulated under Section 404.

DFG enters into a streambed alteration agreement with an applicant and can impose conditions on the agreement to ensure that no net loss of wetland values or acreage will be incurred. The streambed or lakebed alteration agreement is not a permit, but rather a mutual agreement between DFG and the applicant.

Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species, referred to as *fully protected species*. Section 5050 lists protected amphibians and reptiles. Section 3515 prohibits take of fully protected fish species. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, birds of prey under Section 3503.5, and fully protected birds under Section 3511. Migratory nongame birds are protected under Section 3800. Mammals are protected under Section 4700. Except for take related to scientific research, all take of fully protected species is prohibited.

Sections 3503 and 3503.5

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the needless destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests.

Local Regulations

Relevant Dixon General Plan Policies

The following City of Dixon General Plan policy relates to the protection of biological resources and applies to the wildlife resources located in the Project area:

> Natural Environment Policy, Wildlife Habitat, 13: The City shall require the proponents of new development projects to submit a study identifying the presence or absence of special-status species at proposed development sites. If special-status species are determined by the City to utilize a development site, appropriate mitigation measures must be incorporated as part of the proposed development prior to final approval.

3.5 Cultural Resources

3.5.1 Introduction and Sources of Information

This section of the EIR presents the Affected Environment of the proposed Project. Included herein are the sources of information consulted in support of the impact analysis and the regulatory setting governing cultural resource impact analyses under CEQA. Background information on the Project area’s prehistory and ethnography are incorporated by reference from the *Dixon High School and City Stormwater Detention Basin* environmental impact report, available at the offices of the City of Dixon (Jones & Stokes 2004).

Jones & Stokes received a record search from the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) on January 10, 2005 (NWIC File No. 04-612). The NWIC manages the State of California’s database of previous cultural resource studies and known cultural resources for a 16-county area, including Solano County. The CHRIS, combined with the published literature on California’s cultural resources, forms the baseline or existing conditions for cultural resources in environmental reviews. The records maintained by the CHRIS, including cultural resource locations and cultural resource studies containing locations of cultural resources, are not accessible to the general public but to cultural resource professionals.

The record search included review of the database of previous studies and known resources, the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), *California Historical Landmarks*

(California Department of Parks and Recreation 1996), *California Points of Historical Interest*, the California Office of Historic Preservation’s Historic Resource Inventory (HRI) listings for Solano County, California Department of Transportation’s State and Local Bridge Survey, and historic maps and secondary historical sources (California Department of Parks and Recreation 1976; General Land Office 1862; Henning 1872).

3.5.2 Physical Setting

The record search indicated that two cultural resource studies have been conducted in the proposed Project area (Foster and Foster 1992a, 1992b). These surveys were conducted more than 10 years ago and conditions are likely to have changed to a degree necessitating a comprehensive archaeological survey of the Project area. This is particularly important for those portions of the Project area that are presently under cultivation; archaeological remains are often redistributed within a field’s plow zone and periodically unearthed (see Feder 1997:55; Neslon et al. 2004). For example, prehistoric archaeological site CA-Sol-264, located about 200 feet north of the Project area, was identified in a cultivated field in 1975 (PEN 1975). Subsequent attempts to relocate the site were unsuccessful (Foster and Foster 1992a, 1992b; Jones & Stokes Associates 1992).

In addition, Lateral 2 of the Dixon Resource Conservation District (DRCD) is located adjacent to the Project area, and an archaeological site (CA-Sol-428/H) consisting of historic and Native American artifacts is located 0.5 mile from the Project area (Cervantes and Trumbly 2003; Nelson et al. 2004). Lateral 2 was built over 50 years ago but, as discussed in Chapter 4, is not of historic significance.

Historical Context

Present-day Dixon has its origins in the historic town of Silveyville, which was first settled in 1852 by Elijah S. Silvey. Originally consisting of Silvey’s country house and dairy farm, Silveyville soon became a stopping point for stagecoaches and freight wagons traveling between San Francisco and Sacramento. By the 1860s, Silveyville had developed into a sizable trading center, though in 1868 the entire town was moved five miles east to the new California Pacific Railroad. The following year, Thomas Dickson donated ten acres of land for the construction of a railroad station around which the new town of Dixon developed. The City of Dixon was incorporated by a special act of the Legislature during the 1877–1878 session (Hunt 1926). Though many of its original buildings were moved intact, Silveyville gradually disappeared and became Dixon.

From its inception, the principal livelihood of Dixon was farming. Historically, the first agrarian pursuits in the Project vicinity consisted of subsistence farming and cattle-raising. A number of developments, however, among them fencing laws, the proliferation of small farmsteads, and competition for land with grain farmers made cattle-raising less profitable than sheep-raising (Cosby and Carpenter 1935). Subsequently, Dixon's chief agricultural product was grain, which alfalfa and small-grain production eventually superseded (Cosby and Carpenter 1935; Hunt 1926). The city is best known, however, as a leading dairy center (Hunt 1926). The importance and profitability of Dixon's agricultural output increased significantly with the advent of the Central Pacific Railroad through the area. Prior to railroad transport, agricultural products had to be taken in wagons south to the Maine Prairie shipping point on the Sacramento River and transferred to boat (Cosby and Carpenter 1935).

Dixon Resource Conservation District

The DRCD manages storm drainage in the area surrounding Dixon and collects irrigation tailwater in spring and summer (California Association of Resource Conservation Districts 2002). The DRCD's boundaries are marked approximately by Putah Creek on the north, McCune Creek on the west, Haas Slough on the south, and Yolo Bypass on the east. Waters within DRCD's jurisdiction generally drain from Putah Creek, north of Dixon, to the southeast. Prior to incorporation of the DRCD, stormwater drainage relied upon natural waterways such as Dickson and Dudley creeks and other drainages (U.S. Geological Survey 1908, 1916, 1941, 1953). To improve stormwater conveyance from the city and the surrounding agricultural fields the DRCD constructed, among other improvements, Laterals 1, 2, and 3 near Dixon.

The DRCD began construction of this channel network in 1953, with assistance from the U.S. Soil and Conservation Service in 1953. A total of 27 miles of open channel was completed as a result of this Project. The channel network consisted of the Dixon Main Drain and Laterals 1–5. Additional improvements were made to the system in 1965, including the enlargement of Laterals 2 and 3 (Brown and Caldwell Consulting Engineers 1989:4-29; Raney Planning and Management 2002). The DRCD presently manages a 70-mile-long system of ditches. The DRCD drainage system has been important from the aspect of putting more land into agricultural production and reducing crop damage resulting from winter floods (California Association of Resource Conservation Districts 2002).

Description of Potential Cultural Resources

Two potential cultural resources have been identified in the Project area: Lateral 2 and the Bloom House. These resources are described below. Their cultural significance is discussed in Chapter 4.

Lateral 2

Lateral 2 is more than 50 years old and therefore was examined to determine whether it qualified as a cultural resource. Lateral 2 is an open earthen ditch or drain that extends from the channelized Dickson Creek one mile to the south, where the lateral turns east for 0.5 mile. At this point Lateral 2 turns south again, paralleling Pedrick Road on its western side. Lateral 2 discharges into the Dixon Main Drain south of Dixon. Lateral 2 was enlarged in 1965.

Bloom House

The Bloom House is a large two-story, single-family residence. Rectangular in plan, the wood frame house is supported by a concrete foundation, has horizontal wood siding, and a hipped roof clad with composition shingles. Fenestration consists of a series of double-hung, wood sash windows. An inset porch that shelters the main and secondary entrance extends around the lower level of the west and south elevations. A gable end extension protruding from the west elevation marks the main entrance. An entrance on the lower level of south elevation is also sheltered by an inset porch while a shed roof extension covers a service porch on the east elevation. Sleeping porches are located on the upper story on the south and east elevations. Stylistically, the Bloom House is considered to be a vernacular derivative of the Craftsman idiom. In other words, although the house exhibits some of the detailing that is typical of the Craftsman-style in form and massing—including knee braces on a gabled roof porch extension and exposed rafter tails—it does not strictly embody the style.

The property also includes a garage, storage building, barn, and another residence. The garage and storage building are located adjacent to the Bloom House, but do not appear to be contemporary with the building. They are both simple wood frame buildings with corrugated metal panel roofs. The garage has a variety of siding including board-and-batten, vertical planks, and corrugated metal panels; the storage building features simple vertical plank siding. The barn is a large (approximately 2.5 stories tall) wood frame structure with a corrugated metal panel roof and vertical plank siding. Although available records do not indicate its construction date, based on its architecture, the barn was likely built around the same time as the Bloom House. The secondary residence is a humble house built or renovated in recent years. It is a single-story, wood frame building with a corrugated metal, gabled roof. The building is sheathed with Type T-111 siding. Based on the basic rectangular footprint, it is possible that this was an ancillary farm building converted to a residence, however, available records do not indicate a construction date.

3.5.3 Regulatory Setting

Federal

There are no specific federal regulations that apply to the cultural resources associated with this Project.

State Regulations

CEQA requires public agencies which finance or approve public or private projects assess the effects of the project on cultural resources. Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. CEQA requires that, if a project results in significant effects on important cultural resources, alternative plans or mitigation measures must be considered; only significant cultural resources, however, need to be addressed. Therefore, prior to the development of mitigation measures, the importance of cultural resources must be determined. The steps that are normally taken in a cultural resources investigation for CEQA compliance are as follows:

- identify cultural resources,
- evaluate the significance of resources,
- evaluate the effects of a project on *all* resources, and
- develop and implement measures to mitigate the effects of the project only on *significant* resources.

Local

There are no specific local regulations that apply to the cultural resources associated with this Project.

3.6 Geology, Soils, and Hazards

3.6.1 Physical Setting

Geology

The proposed Project site is located within the Sacramento Valley, which is a broad lowlands, bounded by the Sierra Nevada Mountains to the east and the Coast Ranges to the west. The Valley rests upon a thick sequence of sedimentary rocks varying in age from the Jurassic period to the Holocene epoch, covered by more recent alluvial deposits. The Project site is underlain by Quaternary-aged alluvial deposits (Geocon 2003, California Division of Mines and Geology 1981).

Soils and Topography

According to the U.S. Soil Conservation Service Soil Survey of Solano County (Soil Conservation Service 1977), the two soils underlying the Project area are Brentwood clay loam, with 0–2 percent slopes, and Yolo silty clay loam. The

Brentwood soil consists of well-drained soil on alluvial fans. Permeability is moderately slow. Surface runoff is very slow, and the erosion hazard is slight. Shrink-swell (expansion) potential is high. The Yolo silty clay loam also consists of well-drained soil on alluvial fans. Permeability is moderately slow. Surface runoff is slow, and the erosion hazard is slight. Shrink-swell potential is moderate.

The proposed Project site is composed of flat topography. A drainage ditch (Lateral 2) runs north-south along the eastern site boundary.

Seismicity

There are no Alquist-Priolo fault zones running through or adjacent to the Project area (California Geological Survey 2000a). The potentially active Midland Fault is less than two miles west of the proposed site, and the potentially active Vaca Fault is approximately 12 miles west of the site (California Division of Mines and Geology 1981). The California Geological Survey rates the Project area as being at low-medium risk of groundshaking (California Geological Survey 2000b).

Hazardous Sites and Soil Contamination

According to the Phase I Environmental Site Assessment prepared by ENGEO Incorporated (2003), the proposed Project site contains no potential recognized hazardous conditions other than application of regulated pesticides, and the only hazardous materials/wastes that have been historically or reportedly used, generated, and/or stored at the site are regulated pesticides and temporary aboveground fuel storage tanks. There are no National Priority List (i.e., Superfund) sites in the vicinity of the site. North of the proposed site is a closed and covered landfill facility (now Hall Memorial Park), and properties at the park have also been used by the City of Dixon for sewage treatment ponds. The Phase I Environmental Site Assessment recommended that further assessment be done to evaluate whether impacted groundwater from the aforementioned uses had impacted the groundwater entering the property (ENGEO 2003).

A Preliminary Endangerment Assessment (PEA) was prepared for the school and Pond C by Geocon Consultants in January 2004 and approved by the California Department of Toxic Substances Control in March 2004. Based on the PEA’s findings, the Department of Toxic Substances Control concluded that “neither an actual or potential release of hazardous materials nor the presence of a naturally occurring hazardous material, which would pose a threat to human health or the environment under the unrestricted land use, was indicated at the site” (Fair 2004). Therefore, the likelihood of hazardous materials or wastes existing on this site from the sources noted in the Phase I Environmental Site Assessment is quite low.

Flood Zones

The Federal Emergency Management Agency (FEMA) has mapped the Dixon area for purposes of identifying those areas that lie within floodways of rivers and other waterways, or that are likely to be inundated in the event of a 100-year flood. The 100-year flood is a statistical construct identifying those areas that have a 1 percent chance of being flooded in any given year. According to the FEMA Flood Insurance Rate Map (FIRM), the southeasterly portion of the Brookfield Development is within "Zone A." Zone A is defined as areas that are within the 100-year floodplain where flood elevations (i.e., depths) are not precisely defined. Mandatory flood insurance purchase requirements apply. Grading and filling will alter the Project site's current elevation and will alter its susceptibility to flooding. In addition, drainage improvements will direct drainage from the Project site to the future Pond C stormwater detention basin.

3.6.2 Regulatory Setting

Federal Regulations

The key relevant federal legislation pertaining to hazardous wastes, as administered by EPA, is described below. Other applicable federal regulations are contained primarily in 29 CFR, 40 CFR, and 49 CFR. Because state regulations are as stringent or more stringent than federal regulations, and the state has been granted primacy (primary responsibility for oversight) by EPA to administer and enforce hazardous waste management programs, further discussion focuses on state regulations.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) enables EPA to administer a "cradle-to-grave" regulatory program (i.e., from manufacture of the hazardous material to its disposal) regulating the generation, transportation, treatment, storage, and disposal of hazardous wastes at all facilities and sites in the nation.

State Regulations

Hazardous Materials

State regulations also contain detailed planning and management requirements to ensure that hazardous wastes are properly handled, stored, and disposed of to reduce human health risks and environmental risks. Key state laws pertaining to hazardous wastes include:

- the Hazardous Materials Release Response Plans and Inventory Act of 1985 (Business Plan Act) (Chapter 6.95 of the California Health and Safety Code);
- the Hazardous Waste Control Act (HWCA);
- the Emergency Services Act;
- Proposition 65 (the Safe Drinking Water and Toxic Enforcement Act of 1986), which requires the Governor to publish a list of chemicals known to the state to cause cancer or reproductive toxicity; and
- California Government Code, Section 2.65962.5, which requires the Office of Permit Assistance to compile a list of potentially contaminated sites in the state (Cortese List).

Several of these laws are discussed in more detail below.

Hazardous Waste Control Act

The HWCA is the primary state hazardous waste law. HWCA created the state hazardous waste management program, which is like the federal RCRA program but generally more stringent. HWCA is implemented by regulations contained in 26 CCR, which describes the requirements for the proper management of hazardous wastes, including:

- criteria for identification and classification of hazardous wastes;
- requirements for generation and transportation of hazardous wastes;
- standards for design and permitting of facilities that recycle, treat, store, and dispose of hazardous wastes;
- treatment standards;
- guidelines for operation of facilities and staff training; and
- requirements for closure of facilities and liability requirements.

Title 26 of the California Code of Regulations lists more than 800 materials that may be hazardous, as well as the criteria for identifying, packaging, and disposing of wastes identified as hazardous. Title 26 also establishes permit requirements for facilities that recycle, treat, store, or dispose of hazardous wastes. Under HWCA and Title 26, the generator of a hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

Pesticide Control

The Department of Pesticide Regulation within Cal-EPA is responsible for administering state regulations for the safe permitting, use, and storage of pesticides. In general, the regulations establish a system of tracking and reporting pesticide use; permit requirements for the storage, use and application of pesticides; rules for the application of pesticides, including restrictions on the time and place of use; and rules for licensing and training applicators. The regulations aim to avoid the overuse of pesticides, keep the pesticides out of surface and groundwater supplies, minimize worker exposure, and ensure that pesticides do not leave the site to which they are being applied. These requirements are codified in Division 6 of Title 3 of the California Code of Regulations, commencing with Section 6000. The Department relies upon county Agricultural Commissioners to carry out permitting and inspection functions under these regulations.

Emergency Services Act

Under the Emergency Services Act, the state developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local agencies. Response to hazardous material or waste incidents is a key part of the plan. The plan is administered by the state Office of Emergency Services (OES). OES coordinates the responses of other agencies, including Cal-EPA, the California Highway Patrol, RWQCBs, air quality management districts, and county disaster response offices.

Seismicity

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act, signed into law by the California State Legislature in 1972, requires the state geologist to delineate all active fault traces in the state and to delineate appropriately wide earthquake fault zones around these fault traces. The purpose of this and other requirements of the Alquist-Priolo Act is to prevent the construction of habitable structures on the traces of active faults and thereby mitigate the hazard of surface fault rupture (Hart and Bryant 1997).

Local Regulations

Solano County has adopted a Hazardous Waste Management Plan (Brown, Vence and Associates 1989). Among other goals and policies, this plan promotes waste source reduction, encourages coordination between various local governing agencies, and requires proper management of hazardous materials according to state and federal regulations.

The Solano County Environmental Management Department is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas of the County. As such, it has been delegated responsibility by the state of California for the administration of the hazardous materials management plan program. This involves inspecting businesses for compliance with the HWCA, responding to illegal disposal of hazardous wastes, responding to hazardous materials incidents, and ensuring that businesses prepare hazardous materials management plans to aid emergency response, if necessary. The Department also undertakes the permitting and inspection of underground storage tanks.

The Solano County Agricultural Commissioner (County Agricultural Department) is responsible for regulating the use of pesticides in the County.

This includes issuing permits for the use of pesticides, registration of commercial pesticide users, field monitoring and inspections of pesticide use and application equipment, investigation of incidents relating to pesticide use, and tracking pesticide use. Farmers (or the commercial users in their employ) must obtain a permit from the Agricultural Commissioner prior to applying pesticides and must follow the restrictions on the time and place of application established under Title 3. For example, the County's Permit G prohibits the ground spraying of Category 1 and 2 materials within 100 feet, and aerial spraying within 500 feet, of residences and unprotected areas. The Agricultural Commissioner is authorized under Division 6 of Title 3 to undertake inspections and to bring civil actions and impose fines to enforce the pesticide control requirements.

3.7 Hydrology and Water Quality

3.7.1 Physical Setting

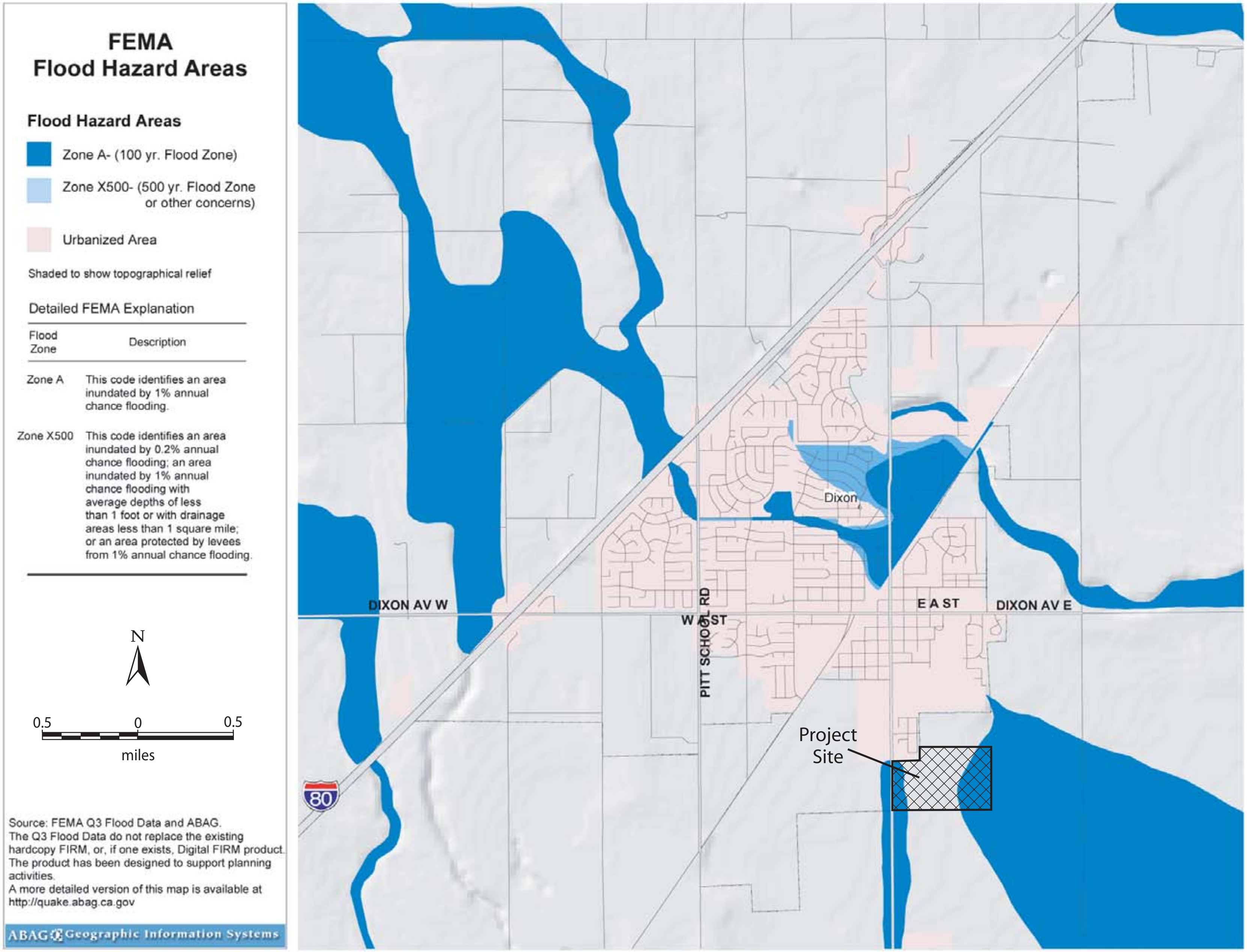
Surface water in the Project area historically flowed in a generally southeasterly direction. Although this is still the case, the system of drainage ditches in the Dixon area eventually carries surface runoff in a southerly direction to Ulatis Creek and Hass Slough. Lateral 2 runs south, between the high school site, and the high school farm and pond sites that are just east of the proposed development. Dickson Creek historically ran south through the high school farm and pond sites. The creek's historical path through the high school farm and pond sites has disappeared due to decades of agricultural practices.

Lateral 2 conveys drainage water from the City of Dixon south to the Dixon Main Drain. The Dixon RCD administers operation of Lateral 2. The site is generally flat. The site is currently being used for agriculture and vegetative cover is limited to row crops grown seasonally. Ground surface elevations range from about 56 feet above mean sea level (msl), to about 50 feet msl. This produces a very gentle slope. In addition, the regular practices of agricultural production aid in leveling of the site.

According to the FEMA FIRM, parts of the Brookfield Development are in *Zone A*, which are areas defined as within the 100-year floodplain where flood elevations are not precisely defined. The current 100-year floodplain is illustrated on Figure 3.7-1 .

Surface Water Quality

Surrounding land uses largely affect surface water quality, with both point-source and nonpoint-source discharges contributing contaminants to surface waters. The surrounding Project area includes a mixture of urban, agricultural, and recreational uses. Pollutant sources in urban areas include parking lots and streets, roof tops, exposed earth at construction sites, and landscaped areas. Water quality impacts from construction are of particular concern. Grading for



Detailed FEMA Explanation

Flood Zone	Description
Zone A	This code identifies an area inundated by 1% annual chance flooding.
Zone X500	This code identifies an area inundated by 0.2% annual chance flooding; an area inundated by 1% annual chance flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 1% annual chance flooding.

Source: FEMA Q3 Flood Data and ABAG.
The Q3 Flood Data do not replace the existing hardcopy FIRM, or, if one exists, Digital FIRM product. The product has been designed to support planning activities.
A more detailed version of this map is available at http://quake.abag.ca.gov

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Figure 3.7-1
Flood Zones

construction activity removes vegetation and exposes soil to wind and water erosion. The erosion can result in sedimentation that ultimately flows into surface waters. Other contaminants in urban runoff include sediment, hydrocarbons, metals, pesticides, bacteria, and trash. Runoff from agricultural areas is characterized by constituents such as fertilizers, herbicides, and pesticides, and often contains bacteria, high nutrient content and dissolved solids.

The Western portion of the Sac-Joaquin Delta is CWA 303(d) listed as impaired for chloropyrifos, DDT, diazinon, electromagnetic conductivity (EC), group A pesticides, mercury, and unknown toxicity. Within the local watershed of the Project proponent, Ulatis Creek runs to the western portion of the delta.

CWA Section 303(d) establishes the total maximum daily load (TMDL) process to assist in guiding the application of state water quality standards, requiring states to identify streams whose water quality is “impaired” (affected by the presence of pollutants or contaminants) and to establish the *TMDL* or the maximum quantity of a particular constituent that a waterbody can assimilate without experiencing adverse effect (U.S. Environmental Protection Agency 2000). The 303(d) lists breaks up the Sacramento-San Joaquin Delta into different sections. The Western portion of the Delta where Ulatis Creek drains into it is impaired for chloropyrifos, diazinon, DDT, group A pesticides, EC, mercury, and unknown toxicity.

The City’s approved stormwater detention Pond C, which will receive storm drainage from the Project site and other sites in southern Dixon, is being designed to filter contaminants. Pond C will act to remove stormwater pollutants from urban runoff to meet water quality standards before it is discharged to the Dixon Main Drain system.

Groundwater Quality

The Project is located within the Solano groundwater Subbasin. The Solano groundwater basin elevation is relatively stable with fluctuations occurring during drought years followed by a natural return in elevation from wet years. The Solano groundwater basin is considered to be good quality and beneficial in uses for both agriculture and domestic. Arsenic concentrations within the Solano groundwater basin are typically between 0.02-0.05 ppb, which is not considered to be problematic at this time (DWR 2004). Salt concentrations in the groundwater supply contribute to salt-related groundwater degradation that is occurring at the City’s wastewater treatment plant. The wastewater treatment plant is discussed under *Public Services and Utilities*, below.

3.7.2 Regulatory Setting

Federal Regulations

The following sections briefly describe federal water quality control programs, plans, and policies that are applicable to the Project area.

Clean Water Act and Associated Environmental Compliance

There are several sections of the CWA that pertain to regulating impacts on waters of the United States. The discharge of dredged or fill material into waters of the United States is subject to permitting specified under Title IV (Permits and Licenses) of the CWA and specifically under Section 404 (Discharges of Dredge or Fill Material) of the act. Section 401 (Certification) specifies additional requirements for permit review, particularly at the state level.

Section 303

The State of California adopts water quality standards to protect beneficial uses of state waters as required by Section 303 of the CWA and the Porter-Cologne Act. Section 303(d) of the CWA established the TMDL process to guide the application of state water quality standards (see discussion of state water quality standards below). To identify candidate water bodies for TMDL analysis, a list of water quality-limited streams was generated. These streams are impaired by the presence of pollutants, including sediment, and are more sensitive to disturbance.

Section 401

Section 401 of the CWA requires that an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant obtain a Water Quality Certification (or waiver). Water Quality Certifications are issued by the RWQCBs in California. Under the CWA, the state (RWQCB) must issue or waive Section 401 Water Quality Certification for the Project to be permitted under Section 404. Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States and imposes project-specific conditions on development. A Section 401 waiver establishes standard conditions that apply to any project that qualifies for a waiver.

Section 402

The 1972 amendments to the Federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point sources (Section 402). The 1987 amendments to the CWA created a new section of the CWA devoted to stormwater permitting (Section 402[p]). EPA has granted the State of California primacy in administering and enforcing the provisions of CWA and NPDES. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

The SWRCB issues both general and individual permits. Construction activities are regulated under the NPDES General Permit for Construction Activities, provided the total amount of ground disturbance during construction exceeds 1 acre. In the Project area, the Central Valley RWQCB enforces the general permit. Coverage under a general permit requires the preparation of a stormwater pollution prevention plan (SWPPP). The SWPPP includes pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a best management practice (BMP) monitoring and maintenance schedule.

Section 404

Placement of clean fill materials into the waters of the United States is regulated by Section 404 of CWA, which is administered by USACE. Under CWA, the state (i.e., the SWRCB) must issue or waive Section 401 water quality certification for the project to be permitted under Section 404. Water quality certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States.

State Regulations

The following sections describe state water quality control programs, plans, and policies that are applicable to the Dixon area.

Porter-Cologne Water Quality Control Act of 1969

Porter-Cologne established the SWRCB and divided the state into nine regional basins, each with an RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state’s surface and groundwater supplies.

Porter-Cologne authorizes the SWRCB to draft state policies regarding water quality in accordance with Section 303 of the Clean Water Act (CWA). In addition, Porter-Cologne authorizes the SWRCB to issue waste discharge requirements (WDRs) for projects that would discharge to state waters. Porter-Cologne requires that the SWRCB or the RWQCB adopt water quality control plans (basin plans) for the protection of water quality. A basin plan must

- identify beneficial uses of water to be protected,
- establish water quality objectives for the reasonable protection of the beneficial uses, and
- establish a program of implementation for achieving the water quality objectives.

Basin plans also provide the technical basis for determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals. Basin plans are updated and reviewed every 3 years in accordance with Article 3 of the Porter-Cologne and Section 303(c) of the CWA. The Central Valley RWQCB (CVRWQCB), which has jurisdiction over the Dixon area, adopted the most recent amendments to the basin plan in September 1998.

California Regional Water Quality Control Board, Central Valley Region—Basin Plan

Water quality in streams and aquifers of the region is guided and regulated by the CVRWQCB basin plan (CVRWQCB 1998). State policy for water quality control is directed at achieving the highest water quality consistent with the maximum benefit to the people of the state. To develop water quality standards consistent with the uses of a water body, the CVRWQCB attempts to classify historical, present, and future beneficial uses as part of its basin plan.

Streambed Alteration Agreement

A Streambed Alteration Agreement (California Department of Fish and Game Code 1600 et seq.) is required for any work within a creek or stream and its floodplain. Streambed Alteration Agreements may impose conditions to protect water quality during project construction.

Local Regulations

Dixon Resource Conservation District

The DRCD administers Lateral 2, the conveyance for drainage water from the City of Dixon and the proposed school. The DRCD establishes maximum flows into the Dixon Main Drain, and controls any modifications that may be made to Lateral 2. The City of Dixon, Dixon RCD Board of Directors, Main Prairie Water District (MPWD), and Reclamation District 2068 (RD 2068) have formed a Joint Powers Authority for the planning and future construction of substantial improvements to the Dixon RCD, MPWD, and RD 2068 drainage systems. The Joint Powers Authority will need to be advised of proposed modifications to Lateral 2.

3.8 Land Use and Planning

3.8.1 Physical Setting

The Project site is located in an unincorporated area of Solano County. Although not located within Dixon's current city boundaries, the site is encompassed by the Dixon sphere of influence established by the Solano County LAFCO (http://www.solanolafco.com/SOIMAP.pdf) and planning area, meaning the city and county general plans indicate that the area is slated for future annexation to Dixon. The site is currently used as agricultural land. In addition, one ranch house, one barn, one cabin and three out-buildings occupy the northwest area of the property along SR 113.

The Solano County LAFCO supervises city boundary changes in Solano County. An application or applications will be submitted for annexation of the Project and adjoining school and Pond C sites to the LAFCO, which will then consider the application based on the site's location within the sphere of influence; consistency with city and county plans; effects on natural resources; and other discretionary standards, including, but not limited to, the provision and cost of public services, protection of prime farmland, and effects on surrounding incorporated and unincorporated territories. Before the LAFCO can consider annexation, the City and County must agree on how to divide future property taxes generated from the site[1]. The Dixon City Council adopted a resolution authorizing execution of a Master Property Tax Transfer Agreement with Solano County for allocation of property taxes at its meeting of April 26, 2005.

Surrounding Land Uses

The south border of the site adjoins agricultural fields. North and east of the site is land that has been approved for development as the new Dixon High School and the City's Pond C storm drainage facility. The west boundary of the site is bordered by SR 113 and the Country Faire subdivision. Across SR 113 is the Valley Glen residential subdivision. Other uses in the vicinity include the Silveyville cemetery west of SR 113, the Dixon May Fairgrounds to the northwest, and the Superior Packing Company meat packing facility one-third mile south of the site. Surrounding land uses are illustrated in Figure 3.8-1.

Recent Annexations

Annexation to Dixon has not occurred since 1996. There are approximately 1,220 acres of land in the City's sphere of influence and outside its corporate limits that have not been annexed to the city; approximately 1,040 acres of which

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[1] Any private property annexed to the City would be subject to a master property tax agreement between Solano County and the City of Dixon. Pursuant to the Cortese-Knox-Hertzberg Act, such an agreement will be executed prior to any annexation (Salmons pers. comm.).

is farmland. This estimate is based on inspection of Solano County Environmental Management Department Map of Solano County Sphere of Influence, June 2003, and comparison with aerial photos courtesy of Mapquest [http://www.mapquest.com]. The County sphere of influence map was compared to the City limits to determine those areas that are potentially available for future annexation to the City. The Mapquest aerial photos were examined to determine the extent of existing agricultural use.

3.8.2 Regulatory Setting

Federal and State Regulations

There are no specific federal or state regulations that apply to the land use and planning associated with this Project.

Local Regulations

The Project area is located in an unincorporated portion of Solano County on the southeast edge of Dixon. The area is included in the county general plan and addressed in the county zoning ordinance.

Solano County General Plan

In its general plan, the County designates the Project area as Intensive Agricultural, “A-40,” and “essential agricultural land”. Essential agricultural land is identified as those productive farmlands that have been identified by the local community as necessary to the maintenance of a healthy agricultural economy. No single criterion or rating system of factors is adequate to determine whether an area is essential. The selection process must be somewhat subjective including not only quantifiable factors, but also the community’s perception of what it deems essential to its continued well-being.

If the proposed Project is developed, the Project site will no longer be in unincorporated county lands and will therefore not be subject to Solano County policies. The *Solano County General Plan* states: The County will coordinate its planning and program efforts with the cities to ensure that adequate quantities of various housing types are provided to meet the County’s total projected housing needs (Solano County 1980, as amended 1995).

Solano County Zoning Ordinance

The Project site is zoned Extensive Agriculture, with 40-acre minimum parcel size (A-40). The A-40 designation allows use of the site for agricultural pursuits, including crop production (e.g. orchards and vineyards), the grazing of animals,

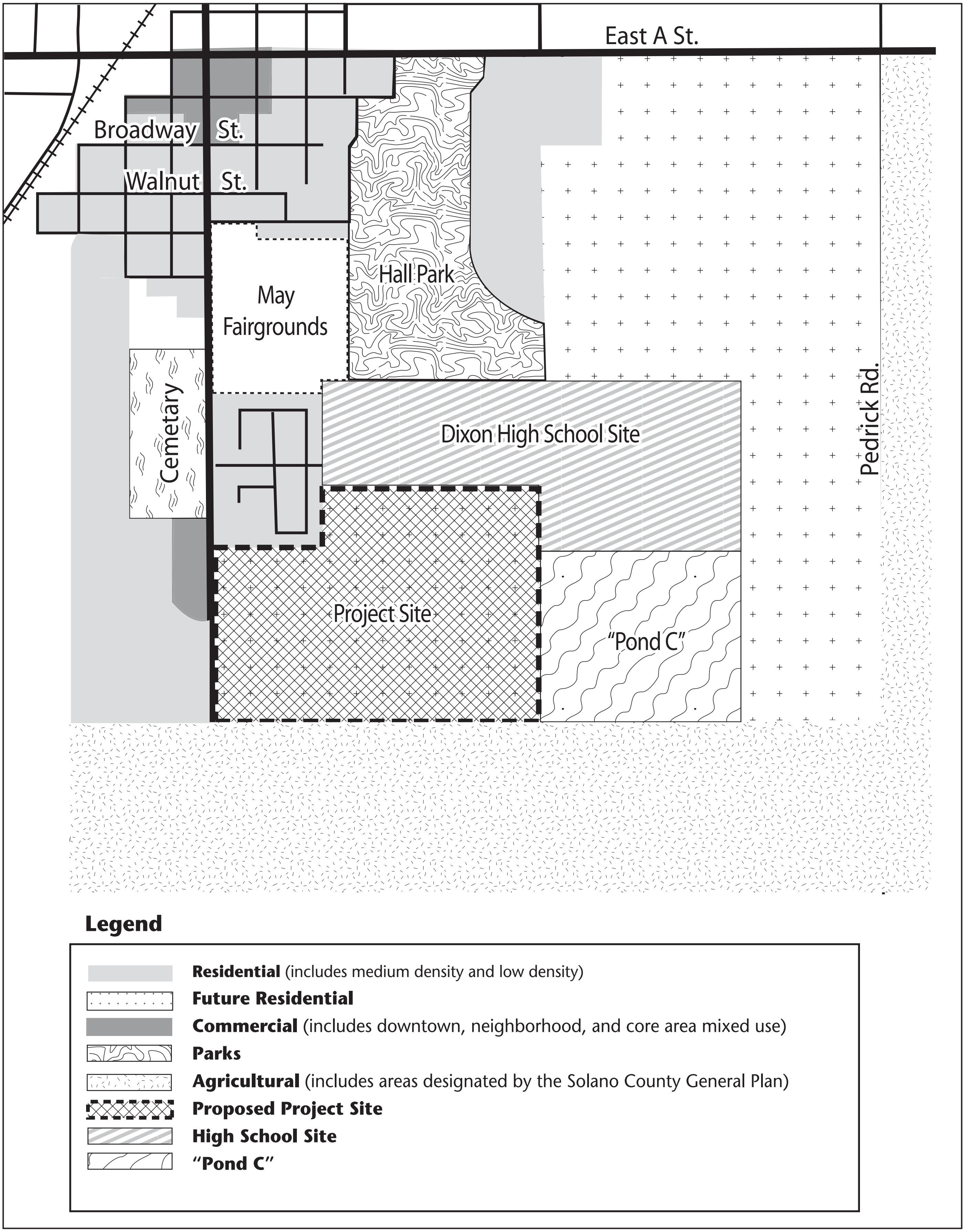

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Figure 3.8-1
Surrounding Land Uses

and the construction of agriculturally related accessory buildings and processing facilities (for products grown on-site). The A-40 district also permits construction of a single-family residence and a second dwelling unit. Certain land uses, including hog ranches, veterinary facilities, and agricultural trucking services/facilities, require approval of Conditional Use Permits from the County Planning Commission.

City of Dixon General Plan

The Project site is situated within an unincorporated area of Solano County and will be under County jurisdiction until the Project area is annexed to the City. Although the Project site is not within the current city limits of Dixon, California state general plan law (Government Code Section 65300 et seq.) allows a city's general plan to include areas that are outside the city's corporate boundaries, but within its sphere of influence. The Dixon general plan includes land use pre-designations for all lands within the City's sphere of influence, including the Project site. The designation of these lands allows the City to influence land use policies and decisions within its sphere of influence.

The *Dixon General Plan* designates the site as *Future Residential (after 2010)*. The following policies were found relevant to the Project area with respect to land use (City of Dixon 1993):

> 11. The City shall link the approval of new residential development to its ability to "pay its own way," in terms of infrastructure and service improvements directly related to the proposed residential development.
>
> 17. The City shall address and assist, to the extent possible, special housing needs, such as those of the…elderly.

City of Dixon Zoning Ordinance

The Project area is not currently subject to the City's zoning ordinance. However, it would be upon annexation. The following passages from the ordinance discuss annexation in general:

> 12.31.01. Unincorporated territory adjoining the city may be prezoned for the purpose of determining the zoning that will apply to such property in the event of subsequent annexation to the city.
>
> 12.30.11.A. All territory which is annexed to the city…shall automatically and without public hearing be unclassified in the T—Temporarily Unclassified District, unless otherwise zoned at the time of annexation.
>
> 12.30.11.B. The City Planning Commission shall make a study of the territory to determine in which zoning district it should be classified in order to carry out the objectives of the zoning ordinance… If the Commission finds that a change of district is required, it shall initiate the change as prescribed in Section 12.30.02.A.2. The owner of annexed property or the authorized agent of the

> owner may file an application for a change in district as prescribed in Section 12.30.02.A.1.

Solano County Local Agency Formation Commission

As mentioned above, the Solano LAFCO is the agency with jurisdiction over annexations and changes in cities' and special districts' spheres of influence within Solano County. The LAFCO is made up of representatives from the County Board of Supervisors, the cities within Solano County, and the public at large. Under state law, before it may grant an annexation request, the LAFCO must consider, among other things, the provision of urban services to the area, city and county general plans, agricultural protection policies, and the equitable distribution of property taxes between the county and the annexing city. The LAFCO requires that any land proposed for annexation to a city be "prezoned" before the annexation application is tendered. When a city prezones land, it establishes the zoning that will apply to the site at such time as formal annexation proceedings are completed. Until the annexation is approved, the land remains under county jurisdiction and is subject to county general plan and zoning regulations.

Standards 8 and 9 of the Solano LAFCO Standards and Procedures give guidance for approving annexation and urban growth that are relevant to the proposed Project. Standard 8 states:

> Prior to approving an annexation, LAFCO shall make a determination that the proposed conversion of open space lands to urban use is justified by probable urban growth within a 10 year period of time. A determination on the likelihood of significant growth justifying the conversion shall be based on analysis of local and regional demand for the proposed use (Solano LAFCO 1999);

And Standard 9 states:

> Urban growth shall be guided away from prime agricultural land unless such action would not promote planned, orderly, and efficient development for the agency. Development of existing vacant or non-prime agricultural lands within the agency limits should be encouraged before any proposal is approved for urbanization outside of the agency limits (Solano LAFCO 1999).

Each standard also includes explanation and discussion, including evaluation criteria, to be used to decide whether a proposed annexation would adhere to the LAFCO regulations. Relevant criteria for Standard 9 include:

2. If an annexation includes prime agricultural land, the annexation is considered to promote the planned orderly and efficient development of an area if:

    a. The proposed annexation meets the requirements of Standard No. 8; and

b. The proposed annexation either abuts a developed portion of the agency or abuts properties which already are committed to urban development by the extension of streets and other public facilities where service extensions were predicted on adjacent lands within the proposed annexation area being developed to assist in meting bond obligations or other financial instruments against the property; and

c. It can be demonstrated that there are sufficient vacant non-prime lands within the sphere of influence planned for the same general purpose because of one or more of the following.

(1) Where land is unavailable at a reasonable market rate as determined by competent market analysis.

(2) Where insufficient land is currently available for the type of land used [*sic*] proposed, as determined by competent market analysis.

(3) Where surrounding land use clearly is incompatible because of the age and condition of structures or mixture of land uses.

3.9 Noise

3.9.1 Terminology

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called “A-weighting,” written “dBA.”

Different types of measurements are used to characterize the time-varying nature of sound. Below are brief definitions of these measurements and other terminology used in this chapter:

- *Sound* is a vibratory disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- *Noise* is sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- *Decibel (dB)* is a unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
- *A-weighted decibel (dBA)* is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- *Maximum sound level (L_{max})* is the maximum sound level measured during the measurement period.
- *Minimum sound level (L_{min})* is the minimum sound level measured during the measurement period.
- *Equivalent sound level (L_{eq})* is the equivalent steady-state sound level that, in a stated period of time, would contain the same acoustical energy.
- *Percentile-exceeded sound level (L_{xx})* is the sound level exceeded *x* percent of a specific time period. L_{10} is the sound level exceeded 10 percent of the time.
- *Day-night level (L_{dn})* is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- *Community noise equivalent level (CNEL)* is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.

L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such in this assessment. In general, human sound perception is such that a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level. For a more detailed discussion of noise terminology, please refer to Appendix B.

3.9.2 Physical Setting

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses in the vicinity of the four project areas include:

North Side

- Residential subdivision to the northwest
- Proposed Dixon High School

East Side

- Isolated single-family residents

West Side

- Valley Glen Residential subdivision

The locations of noise-sensitive land uses are indicated in Figure 3.9-1.

Existing Noise Environment

The noise environment in the Project area is dominated by noise from traffic and on-street activity along SR 113, railroad activities along the Union Pacific railroad line, and agricultural operations from adjacent land uses. The noise environment in the Project area has been characterized using both noise monitoring and noise modeling. Long-term and short-term noise monitoring was conducted in the Project vicinity to characterize the existing noise environment. Long-term noise monitoring was conducted during the period between September 18, 2003, and September 19, 2003, using a Larson Davis SLM Model 700 sound level meter, while short-term noise monitoring was conducted on September 10, 2003, using a Larson Davis SLM Model 812 sound level meter. Noise monitoring positions are listed and indicated in Table 3.9-1 and Figure 3.9-1. Table 3.9-2 summarizes the results of long-term noise monitoring, while Table 3.9-3 indicates the results of short-term noise monitoring.

To further characterize existing noise levels in the Project area, noise from traffic traveling on streets in the Project area was modeled using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic data provided by the Project traffic engineer. Table 3.9-4 summarizes modeled traffic noise levels under existing conditions for various roadways in the Project area.

Table 3.9-1. Noise Monitoring Positions

Monitoring Position[a]	Monitoring Location
1	Between 780 and 790 Collier Drive backyard, along perimeter fence
2	Behind 800 Collier Drive
3	Behind 995 Orchard Drive backyard, along perimeter fence in field
4	905 Orchard Drive, on sidewalk
5	West side of canal in Bertolero field
6	Midpoint of Lombardo Field
A	North of Bertolero field and Lombardo field boundary

[a] Numbered position indicates short-term noise monitoring position, while lettered position indicates long-term noise monitoring position

Table 3.9-2. Summary of Long-Term Noise Monitoring

Time	Weekday (1-Hour dB-L_{eq})
12 a.m.	38.9
1 a.m.	43.9
2 a.m.	42.7
3 a.m.	44.3
4 a.m.	42
5 a.m.	47.4
6 a.m.	45.1
7 a.m.	51.4
8 a.m.	47.2
9 a.m.	45.9
10 a.m.	43.7
11 a.m.	43.3
12 p.m.	43.1
1 p.m.	53.3
2 p.m.	43.3
3 p.m.	46.3
4 p.m.	59.8
5 p.m.	40.2
6 p.m.	43
7 p.m.	41.1
8 p.m.	39.6
9 p.m.	42.9
10 p.m.	39.2
11 p.m.	37.7

Table 3.9-3. Summary of Short-Term Noise Monitoring

Position	Start Time	Duration (minutes)	Sound Level (dBA-L_{eq})	L_{max} (dBA)	L_{10} (dBA)	L_{90} (dBA)[a]	Sources
1	10:35 a.m.	10	53.1	62.0	56.6	47.6	Trees rustling, wind
2	11:04 a.m.	15	60.0	79.7	56.1	44.1	Tractor in distance, train horn, aircraft overhead
3	11:49 a.m.	15	47.8	58.7	50.7	42.5	Tractor in distance, train horn, aircraft overhead, trees rustling
4	12:17 p.m.	15	48.2	60.3	52.6	40.9	Train horn, aircraft overhead, garage door opener
5	1:00 p.m.	13	57.8	83.9	56.7	44.4	Tractor in distance
6	2:33 p.m.	12	54.7	64.9	58.4	42.9	Tractor in distance

[a] L_{90} is considered to represent the residual, or background, sound level.

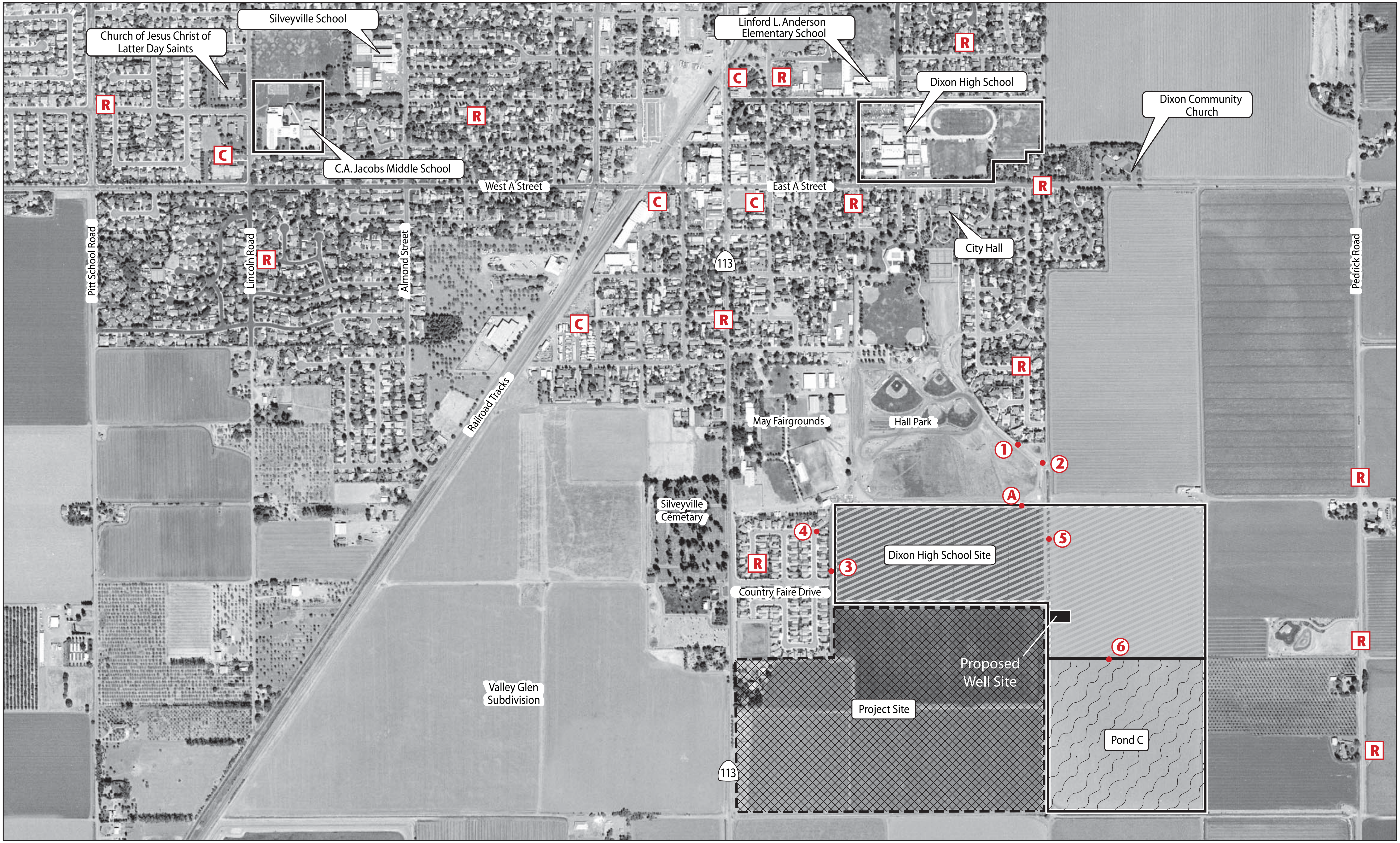

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Figure 3.9-1
Location of Noise-Sensitive Land Use and Noise Monitoring Locations

Table 3.9-4. Traffic Noise Model Results for Existing Conditions

Roadway	From	To	Existing (L_{dn} 100 feet from roadway centerline)
First Street	North of West A Street		56
	West A Street	East Chestnut Street	55
	East Chestnut Street	Cherry Street	54
	Cherry Street	Country Fair Drive	54
	Country Fair Drive	Valley Glenn Drive	59
	Valley Glenn Drive	Parkway Boulevard	58
	Parkway Boulevard	Midway Road	58
	South of Midway Road		57
Pitt School Road	North of West A Street		50
	South of West A Street		47
West A Street	West of Pitt School Road		56
	Pitt School Road	First Street	57
	East of First Street		56
East Chestnut	West of First Street		44
	East of First Street		42
Cherry Street	West of First Street		41
	East of First Street		35
County Fair Drive	West of First Street		34
	East of First Street		46
Valley Glenn Drive	Parkway Boulevard	First Street	46
	East of First Street		N/A[a]
Parkway Boulevard	West of Valley Glenn Drive		N/A[a]
	Valley Glenn Drive	First Street	36
	First Street	Valley Glenn Drive	N/A[a]
	East of Valley Glenn Drive		N/A[a]
Midway Road	West of First Street		55
	East of First Street		51
Valley Glenn Drive (2)	North of Parkway Boulevard		N/A[a]

[a] Not applicable. Roadway does not exist under existing and no project conditions where sound walls are located between residences and the roadway sound levels would be about 5 dB and distances to contours would be about half the value shown.

3.9.3 Regulatory Setting

Federal Regulations

There are no specific federal that apply to the noise resources associated with this Project.

State Regulations

California requires each local government entity to adopt a noise element as part of its general plan. The general plan is a document required by state law that serves as the jurisdiction's "blue print" for land use and development. The plan is a comprehensive, long-term document that provides details for the physical development of the jurisdiction, sets out policies, and identifies ways to put the policies into action. The general plan provides an overall framework for development in the jurisdiction and protection of its natural and cultural resources. The noise element of the general plan contains planning guidelines relating to noise. The noise element identifies goals and policies to support achievement of those goals, but is not legally enforceable. The goals and policies contained in the general plan are applicable throughout the jurisdiction. The general plan noise element is not a noise enforcement tool but rather serves as a guide for land use and development.

The California Code of Regulations, Title 4, has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The state land use compatibility guidelines are listed in Table 3.9-5.

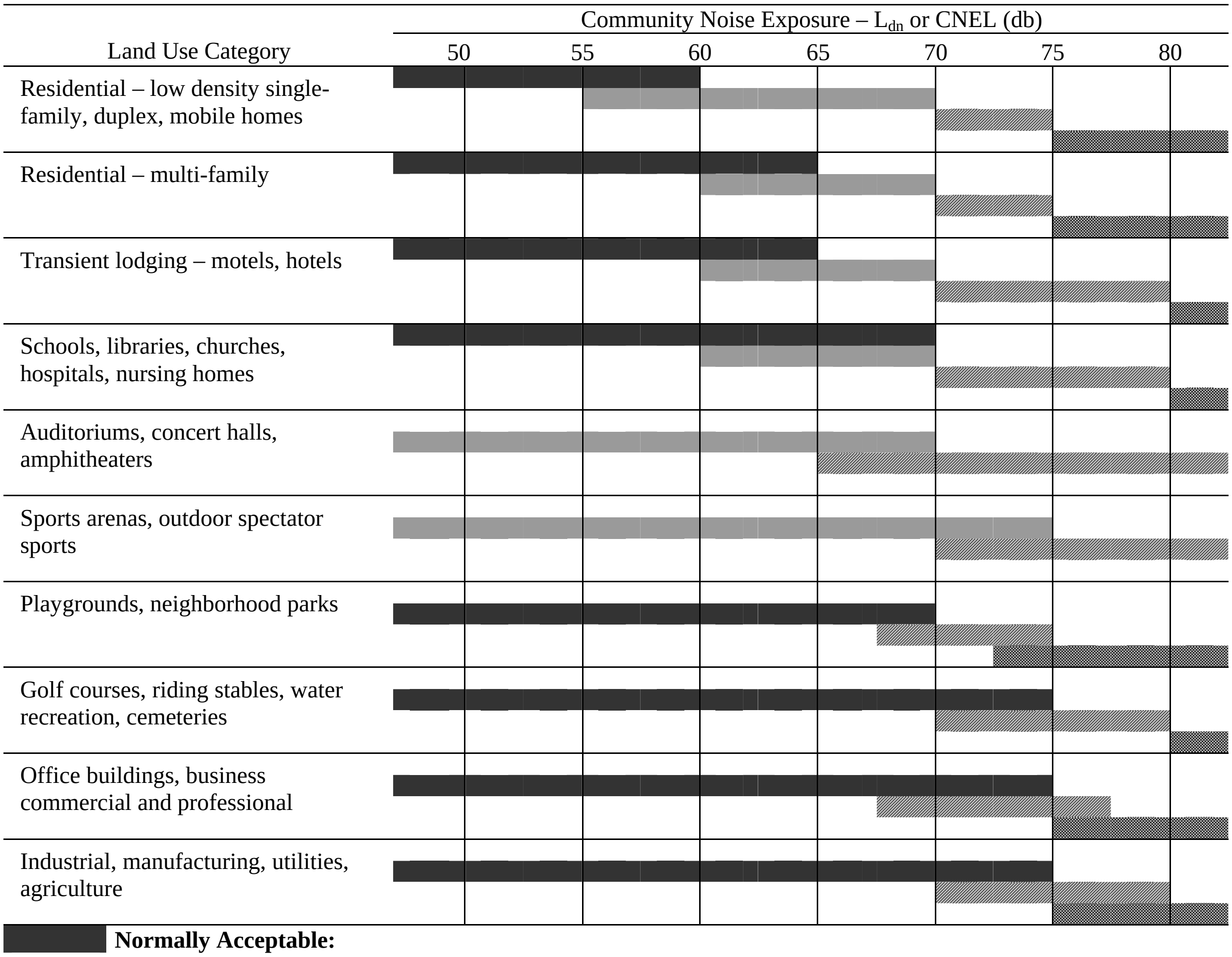
Local Regulations

The proposed Project site adjoins the corporate limits of the City of Dixon, and will be proposed for annexation to the City as part of this Project. Therefore, this discussion will focus on the City of Dixon's noise policies and regulations. This includes the noise element and the City noise ordinance. The following is a brief discussion of the City of Dixon's general plan policies and noise ordinance regulations implemented by the city to protect its residents from the adverse impacts of noise.

City of Dixon General Plan Noise Element

The noise element of the City's general plan identifies land use compatibility guidelines for noise. These guidelines are summarized in Table 3.9-6 and apply to sources of noise that are not regulated at the local level such as traffic, trains, and aircraft).

Table 3.9-5. State Land Use Compatibility Standards for Community Noise Environment



■ **Normally Acceptable:**

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

▩ **Conditionally Acceptable:**

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

▒ **Normally Unacceptable:**

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

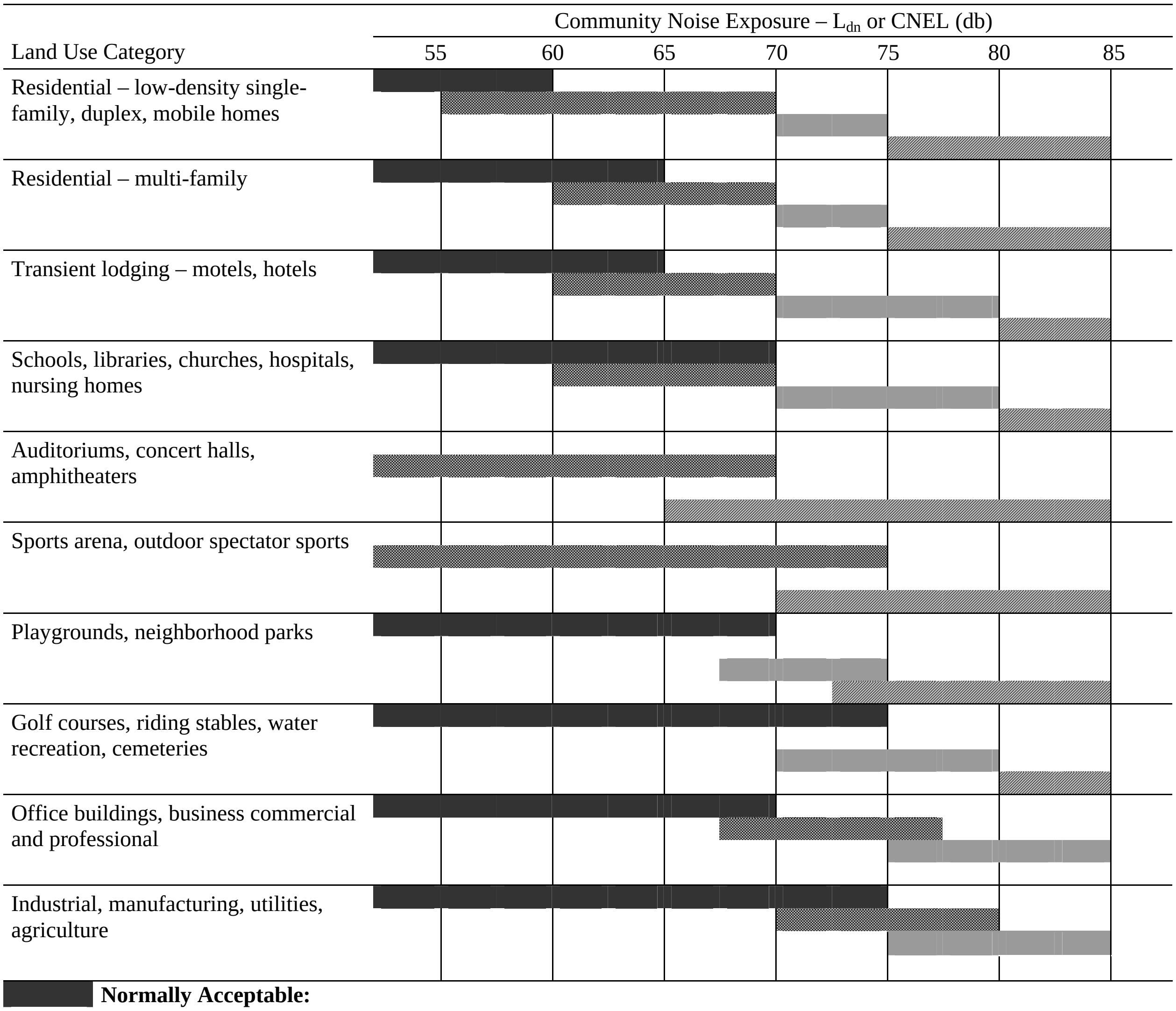
▨ **Clearly Unacceptable:**

New construction or development should generally not be undertaken.

Source: California Governor's Office of Planning and Research, November 1998.

Table 3.9-6. City of Dixon Land Use Compatibility Standards for Community Noise Environments

Page 1 of 2



■ **Normally Acceptable:**

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

▩ **Conditionally Acceptable:**

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

▒ **Normally Unacceptable:**

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

▨ **Clearly Unacceptable:**

New construction or development should generally not be undertaken.

Table 3.9-6. Continued

CONSIDERATIONS IN DETERMINATION OF NOISE-COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a “normalized” value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single-noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no grater than 45 dB CNEL or L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered “normally acceptable” for that land use category, may be appropriate.

Source: City of Dixon 1993.

City of Dixon Noise Ordinance

The City's noise ordinance stipulates maximum sound levels that may be generated by locally regaled sources of noise. These maximum sound levels vary by land uses. Table 3.9-7 summarizes the City's standards, while Table 3.9-8 summarizes correction factors that are applicable to Table 3.9-7.

The City's noise ordinance exempts temporary construction and demolition work from the standards in the City's noise ordinance. In addition, the City's ordinance prohibits the generation of vibration that is discernible at the property line of the source without the use of instruments.

Table 3.9-7. City of Dixon Noise Ordinance Maximum Land Use Sound Levels

Zoning District	Maximum Sound Pressure Level in Decibels
Residential	55 dB
Medical	55 dB
Multi Family Residential	60 dB
"C" Districts	70 dB
"M" Districts	75 dB

Table 3.9-8. City of Dixon Noise Ordinance Correction Factors to be Applied to Table 3.9-7

Time and Operation of Type of Noise	Correction in Maximum Permitted Decibels (dB)
Emission only between 7:00 a.m. and 10:00 p.m.	+5 dB
Noise of unusual impulsive character such as hammering or drill pressing	-5 dB
Noise of unusual periodic character such as hammering or screeching	-5 dB

Other Relevant Criteria

No commonly accepted thresholds exist for acceptable levels of noise from construction activities. The Office of Noise Control (ONC) of the California Department of Health published a model noise ordinance 1977 (California Department of Health Office of Noise Control 1977). This model ordinance provides recommended limits on noise generated by construction noise sources. The limits are summarized in Table 3.9-9.

Table 3.9-9. Office of Noise Control Construction Noise Limits

	Single Family Residential		Multi-Family Residential		Semi-Residential/ Commercial	
Time of Day	Duration < 10 days	Duration ≥ 10 days	Duration < 10 days	Duration ≥ 10 days	Duration < 10 days	Duration ≥ 10 days
Daily, except Sundays and legal holidays, 7 a.m. to 7 p.m.	75 dBA	60 dBA	80 dBA	65 dBA	85 dBA	70 dBA
Daily, 7 p.m. to 7 a.m. and all day Sunday and legal holidays	60 dBA	50 dBA	65 dBA	5 dBA	70 dBA	60 dBA

Source: California Department of Health Office of Noise Control 1977.

3.10 Public Services and Utilities

3.10.1 Physical Setting

This section describes the general public services and utilities available to the Project site, and the services and utilities that would be available if the site is annexed to Dixon. The Project site is located in an area defined for urban development in the *Dixon General Plan*.

Fire Protection

The Project site falls within the jurisdiction of the Dixon Fire Department, which would continue after annexation. The department responds to fire protection needs in the City and, under contract, the Dixon Fire Protection District (Salmons pers. comm.; Tam pers. comm.). A total of 18 full-time, two clerical, 40 volunteer, and one code compliance staff members work for the department (City of Dixon Web site). There is one fire station for the department, at 205 Ford Way. A new substation is currently planned in Southwest Dixon and is now in the design stage (Salmons pers. comm.). Once the Parkway Boulevard grade crossing has been completed (projected for 2007), this facility would be the station closest to the Project site. The Parkway Boulevard grade crossing of the railroad tracks is a separate project that is currently being designed by the City and is reflected in the City's Capital Improvement Program.

The Dixon Fire Department maintains an Insurance Services Office Class 5 rating (Class 1 represents the most protected, Class 10 the least protected) (City of Dixon Web site). The Project site is not located in an area expected to be susceptible to wildfires because the area is composed of agricultural land.

Law Enforcement

The Solano County Sheriff's Department currently provides law enforcement services to the site. After annexation, the Dixon Police Department would take over supervision of the area. The Dixon Police Department station is located at 201 West A Street. The department's staff includes 24 sworn officers and 4.5 non-sworn employees, as well as reserve officers and volunteers. The department provides a range of services, including patrol, detectives, and bicycle patrol (City of Dixon Web site).

Parks

Dixon has five main parks (Conejo, Patwin, Northwest, Veterans, and Hall Memorial), one small park (Women's Improvement Club Park, covering 0.6 acre), and one linear path with minimal facilities, including an open space area. The nearest neighborhood park to the Project is Veteran's Park. Hall Memorial Park, located directly south of East A Street and several blocks east of North 1st Street, is north of the proposed High School site. It includes a senior/multi-use center, aquatic center (planned for expansion), basketball and tennis courts, playing fields (softball, baseball), skate park, covered hockey arena, two picnic areas, and two playgrounds. The most recent expansion added four lighted little-league baseball diamonds. The next phase will provide lighted full-sized soccer and senior baseball fields, and additional parking. (Matheson pers. comm.; Salmons pers. comm.)

Schools

DUSD currently has four elementary schools (Silveyville, Anderson, Tremont, and Gretchen Higgins), a middle school (C.A. Jacobs Intermediate), a high school (Dixon), and a continuation high school (Maine Prairie) (Dixon Unified School District Web site). A new high school facility has been approved on the site north of this proposed Project. Once the new high school is built, the existing Dixon High School will be converted to a middle school, and the current middle school would be converted to an elementary school. The proposed Project, under agreement with the DUSD, would dedicate 40 acres of land and install the roads and utilities necessary to serve the new high school and grade the campus site in conjunction with Project site grading.

Solid Waste

The two landfills in Solano County are the B & J Hay Road and Potrero Hills landfills. Solid waste collected in Dixon is transported to the Hay Road Landfill (located at 6426 Hay Road, eight miles south of Dixon). Hay Road Landfill is slated to close in 2070 and currently has capacity for 23 million cubic yards of additional solid waste (California Integrated Waste Management Board 2005).

This landfill operates under a Class II-2 permit, which allows for the disposal of municipal waste. It has a permitted capacity of 2,400 tons per day.

Through its franchise agreement with Dixon Sanitary Service, the City has capacity for waste disposal reserved and guaranteed through the extension of the franchise term. The remaining permitted disposal capacity at the Hay Road Landfill is estimated to be adequate to handle the projected waste generation through buildout of the *Dixon General Plan*.

Wastewater Services

The City of Dixon, through the Department of Public Works, would provide wastewater service to the Project site. Currently, major trunk sewer mains run both north-south along the eastern Project boundary and east-west along the southern Project boundary, to the wastewater treatment plant. Sewer lines would need to be connected to buildings from this main line during Project construction. The wastewater treatment plant, at 6915 Pedrick Road, has a current permitted capacity of 1.31 million gallons per day (mgd), which accommodates the city population of approximately 15,000 people. The City currently operates under a Regional Board cease and desist order, which requires it to expand its wastewater treatment disposal system to accommodate existing flows, prevent inundation from bypassed overflows, and allow a minimum of 5 years of growth with the annual flow consistent with 100-year seasonal rainfall conditions. The cease and desist order also requires the City to address salt-related groundwater degradation at the wastewater treatment plant.

The City is in the midst of planning for facilities construction that will increase treatment plant, trunk sewer, and pump station capacities to accommodate future growth within its service area. It has approximately 120 acres of land currently used for overland flow disposal that could be utilized for new facilities and is investigating the feasibility of obtaining new disposal lands for the wastewater treatment plant where percolation disposal would not degrade the groundwater. Creative alternatives are being explored with the Regional Board to cost effectively address capacity and groundwater salt level issues. At the present time, this includes the South Dixon Sewer Trunk Line Phase 2, scheduled for completion in 2005, and East-West Sewer Trunk Connector now in design. The reliable capacity of the headworks pumping facility is about 12 mgd which is associated with an average daily flow of 2.5 mgd. The current average daily flow is about 1.5 mgd. Design will begin soon on modifications to the headworks pumping facility to connect the new trunk line and improve hydraulic and screening. The City’s goal is to stay 5–6 years ahead of the population’s needs. At buildout, the design capacity of the plant will be approximately 2.4 mgd (Tribbett pers. comm.).

The City will provide sewer service to the site as allowed under the terms of the pending new cease and desist order from the State Water Resources Control Board (State Water Board). The order is expected to include a compliance schedule to stop salt-related groundwater degradation at the existing wastewater treatment plant site and any new disposal sites. At this point in time, City staff believes that groundwater salt degradation mitigation measures may include relocation of disposal facilities to a more favorable site for percolation disposal, increased usage of surface water supplies to dilute the salt content of the wastewater [and possibly potable water when feasible], banning of new salt discharging water softeners, and increased public awareness through a community awareness campaign. (Melilli pers. comm.)

Stormwater Drainage

The City would provide stormwater drainage facilities for the development. The City is divided into drainage basins for purposes of collecting storm drainage. There are currently no existing stormwater drainage facilities on or adjacent to the Project facilities. However, the City has approved construction of a retention basin to serve this area. The proposed development would drain to Lateral 2 on its eastern edge, and then to the City's new Pond C, which will serve the drainage basin in which the proposed Project is located. The Country Faire subdivision, which currently has an on-site retention pond, would also drain to Pond C through the Brookfield development. Separately from the Brookfield Project, the existing Country Faire pond would be removed and its site developed.

Water Services

The following information is summarized from the *Water Supply Assessment for the Brookfield Homes Annexation, Dixon, California (2005)* prepared by the Solano Irrigation District Engineering Department. The WSA is attached as Appendix C.

Service Providers

Domestic and fire protection water in the Project vicinity is supplied by either the Dixon-Solano Municipal Water Service (DSMWS) or the California Water Service Company (Cal Water). The DSMWS water supply is entirely from groundwater wells and no surface water supply is currently used to augment supplies. Agricultural irrigation water in the Project vicinity is supplied by the Solano Irrigation District (SID). The Project site is not currently within the service area for any of these providers (Figure 3.10-1). However, as part of the annexation process, the Project site would be incorporated into the DSMWS service area. If the Project site is annexed into Dixon and the SID, it will be served with domestic and fire protection water, as needed, by DSMWS per the Joint Exercise of Powers Agreement between the City and SID. Since the Project site is not located in the DWMWS service area covered by the current DSMWS water master plan, there are currently no facilities to provide water service to the Project area. The master plan is being updated to plan new facilities (i.e., a deep well and storage tanks) to serve the Project. The design and construction of these facilities would need to be funded by the City or DSMWS and Brookfield (Daniels pers. comm. June 30, 2003 and November 13, 2003).

SID's Weyand Lateral B is located on the west side of the project, parallel to SR 113, and crosses SR 113 just south of the proposed extension of Parkway Boulevard. This agricultural irrigation line is not built to support the weight of residential development and will need to be relocated. SID has recommended that the existing pipeline be relocated to a public right-of-way and replaced with rubber gasket reinforced concrete pipe, with manholes at least every 500 linear feet. (Fuchlin 2005) There are also SID delivery systems within 0.5 mile of the site in North 1st Street to the west and Pedrick Road to the east, and the proposed high school site will also be incorporated into SID. Preliminary plans were made to serve the proposed school farm site from facilities at Pedrick Road.

Groundwater Basin

The Project site is located within the hydrogeologic area known as the Putah Creek Fan. The Putah Creek Fan is part of the Solano Subbasin of the Sacramento Valley Groundwater Basin. This groundwater basin has not been identified as being in an overdraft condition or projected to be overdrafted, nor has it been adjudicated. The water bearing strata in the Putah Creek Fan underlying Dixon begin at the surface with a geologic layer of older alluvium that is 60–130 feet thick. These are the most permeable and productive aquifers in Solano County. Recharge to the aquifers in the Putah Creek Fan comes from deep percolation of precipitation, surface water applied on the valley floor, seepage losses from Putah Creek, and from subsurface groundwater flow from Yolo County.

Groundwater Supply Availability

The safe annual groundwater yield for the Putah Creek Fan was estimated to be approximately 40,000 acre-feet per year (af/yr) before irrigation from the Solano Project began in 1959. The irrigation activities increased the amount of groundwater recharge and decreased the amount of groundwater pumping. It is reasonable to assume an additional net recharge of approximately 10,000 af/yr has occurred.

SID currently pumps approximately 6,000 af of groundwater annually and historically has pumped as much as 14,000 af. As discussed in the WSA (Appendix C), a 1988 Groundwater Resources Report recommended that between 25,000 and 30,000 af of groundwater should be pumped annually to augment supplies and avoid water logging of soils in the Putah Fan area. Therefore, given the amount of groundwater available, it is assumed that SID could extract an additional per-year average of 20,000 af.

The projected average annual water supply demand for the DSMWS Service Area at build out of the General Plan indicates that the total demand, including the Brookfield Project, is estimated to be 7,318 af. The Brookfield Project would account for 631 af (approximately 8.6 percent) of the total demand. The projected water demand, including full build out of the General Plan and the

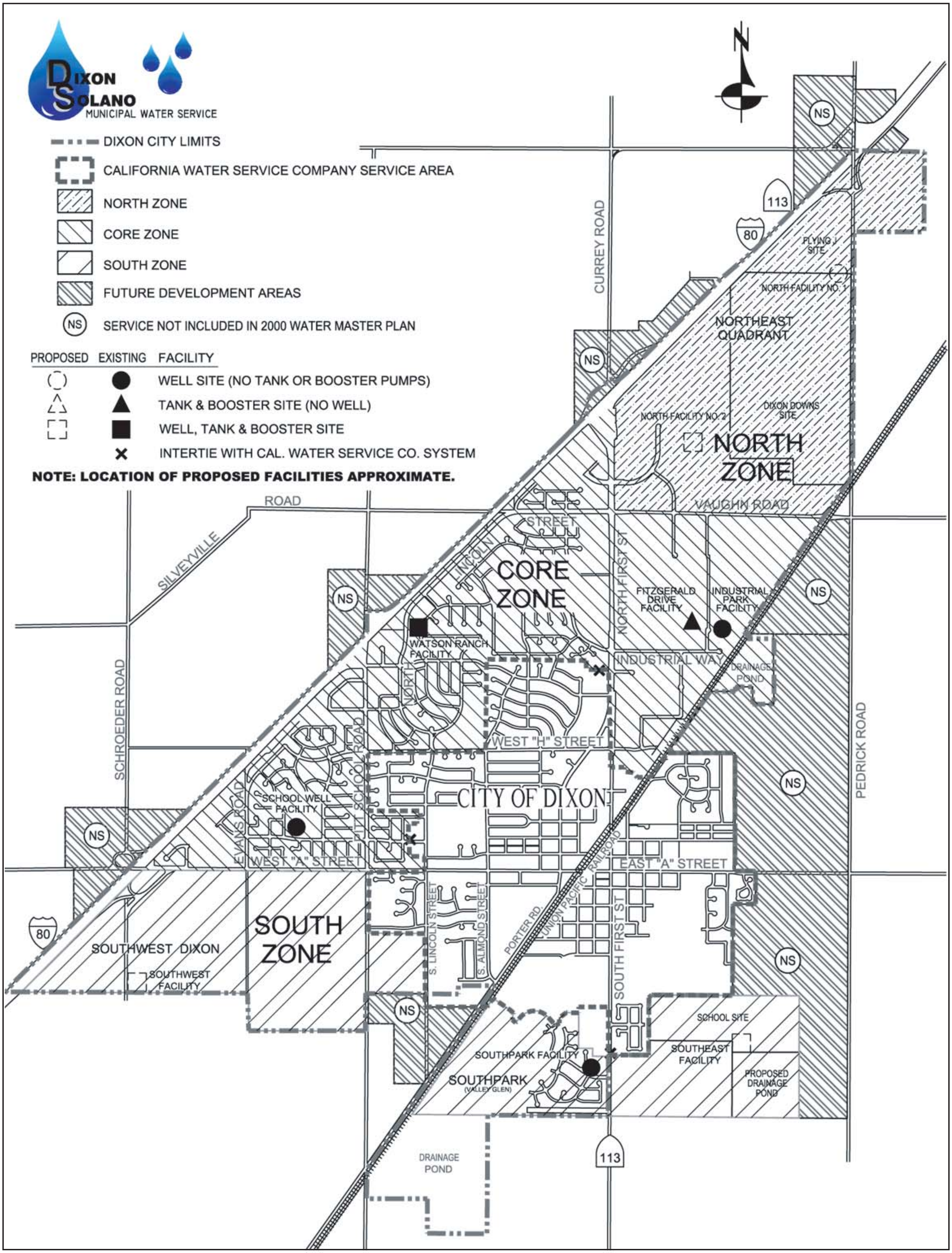


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Figure 3.10-1
DSMWS Water Service Area

Brookfield Project, would be substantially less than the annual safe yield of the aquifer.

Power

The existing structures on the Project site are supplied with power by Pacific Gas & Electric. The proposed development would also be supplied with power by Pacific Gas & Electric.

Communications

The Project site is served by Charter CATV.

3.10.2 Regulatory Setting

Federal Regulations

There are no specific federal that apply to the public services and utilities associated with this Project.

State Regulations

There are no state regulations applicable to the provision of public services and utilities.

Local Regulations

City of Dixon General Plan

General Public Service and Utilities Policies
The following policies were found relevant to the Project area with respect to public service and utilities (City of Dixon 1993):

VI.A.1. The City will create a system of public service provision which will:

- Support and encourage a contiguous pattern of land use, and discourage premature development.
- Maintain or improve current service standards.
- Minimize potential environmental, fiscal, and social impacts.

VI.A.2. New development shall pay its fair share of the costs of all required public facilities and services by means of adequate mitigation fees.

Wastewater Facilities

VI.A.9. The City will ensure that the significant increases in sewage treatment and disposal capacity requirements generated by new development will be provided in a timely, cost-effective, and environmentally sound manner. Achieving this policy will require a variety of improvements, including:

- Installing major new conveyances.
- Expansion of existing sewage treatment capacity.
- Expansion of existing effluent disposal facilities.

Water Facilities

VI.A.10. The City will ensure that the significant increase in water demand generated by new development will be provided in a timely, cost-effective, and environmentally sound manner. Achieving this policy will require a variety of improvements including:

- Installing major new water mains.
- Increasing storage and treatment capacity.

VI.A.11. The City will coordinate development activity with the water purveyors to ensure that adequate domestic, commercial/industrial, and fire flow requirements are met.

Drainage

VI.A.14. The pattern and density of proposed urban development defined by this General Plan for the period 1986 to 2005 will be used in the determination of drainage facility requirements by the City's consulting engineers. (The Drainage Plan will utilize a 50-year planning period and addresses a larger planning area than the General Plan's.) The long-range development concept…indicating the proposed direction of urban expansion beyond the year 2005, can also guide the drainage plan analysis.

Parks and Recreation

VII.E.23. The City shall maintain a ratio of at least 5 acres of park land for each 1,000 Dixon residents, at least 1.2 acres of neighborhood park land and at least 3.8 acres of community park land.

VII.E.24. The City shall require proponents of new development projects to contribute to the acquisition and development of adequate parks and recreational facilities within the community, either through the dedication of park land and [*sic*] through the payment of fees in lieu of such dedications.

Police Protection

VI.A.20. The City will strive to maintain existing police protection service standards to assure the citizens of Dixon a high level of police protection, based on a reasonable and realistic allocation of available City funds.

Fire Protection

VI.A.21. The City of Dixon Fire Department jointly with the Dixon Rural Fire District will provide the additional fire protection services and new facilities required to serve expanded development in Dixon. The addition of fire protection staff and the relocation and construction of new fire stations will be funded on an equitable basis related to benefits provided by new development. The City will strive to maintain existing service standards.

Schools

VI.A.23. The City will cooperate with the School District to ensure that adequate school facilities are provided, and equitable and supportable funding mechanisms are defined.

VII.E.33. The City shall require proponents of new development projects to contribute to the acquisition of sufficient land to enable the construction of those educational facilities which would be necessary to accommodate students from such projects, either through the dedication of land or through the payment of in-lieu fees.

3.11 Traffic

3.11.1 Physical Setting

This section describes existing traffic conditions occurring on the area roadways that will provide access to the Project site. Figure 3.11-1 shows the existing road system in the City of Dixon. Ten intersections were quantitatively analyzed in the traffic study—nine existing intersections, and one future intersection (future Parkway Boulevard extension and the school collector). The text that follows describes the facilities included in this analysis. The information in this section is based on a study done by kdAnderson Transportation Engineers (Appendix D).

Study Area Intersections

The following describes the nine existing study intersections. Existing peak hour traffic volumes and turning volumes for each of these intersections are illustrated in Figure 3.11-2.

1st Street (SR 113)/A Street

The 1st Street/A Street intersection is controlled by a traffic signal at the *city center*. The A Street approaches consist of a left-turn lane and a through-right turn lane, with parking allowed along the street beyond approximately 125 feet from the intersection. The 1st Street approaches consist of a left turn lane, and a through-right lane, and parking is permitted along this street. Traffic to and from City Hall, Hall Park, and the existing high school typically passes through this intersection.

South 1st Street/Chestnut Street

The South 1st Street/Chestnut Street intersection is an offset intersection controlled by stop signs on the Chestnut Street approaches. The centerlines of Chestnut Street are offset by about 30 feet, with the east leg located north of the west leg. The east leg of the intersection provides access to Hall Park. All approaches to the intersection consist of single lanes, and parking is allowed along the street.

South 1st Street/Cherry Street

The South 1st Street/Cherry Street intersection is a four way intersection controlled by a stop sign on the Cherry Street approach. A retractable gate is opposite Cherry Street leading to the Dixon May Fair site, providing access to a school located on the fairgrounds. Significant morning traffic enters and exits Dixon May Fair while minimal traffic uses this driveway in the p.m. All approaches to the intersection consist of single lanes. Parking is allowed along both Cherry Street and South 1st Street.

South 1st Street/Country Faire Drive

The South 1st Street/Country Faire Drive intersection is a four way intersection controlled by stop signs on the east and west legs. The west leg of the intersection provides access to Silveyville Cemetery while the east leg provides access to the Country Faire subdivision. In this area southbound South 1st Street consists of a left turn lane and a through-right lane while the northbound approach consists of a left turn lane, a through lane, and a right turn lane. A drainage ditch lies immediately adjacent to the west side of SR 113. Country Faire Drive has a 50 foot curb-to-curb width, and the street is striped with a left-through lane and a right-only lane at the approach to the intersection.

South 1st Street/Valley Glen Drive

The South 1st Street/Valley Glen Drive intersection is a tee intersection controlled by a stop sign on the west leg. Valley Glen Drive provides a connector between South 1st Street and Parkway Boulevard. It collects traffic from within the Valley Glen development and channels it to South 1st Street and to Parkway Boulevard.

The southbound South 1st Street approach includes a through lane and a combination through-right lane. The through-right lane becomes a right-only lane at the Parkway Boulevard intersection to the south. The northbound approach consists of a left turn lane and a through lane. A raised median is present along South 1st Street in the Valley Glen Drive intersection area. The eastbound Valley Glen Drive approach consists of dedicated right and left turn lanes.

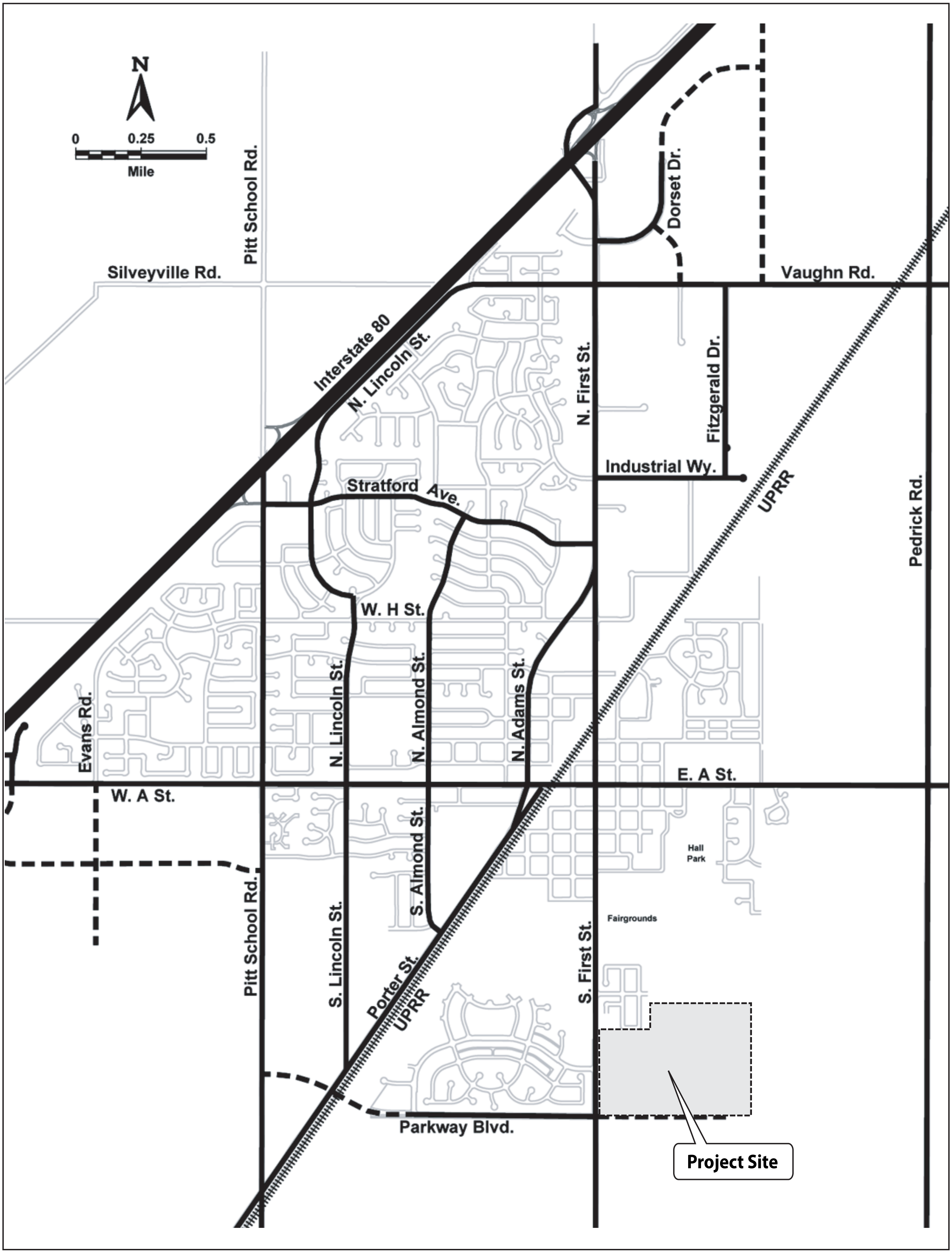

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Figure 3.11-1
Major Streets

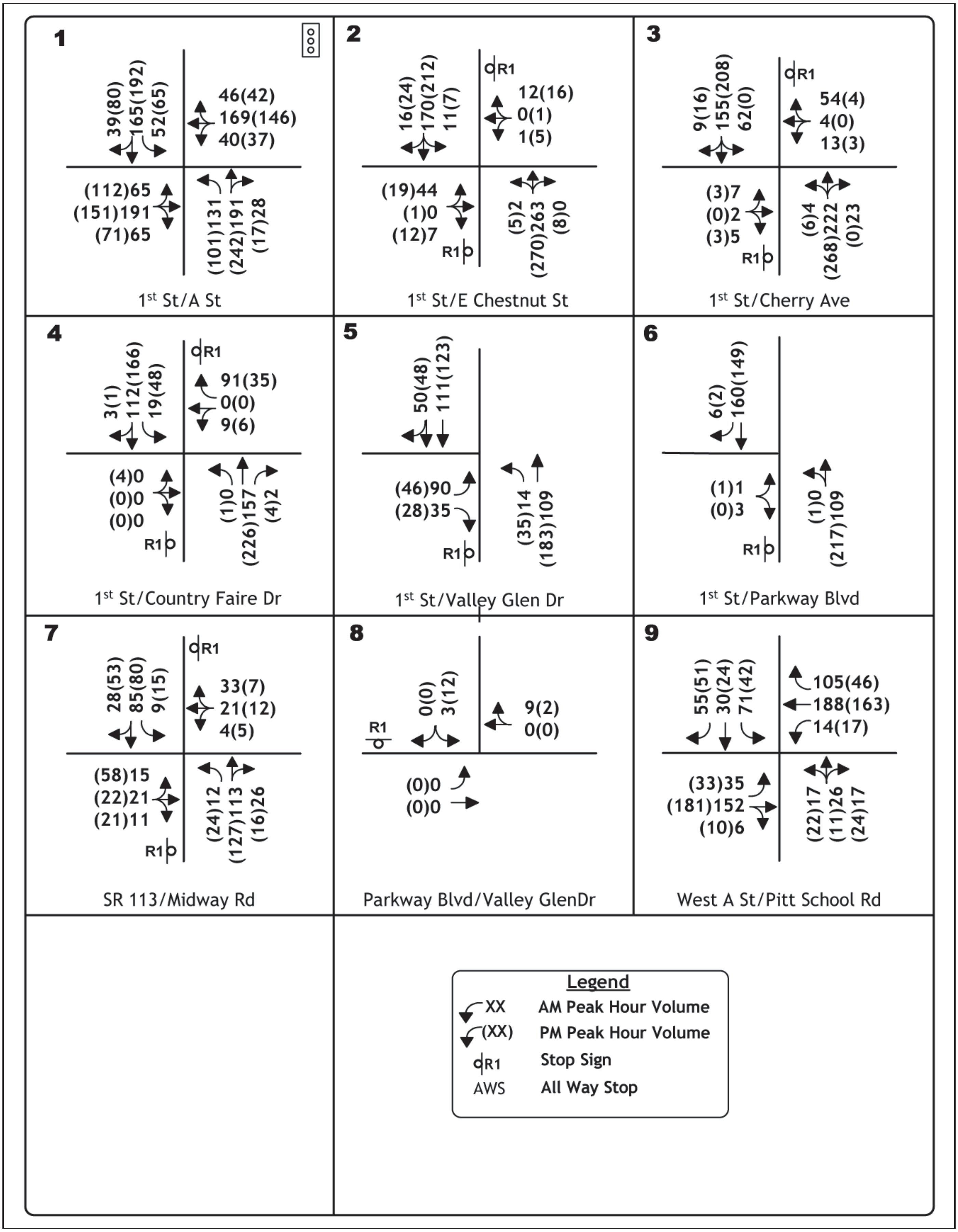

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Figure 3.11-2
Existing Traffic Volumes and Lane Configurations

South 1st Street/Parkway Boulevard

The South 1st Street/Parkway Boulevard intersection is a tee intersection controlled by a stop sign on the west leg. The west leg consists of Parkway Boulevard, which provides controlled access to the Valley Glen development. The future easterly extension of the Parkway Boulevard alignment would serve the proposed Project. The City is currently designing the future grade-separation that will allow the extension of Parkway Boulevard west to Pitt School Road. The grade separation project is undergoing its own CEQA analysis.

The southbound South 1st Street approach includes a right turn lane and a through lane while the northbound approach consists of a left-through lane. The raised median present at the Valley Glen Drive intersection ends prior to reaching Parkway Boulevard. The eastbound Parkway Boulevard approach consists of a single left-right lane.

Plans have been approved for the Valley Glen developer to construct a northbound left-turn lane and separate eastbound left- and right-turn lanes. This work is anticipated to be completed before the first phase of homes is available at the Project in 2008.

SR 113/Midway Road

The SR 113/Midway Road intersection is a four way intersection controlled by stop signs on the Midway Road approaches. The Midway Road approaches include a single lane while the SR 113 approaches consist of dedicated left turn lanes and combination through-right turn lanes. Midway Road is an east-west road providing a connection to I-80 at the Midway Road interchange approximately 4.5 miles west of SR 113. Midway Road is a two-lane rural road.

Parkway Boulevard/Valley Glen Drive

The Parkway Boulevard/Valley Glen Drive intersection is a tee intersection, with a stop sign controlling the Valley Glen Drive approach. The Valley Glen Drive approach consists of a right turn lane and a left turn lane. Valley Glen Drive connects the Valley Glen development to both South 1st Street and Parkway Boulevard. Parkway Boulevard is a limited access collector that is fed by Valley Glen Drive. The westbound Parkway Boulevard approach consists of a single through-right lane.

Currently, Parkway Boulevard ends just west of the Valley Glen intersection. The extension of Parkway Boulevard west to Pitt School Road is projected to be open in 2007. Once the extension is completed, the eastbound approach to the Valley Glen Drive intersection is assumed to include a through lane and a left turn lane.

West A Street/Pitt School Road

West A Street and Pitt School Road meet in a 4-way intersection controlled by stop signs in all directions. Pitt School Road provides a north-south route through the western portion of Dixon and direct access to I-80 at the Pitt School Road interchange. West A Street provides a direct connection between central Dixon and the Dixon Avenue/I-80 interchange approximately 1 mile west of Pitt School Road. The eastbound West A Street approach consists of a left turn lane and a through-right lane. The westbound West A Street approach consists of left, through and right lanes. Southbound Pitt School Road consists of left, through and right turn lanes while northbound Pitt School Road is currently a single left-through-right turn lane. At the opening of the Parkway Boulevard extension the northbound approach to the intersection is assumed to include a left turn lane and a through-right lane.

Intersection Levels of Service

Intersection Methodology and Significance Criteria

Level of service analysis has been employed to provide a basis for describing existing traffic conditions and for evaluating the significance of Project traffic impacts. Level of service measures the *quality* of traffic flow and is represented by letter designations from LOS A to LOS F, with a designation of A referring to the best conditions, and F representing the worst conditions.

Local agencies adopt minimum level of service standards for their facilities. The California Department of Transportation (Caltrans) identifies the acceptable level of service along state routes.

The level of service for both signalized and unsignalized intersections is measured in terms of average delay (seconds per vehicle). Table 3.11-1 describes the conditions that define LOS levels A through F. Table 3.11-2 summarizes current levels of service at the nine study area intersections during the a.m. peak hour (7:00–9:00 a.m.) and the p.m. peak hour (4:00–6:00 p.m.). These hours were selected for analysis since they represent periods of *worst case* traffic impact for the Project. The 1st Street/A Street intersection operates at LOS C. The remaining intersections, all unsignalized, operate at LOS B or better. None of the intersections currently meet the Peak Hour Signal Warrant, Warrant 3.

Public Transit

The City of Dixon provides the “Readi-Ride” Transit service, a public dial-a-ride service within the city limits. Service is scheduled on a reservation, space available basis. The system operates Monday through Friday from 7 a.m. to 6 p.m.

Table 3.11-1. Level of Service Definitions

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
A	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/vehicle	Completely free flow.
B	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/vehicle and ≤ 15 sec/vehicle	Free flow, presence of other vehicles noticeable.
C	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/vehicle and ≤ 25 sec/vehicle	Ability to maneuver and select operating speed affected.
D	Significant congestion of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/vehicle and ≤ 35 sec/vehicle	Unstable flow, speeds and ability to maneuver restricted.
E	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/vehicle and ≤ 50 sec/vehicle	At or near capacity, flow quite unstable.
F	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/vehicle	Forced flow, breakdown.

Sources: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

Table 3.11-2. Existing Peak Hour Levels of Service at Study Intersections

		AM Peak Hour		PM Peak Hour		
Location	Control	LOS	Average Delay	LOS	Average Delay	Meets Peak Hour Traffic Signal Warrants?
1. 1st Street/A Street	Signal	C	30.6	C	31.5	N/A
2. 1st Street/Chestnut Street						
Overall average	EB/WB stop	B	11.9	B	11.4	No
NB Left turn			7.6		7.8	
SB Left turn			7.9		7.9	
EB			13.4		12.8	
WB			10.1		11.2	
3. 1st Street/Cherry Street						
Overall average	EB/WB stop	B	10.0	B	10.2	No
NB Left turn			7.6		7.7	
SB Left turn			7.9		–	
EB			13.1		11.4	
WB			11.4		11.3	
4. 1st Street/Country Faire Drive						
Overall average	EB/WB stop	A	9.4	A	9.2	No
NB Left turn			–		7.6	
SB Left turn			7.6		7.9	
EB			–		14.0	
WB			9.7		10.3	
5. 1st Street/Valley Glen Drive						
Overall average	EB stop	B	10.2	A	9.8	No
NB Left turn			7.6		7.7	
EB			10.5		10.8	
6. 1st Street/Parkway Boulevard						
Overall average	EB/WB stop	A	9.4	A	9.3	No
NB Left turn			–		7.6	
EB			9.4		11.0	
7. 1st Street/Midway Road						
Overall average	EB/WB stop	B	10.1	B	11.0	No
NB Left turn			7.5		7.6	
SB Left turn			7.5		7.6	
EB			11.1		12.2	
WB			10.3		11.2	
8. Parkway Blvd/Valley Glen Drive						
Overall average	SB stop	A	9.0	A	9.1	No
SB			9.0		9.1	
EB Left turn			–		–	
9. West A Street/Pitt School Road						
Overall average	AWS	B	10.0	A	9.8	No
NB Left turn			9.8		9.4	
SB Left turn			9.4		8.9	
EB			10.1		10.2	
WB			10.4		10.0	

Notes: NB = northbound. EB = eastbound. N/A = not applicable.
SB = southbound. WB = westbound. AWS = all way stop.

Fairfield-Suisun Transit provides additional bus service. The #30 route provides access to UC Davis and Sacramento in the east and Vacaville and Fairfield in the west. The non-commute route provides stops at the North Jefferson Street multi-modal center.

Bicycles and Pedestrians

Pedestrian facilities are present throughout Dixon, with sidewalks present along most City streets. However, in some areas along SR 113 and in the “rural” areas to the south of the city, the roadways are generally narrower than within the City proper and do not include sidewalks. Sidewalk is planned along South 1st Street as development occurs in the future. There are already sidewalks along the frontage of SR 113 connecting the Valley Glen and Country Faire subdivisions to the rest of the City to the north.

Marked bicycle facilities are prevalent throughout the City, and the City encourages bicycle ridership. New developments are generally constructed to include bicycle lanes. In addition, the City has been installing bicycle lanes along existing roadways through a combination of lane narrowing and parking removal. Bike lanes do not exist along South 1st Street; however, they are planned for future installation south of Cherry Street.

3.11.2 Regulatory Setting

Federal Regulations

There are no specific federal regulations that apply to the transportation resources associated with this Project.

State Regulations

South 1st Street is SR 113. As such, it is part of the state highway system that is owned and operated by Caltrans. Installation of two new access points, turn lanes, traffic signals, and other improvements to SR 113 would require the prior approval of Caltrans. Caltrans identifies LOS D as the acceptable level of service along its state routes.

Local Regulations

The circulation element of the *Dixon General Plan* identifies the relative importance of streets to the flow of traffic within the city. The City of Dixon identifies LOS C as the acceptable Level of Service on existing roadways throughout the City.

The City is currently considering modification of its acceptable level of service policy. This modification would decrease the acceptable level of service from C to D citywide and E in certain portions of the City. This modification is proposed to occur prior to the Project, but has not been enacted.

3.12 Population and Housing

3.12.1 Physical Setting

Dixon has grown steadily over the last 35 years from a community of 4,400 people in 1970 to approximately 16,350 in 2004. According to the estimate of the California State Department of Finance, Dixon had a population of 16,350 and a housing unit count of 5,254 in 2004

The Brookfield Project is located within the City of Dixon's sphere of influence, in a several-hundred-acre area that has been designated as *Future Residential (after 2010)* in the City's general plan. The City intends to annex and permit the development of its sphere of influence within the 2011–2025 time frame, according to the general plan. Assuming a mix of 80 percent single-family, lower density (Low-Density: average 3.1 dwelling units per gross acre) and 20 percent multiple-family, higher density (Medium Density High: average 13.6 dwelling units per gross acre), the 94-acre site would accommodate approximately 489 dwelling units. Of these, approximately 233 could be single-family and 256 could be multiple-family dwellings. Based on these densities, development of the site under the existing General Plan designation could accommodate a total population of approximately 1,550 people.

3.12.2 Regulatory Setting

Federal and State Regulations

There are no specific federal or state regulations that apply to the population and housing resources associated with this Project.

Local Regulations

The rate of Dixon's growth is held to three percent per year by *Measure B*, which limits the number of housing allocations that the City may grant each year. Dixon's 1993 General Plan estimates that the City's population will be approximately 20,325 (approximately 6,775 housing units) by the year 2010 (Table 3.12-1). The General Plan makes the following projections regarding the City's future population.

Table 3.12-1. Dixon's 1993 General Plan Population and Housing Projections 2000–2030

	2000	2005	2010	2015	2020	2025	2030
Housing Units	5,041	5,844	6,775	7,854	9,105	10,555	12,236
Population	15,123	17,532	20,325	23,562	27,315	31,665	36,708

Although Dixon's population remained relatively steady during the early 2000s, growth is expected as homes in new subdivisions, such as Valley Glen, become available for purchase. The Association of Bay Area Governments (ABAG) establishes the Regional Housing Needs Determination for each City and County within the 9-county Bay Area. The most recent Regional Housing Needs Determination (1999–2006) projects that Dixon will need 1,464 new housing units during that period (about 195 units per year) to meet its share of the regional housing need.

3.13 Parks and Recreation

3.13.1 Physical Setting

The City of Dixon Recreation/Community Services Department is responsible for providing park and recreation programs for Dixon citizens. Details of existing parks are shown in Table 3.13-1. The Dixon Parks Master Plan contains major planning policies concerning the financing and construction of park facilities.

Table 3.13-1. Existing Parks, Includes an Inventory of Existing Parks

Name	Location	Acreage
Patwin Neighborhood Park	West H Street between Pheasant Run Drive and Brians Way	4.93 acres
Conejo Neighborhood Park	Bordered by Gill, Deck, and Fulmor Drives and by Wiegand Way	3.61 acres
Hall Memorial Community Park	Mayes Street between South 4th and 5th Streets	52.3 acres (not including land set aside for owl habitat)
Northwest Community Park	West H and North Lincoln Streets	22.53 acres
Women's Improvement Club Park	North First Street at East C Street	0.65 acres
Linear Path Park	Extends from Regency Parkway to North Lincoln Street	1.75 acres (not including 3.5-acre pathway)
Veterans Neighborhood Park	Valley Glen Drive and Duncan Street	5.0 acres

There are two main types of parks: neighborhood parks and community parks. Neighborhood parks are small-scale parks with a service radius of one-half mile. Community parks provide large-scale recreation facilities and services that cannot be provided at neighborhood parks, plus neighborhood park facilities.

(Examples of typical community park amenities include swimming pools, multipurpose/soccer fields, softball fields, Little League facilities and community centers.) The minimum size for a community park in Dixon is 20 acres (Parks Master Plan).

Dixon also includes two, one-of-a-kind park facilities. The Women's Improvement Club Park is an open space resource in the City's downtown and is home to several community events each year. The Linear Path Park flanks a 3,800-foot-long pathway that traverses a portion of the City.

3.13.2 Regulatory Setting

Federal and State Regulations

There are no specific federal or state regulations that apply to parks and recreation associated with this Project.

Local Regulations

The following levels of service regarding parks have been recommended by the City of Dixon General Plan and the Dixon Parks Master Plan:

- Neighborhood parks should have a service radius of ½ mile, and a level of service of 1.2 acres per 1,000 people;
- Community parks should have a level of service of 3.8 acres per 1,000 people, and must be at least 20 acres in size;
- Total parkland ratio should be 5 acres per 1,000 people;
- Dedicated soccer fields recommended level of service is 0.412 acres per 1,000 people;
- Multi-purpose fields recommended level of service is 0.591 acres per 1,000 people;
- Passive use areas recommended level of service is 1.54 acres per 1,000 people;
- One roller hockey/soccer arena is recommended for build-out, which will result in a level of service of 0.034 acres per 1,000 people;
- Two community service centers are recommended for buildout (the Senior/Multi-Use Center and the planned Southwest Dixon Community Center), which will result in a level of service of 948 square feet per 1,000 people;
- One skate park is recommended, which will give a level of service of 997.6 square feet per 1,000 people;

- A 20-acre complex of baseball facilities (planned for Hall park) is recommended, for a level of service of 0.906 acres per 1,000 people;
- Hall park's swimming pool and one additional community pool (the planned Southwest Dixon Community Pool) are recommended, for a level of service of 508 square feet per 1000 people;
- 9 tennis courts are planned and recommended (between Hall park and the Southwest Dixon park), for a level of service of 1 court per 2,500 persons.

In order to keep pace with planned development, one neighborhood park and one community/neighborhood park are currently proposed (Southwest Neighborhood Park—3.0 acres; Southwest Community Park—20.0 acres). The land for these facilities will be secured as a condition of development in the Southwest area (Parks Master Plan).

As described above, the General Plan and Parks Master Plan recommend a level of service with a total parkland ratio of at least 5 acres per 1,000 people and a total of 1.2 acres of neighborhood parks per 1,000 people. According to the information in the General Plan and the Parks Master Plan, at build out of the General Plan the total acreage of all parks in the City will be approximately 113.77, providing a ratio of 5.2 acres per 1,000 persons. As for neighborhood parks, a total of 28 acres would be provided at build out of the General Plan, providing 1.2 acre of neighborhood parks per 1,000 people. These ratios exceeds the levels of service (LOS) recommended by the General Plan and the Parks Master Plan.

A Park Improvement Fee is currently collected from all residential building permits in order to finance the cost of park improvements needed to meet level of service recommendations. In addition, the City applies its Park Dedication Ordinance to subdivision projects. This requires that the subdivider either dedicate park and recreation land pursuant to the City's General Plan and the Parks Master Plan, or pay an in-lieu fee. The Brookfield Project will be required to pay the in-lieu fee.

Opportunities for Shared Facilities

Upon completion of the new Dixon High School located north of the site, the City will share a performing arts theater with the DUSD at the new Dixon High School site. In addition, the new school will provide additional parking that would be shared with Hall Park, facilitating parking access to the southern portion of the park.

The City has formed a Joint Powers Authority with the City of Vacaville for the formation of the *Vacaville-Dixon Greenbelt*. The greenbelt established through this agreement, provides open space areas in the vicinity of the City of Dixon between Dixon and Vacaville. The City of Dixon, in collaboration with the City of Davis, will soon create a greenbelt east of Dixon. However, the purpose of this and the Vacaville-Dixon Greenbelt is the preservation of agricultural land. It is not intended for recreational use.

Chapter 4
Impacts and Mitigation Measures

Introduction

This chapter discusses the impacts that would result from the Project if it were constructed as proposed. It classifies each of these impacts as one of the following:

- *Less than significant* (the project impacts do not exceed the threshold for significance).
- *Less than significant with mitigation* (the project impacts would exceed the threshold for significance, but the specific mitigation measures identified in the EIR will reduce the impact below the threshold).
- *Significant and unavoidable* (The project impacts would exceed the threshold for significance, even with mitigation. Pursuant to State CEQA Guidelines §15093, a project with significant and unavoidable impacts may nonetheless be approved if the lead agency issues a statement of overriding considerations, ruling that the economic, legal, social, technological, or other benefits of a project outweigh the negative impacts).

Impacts include the direct impacts, reasonably foreseeable indirect impacts, growth-inducing impacts, and cumulative impacts of the proposed Project. Direct impacts are impacts occurring at the same place and time as the project, as a result of the project. Indirect impacts are impacts of the project that are separated in space or time from the project. Growth-inducing impacts are those impacts of the project that would remove obstacles to growth or otherwise promote growth. Cumulative impacts are the impacts resulting from the combined effects of individual past, present, and probable future projects. A project would have a significant cumulative effect if it is making an important contribution to the combined effect. A project may have a less-than-significant individual effect, yet nonetheless make an important contribution to the overall cumulative effect. Cumulative and growth-inducing impacts are discussed in Chapter 6 of this EIR.

The impact chapter is organized along the same set of issue areas as Chapter 3, *Environmental Setting*. The thresholds of significance that are being used to determine the significance of the Project impacts are discussed under each of the issue areas below.

4.1 Aesthetics

4.1.1 Methodology

Using the methods and setting described above, analysis of the visual effects of the Project are based on:

- direct field observation from vantage points, including neighboring buildings, property, and roadways (conducted January 17, 2005);
- photographic documentation of key views of and from the Project site, as well as regional visual context;
- review of Project construction drawings; and
- review of the Project in regard to compliance with state and local ordinances and regulations and professional standards pertaining to visual quality.

4.1.2 Thresholds of Significance

State Criteria

According to Appendix G of the State CEQA Guidelines, as amended in 1998, visual resource impacts are considered significant if a project has a "substantial, demonstrable negative aesthetic effect." Based on professional standards and practices, a project would normally be considered to have a significant impact it if would:

- conflict with adopted visual resource policies;
- substantially reduce the vividness, intactness, or unity of high-quality views; or
- introduce a substantial source of light and glare into the viewshed.

Professional Standards

According to professional standards, a project may be considered to have significant impact if it would significantly:

- conflict with local guidelines or goals related to visual quality;
- alter the existing natural viewsheds, including changes in natural terrain;
- alter the existing visual quality of the region or eliminate visual resources;
- increase light and glare in the project vicinity;
- result in backscatter light into the nighttime sky;

- result in a reduction of sunlight or introduction of shadows in community areas;
- obstruct or permanently reduce visually important features; or
- result in long-term (that is, persisting for 2 years or more) adverse visual changes or contrasts to the existing landscape as viewed from areas with high visual sensitivity.

4.1.3 Impacts and Mitigation Measures

Impact 4.1-1: Obstruct or Adversely Affect Scenic Vistas or Damage Scenic Resources (Less than Significant with Mitigation)

Construction Impacts

Construction of the proposed Project would create temporary changes in views of and from the Project area. Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of the fairgrounds, park, and residential properties. Viewer groups in the Project area and vicinity are accustomed to seeing construction activities and equipment from construction that has occurred in the southern portion of the park and the ongoing construction of Valley Glen; their sensitivity to such impacts would, overall, be moderate. The occurrence of construction equipment is further somewhat similar to tractors and trucks in the Project vicinity.

Neighboring residences would have construction occurring adjacent to their backyards, and sensitivity of these residences to such impacts would be high. Yet, impacts on these residences are considered less than significant because the residences are buffered from the construction by privacy fences and vegetation, and they would experience a short-term, temporary change in the visual character of the area behind or adjacent to their residences. In addition, Country Faire and Valley Glen residents are familiar with the past and ongoing construction of Valley Glen. Farmstead residents would not be significantly affected by construction activities because of distance away from the site and familiarity with heavy farm equipment. Effects to recreationists would be less than significant due to short intervals of time that they are in visual contact with the Project site. Effects to street users would be less than significant due to short intervals of time that they are in visual contact with the Project site, at normal roadway speeds, and familiarity with construction along this portion of the street.

Overall, construction impacts are considered ***less than significant***. No mitigation is required.

Operational Impacts

Once the development has been built, permanent visual changes would occur to views of and from the Project area. The visual character of the site would be changed from one that is agrarian to one that is suburban. However, the development would be located within the City limits, directly adjacent and visually similar to an existing development; it would blend with the existing City edge, only minorly affecting present views. A significant amount of agrarian open space will remain intact directly east and south of the site.

Farmstead residents would not experience a significant change in their views because of distance from the site. Recreationists using the fairgrounds and park would not be significantly impacted by permanent changes because of duration of use on these sites. Street users would not be significantly impacted due to the short intervals of time that they are in visual contact with the Project site at normal driving speeds, and familiarity with similar developments along this portion of the roadway. Dixon residents would be the viewer group most greatly affected by this change, because they make up the largest and most centralized group with permanent views of the site. The majority of infrastructure would also be located closest to these residences and would decrease middle- and background-views to the foreground.

Implementation of Mitigation Measures 4.1-1a and 4.1-1b, described below, would reduce this significant visual impact to ***less-than-significant*** levels.

Mitigation Measure 4.1-1a: Implement Project Landscaping Plan to Provide a Visual Buffer and to Improve Aesthetics

The Project Landscape Architect and contractor shall adhere to the following practices in implementing the Project landscaping plan:

- The plant species composition shall reflect species that will do well in the Project area. The species list should include trees, shrubs, and an herbaceous understory of varying heights, as well as evergreen and deciduous types. Plant variety will increase the effectiveness of the screen by providing multiple layers, seasonality, more diverse habitat, and reduced susceptibility to disease.
- The Landscape Architect and contractor shall refer to sections 12.26.03 Required Screening and 12.26.07 Required Landscaping of the City of Dixon Zoning Ordinance. The planting design shall be created by a Landscape Architect and reflect patterns that are in keeping with older, established neighborhoods. This would help to maintain the local character, provide a buffer to and reduce the visual scale of buildings onsite, and improve aesthetics. A vegetated buffer, planted along the Lateral 2 channel would provide shade.
- Vegetation shall be planted with each phase of construction.
- An irrigation and maintenance program shall be implemented during the plant establishment period and carried on permanently.

Mitigation Measure 4.1-1b: Design and Construct Buildings to be Compatible with Local Character

The Project shall be designed in a way that is compatible with and respectful of local architecture to maintain the community's visual continuity. Building materials, detailing, and colors shall be selected for their ability to enhance the visual character of the development and to complement the local surroundings.

Impact 4.1-2: Permanent Changes in Light and Glare (Less than Significant with Mitigation)

Construction Impacts

Construction of the proposed Project would take place during normal business hours and would not create any new sources of daytime or nighttime light and glare, and therefore, construction impacts are considered ***less than significant.*** No mitigation is required.

Operational Impacts

Daytime and Nighttime Glare. Once the development has been built, permanent features such as windows and building surfaces and temporary features such as parked cars would introduce new sources of glare. The lack of mature vegetation in the area would increase the amount of glare from these sources.

Nighttime Light. New, permanent sources of light would be introduced from lighted residences, walkways, roadways, parking lots, and accent lighting. This would increase the amount of ambient light that existing residences already receive from the fairgrounds and park during nighttime events, although these events occur on an infrequent basis (e.g. light from the school's athletic fields). Appropriate lighting and vegetative barriers near residences would greatly reduce the amount of light affecting nearby residences.

Implementation of Mitigation Measures 4.1-1a, 4.1-1b, described above, and Mitigation Measure 4.1-2 below would reduce potential impacts to ***less-than-significant*** levels.

Mitigation Measure 4.1-2: Apply Minimum Lighting Standards

The Project sponsor shall minimize Project-related light and glare to the maximum extent feasible, given safety considerations. Color-corrected halide lights shall be used rather than low-pressure sodium lights. Lights shall be installed at the lowest allowable height; the lowest allowable wattage will be used for outdoor lighting of residences, pedestrian walkways, roadways, parking lots, and accent lighting; lights will be screened and directed away from existing residences to the highest degree possible; and the amount of nighttime lights used will be minimized to the highest degree possible. At a minimum, light fixtures shall be galvanized steel; no reflective surfaces are proposed. These galvanized surfaces would naturally oxidize within a short time following installation and would not cause reflective daytime glare. Parking lot lights shall reflect aesthetic lighting treatments that are used in the park or elsewhere in the City. It is suggested that the Project implement aesthetic lighting treatments throughout the development.

Impact 4.1-3: Conflict with Local Visual Policies (Less than Significant with Mitigation)

The Project's consistency with the local visual policies found in the Solano County General Plan, the City of Dixon General Plan and the City of Dixon Zoning Ordinance, are described below.

Solano County General Plan

Transference of land use from agriculture to a residential development will reduce the amount of existing open space land. At the same time, the Project is consistent with Solano County's General Plan objective encouraging new development to occur within the cities and establishing an urban growth line that coincides with Dixon's sphere of influence. As a result of this contiguous expansion of the City, the community buffer will not lose integrity. Further, as described under section 4.2, *Agriculture*, the City and the neighboring cities of Davis and Vacaville are partnering in the protection of open spaces between the cities. In addition to consistency with the planning objective and participation in efforts to protect buffer lands, implementation of Mitigation Measure 4.1-1a, described above, would ensure compliance with County general plan policy. As a result, there would be no conflict with these policies and potential impacts would be ***less than significant***.

City of Dixon General Plan

Urban Development and Community Design

> 19. The City shall actively promote the beautification of Dixon by acquiring easement or development rights for open space, planting street trees, and landscaping public rights-of-way.

Implementation of Mitigation Measure 4.1-1a and 4.1-1b, described above, would be consistent with the intent of this policy.

> 23. The City shall consider the establishment of a system of open space buffers to help to define the boundary of Dixon.

Implementation of Mitigation Measures 4.1-1a and 4.1-1b, described above, would ensure compliance with this policy.

> 24. The City shall promote the design of new development that is conducive to use of alternative transportation modes and that will be pedestrian-oriented, i.e.; walkways, pathways, bike paths, and open areas that foster interaction of people.

The installation of sidewalks and bike lanes along the access routes described in Chapter 2, *Project Description* and the implementation of Mitigation Measures 4.1-1a and 4.1-1b, described above, would ensure compliance with this policy.

City of Dixon Zoning Ordinance

> *Sections 12.12A Planned Multiple Residential (PMR) District* include measures to protect visual resources and reduce negative visual impacts. (Refer to Chapter 3, *Environmental Setting* for additional information.)

Implementation of Mitigation Measures 4.1-1a, 4.1-1b, and 4.1-2, described above, would minimize adverse impacts on the visual character of the surrounding community and help to create community identity and improve the aesthetics of new development within the City.

> *Section 12.20.05 Signs in Residential Districts*

Implementation of Mitigation Measures 4.1-1a and 4.1-1b, described above, would ensure compliance with this policy.

> *Section 12.23.08 Standard for Off-Street Parking Facilities*

Implementation of Mitigation Measures 4.1-1a and 4.1-1b, described above, would ensure compliance with this policy.

> *Section 12.26 Screening and Landscaping Regulations (Prescribes standards for screening, fences, walls, and landscaping within the City for the improvement of the visual environment, including the provision of a neat appearance in keeping with neighborhood character)*

Implementation of Mitigation Measures 4.1-1a, 4.1-1b, and 4.1-2, described above, would minimize adverse impacts on the visual character of the surrounding community and provide a vegetated buffer.

Impact 4.1-4: Substantially Damage Scenic Resources, Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings along a Scenic Highway During Construction and Operation (Less than Significant)

There are no County or City designated scenic roadways located within the Project vicinity. Impacts to scenic resources along a scenic highway are, therefore, ***less than significant***. No mitigation is required.

4.2 Agriculture

4.2.1 Methodology

To assess the impacts of the proposed Project on agricultural resources, the total acreage of farmlands and the classifications of the farmlands that would be affected by the Project were quantified. The consistency of the proposed Project with the agricultural land use plans and policies discussed in Chapter 3, *Environmental Setting* are evaluated below.

4.2.2 Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines and professional standards, the Project would result in a significant impact on agriculture if it would:

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use;
- conflict with existing zoning for agricultural use or Williamson Act contracts; or
- cause conflicts with agricultural uses on nearby properties.

4.2.3 Impacts and Mitigation Measures

Impact 4.2-1: Consistency of Proposed Project with Applicable Plans and Policies (Less than Significant)

City of Dixon General Plan

The *Dixon General Plan* allows for conversion of land from agricultural uses as long as it is not premature. Implementation of the proposed Project would occur within the boundary for proposed future urbanization, and as such, is found to be consistent with the *Dixon General Plan*. This impact is considered to be ***less than significant***. No mitigation is required.

Solano County General Plan

The *Solano County General Plan* requires that land located outside of urban growth lines that is designated as essential or intensive agriculture is to remain in production. The proposed Project is located within Dixon's urban growth line and, accordingly, is consistent with the Solano County General Plan policy encouraging the conversion of urban lands before non-urban lands are developed. Therefore, this impact is considered to be ***less than significant***. No mitigation is required.

Impact 4.2-2: Loss of Prime Farmland (Significant and Unavoidable)

The proposed Project would convert approximately 94 acres of Prime Farmland to non-agricultural use. The loss of this prime farmland is considered ***significant and unavoidable***.

Prime farmland is a finite resource. And, it surrounds the City of Dixon such that the City has little choice but to convert farmland if it is to grow to meet population and housing demand. There are a number of policies and programs in place that attempt to limit the loss of farmland. The policies of the General Plans of Solano County and Dixon strongly encourage new development to occur only within areas that are within the City's urbanizing area, and discourage the conversion of agricultural lands to urban uses where urban services are not available. The City of Dixon has required acquisition of conservation easements on agricultural land when major development would lead to conversions. Additionally, the cities of Davis and Dixon have partnered whereby agricultural conservation easements will be purchased from willing agricultural land owners. However, while these activities will help conserve those lands, they cannot avoid the continued conversion of agricultural lands adjoining the cities as the cities grow. Implementation of Mitigation Measure 4.2-2 will offset the conversion of agricultural lands adjoining the cities but not to a less-than-significant level.

Mitigation Measure 4.2-2: Provide Compensatory Agricultural Land Protection

The development agreement to be entered into by the City and developer shall require that the developer either provide for a 1:1 conservation of agricultural land within the Dixon area or pay the appropriate fee to participate in the City's master agricultural conversion program. If feasible, this may be coupled with land for Swainson's hawk or burrowing owl mitigation, when agreeable to the California Department of Fish and Game.

Impact 4.2-3: Conflict with Existing Zoning for Agricultural Use or Williamson Act Contracts (No Impact)

The Project site is actively farmed and is designated in the Solano County General Plan as A-40 (Exclusive Agriculture) and the site is zoned Intensive Agriculture. The Project site is not under a Williamson Act contract with the County or City (Solano County 2005). There is ***no impact.*** No mitigation is necessary.

Impact 4.2-4: Conflict with Agricultural Uses on Nearby Properties (Less than Significant)

The proposed Project would place a residential development in close proximity to agricultural lands. Due to the presence of fencing around the development, as included in the Project description, trespass by residents is not expected to be a significant issue. The development will require the County Agricultural Commissioner to impose setback restrictions if spraying of pesticides is to be undertaken on agricultural lands. Although this may require adjoining farmers to modify their agricultural practices, continued agricultural use of the adjoining lands would not be substantially affected. Impact is ***less than significant.*** No mitigation is necessary.

4.3 Air Quality

4.3.1 Methodology

Construction-Related Emissions

Construction of the proposed Project would result in the temporary generation of emissions of CO, ROG, NO_x, and PM10. Emissions would originate from mobile and stationary construction equipment exhaust, employee vehicle exhaust, dust from clearing the land, exposed soil eroded by wind, and volatile organic compounds (VOCs) from architectural coatings, and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

A detailed inventory of construction equipment that will be used for the proposed Project was not provided, therefore, this analysis is based on anticipated construction equipment calculated by URBEMIS2002 (a computer program used to estimate vehicle trips and emissions resulting from land use development projects) that will be used during construction activities, summarized in Table

4.3-1. Construction-related emissions were estimated and analyzed based on the anticipated construction equipment inventory from Table 4.3-1, emission factors from ARB, guidelines provided by the YSAQMD, and URBEMIS2002,. To estimate construction emissions, URBEMIS2002 analyzes the type of construction equipment used and the duration of the construction period. It was assumed that construction activities would occur for 8 hours per day, with each phase of construction occurring separately except architectural coating, which is assumed to occur simultaneously with the building construction phase in 2008. Construction activities were divided into separate phases and analyzed separately. Consequently, project significance is not a comparison of the sum of all construction phases to the YSAQMD threshold levels. Instead, if one phase of construction is found to have a significant impact, then the entire project is considered to have a significant air quality impact.

Table 4.3-1. Anticipated Project Construction Equipment

Construction Phase and Equipment	Number of Equipment Pieces
Site Grading	
Rubber Tired Dozer	20
Tractors/Loaders/Backhoes	20
Building Construction	
Concrete/Industrial Saw	13
Rough Terrain Forklift	13
Other Equipment	2
Graders	2
Off-Highway Trucks	2
Pavers	2
Paving Equipment	2
Rollers	5

Note: Equipment inventory calculated by the URBEMIS2002 computer modeling program, based on project land use type and size of land use.

Operation-Related Emissions

Sources of operation-related emissions include motor vehicle exhaust and area source emissions from space and water heating, landscape maintenance, and other similar activities. For the proposed Project, traffic would be the primary source of operation-related emissions of ROG, NO_x, CO, and PM10. Emissions of ROG, NO_x, and PM10 were estimated using URBEMIS2002, which analyzes the type and size of the proposed land use. For purposes of this study, the opening year of the proposed Project was assumed to be 2005, and 2025 was analyzed as the future year. The Project is actually expected to begin construction in 2008, with completion by 2014.

The ambient air quality effects of operation-related CO emissions were evaluated using the CALINE4 dispersion model developed by the Caltrans (Benson 1989). CALINE4 treats each segment of a roadway as a separate emission source producing a plume of pollutants that disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments. CO modeling was conducted for two conditions: design-year baseline and design-year with project conditions. Detailed methodology of the CO analysis is provided in Appendix E.

Area source emissions are those typically associated with natural gas combustion used in space and water heaters; space heating with wood stoves or fireplaces; yard maintenance using internal combustion equipment such as lawnmowers, weed cutters, and leaf blowers; and use of consumer products such as hairsprays and deodorants.

Hazardous Air Pollutants

A site visit was conducted to access whether the proposed Project would be located near any sensitive receptors and to determine whether any hazardous facilities were located within 0.25 miles of the Project site. No nearby hazardous facilities were identified.

4.3.2 Thresholds of Significance

Appendix G of the State CEQA Guidelines state that a project would normally have a significant effect on the environment if it would:

- conflict with or obstruct implementation of the applicable air quality management plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

In addition, the State CEQA Guidelines further state that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the determinations above. The YSAQMD has specified significance thresholds within its *Air Quality Handbook* (1996) to determine whether mitigation is needed for project-related air quality impacts.

The Yolo-Solano County AQMD's threshold of significance for construction- and operation-related emissions are presented in Table 4.3-2.

Table 4.3-2. Yolo-Solano County Air Quality Management District's Thresholds of Significance

	Thresholds of Significance	
Pollutant	Construction (pounds per day)	Operation (pounds per day)
ROG	82	82
NO_x,	82	82
CO	550	550
PM10	82	82

Source: Yolo-Solano Air Quality Management District 1996.

4.3.3 Impacts and Mitigation Measures

Impact 4.3-1: Temporary Increase in Construction-Related Emissions during Grading and Construction Activities (Significant and Unavoidable)

Construction activities for the proposed Project would result in short-term impacts on ambient air quality in the area. Temporary construction emissions would result directly from grading and site preparation activities, and indirectly from construction equipment emissions and construction worker commuting patterns. Pollutant emissions would vary from day to day, depending on the level of activity, the specific operations, and the prevailing weather. It is anticipated that construction activities would continue for approximately one and a half years.

A detailed inventory of construction equipment that will be used for the proposed Project was not provided. Therefore, this analysis is based on typical construction equipment that will be used during construction activities, summarized above in Table 4.3-1.

Construction is generally broken down into two phases: an excavation/grading phase and a construction phase. Construction-phase emissions would result from material handling and heavy equipment operations. Because of the use of heavy construction equipment (with associated dust-generating potential), it is anticipated that site-grading activities would result in the highest daily fugitive dust generation. Maximum daily construction emissions are shown in Table 4.3-3. Detailed results of the URBEMIS analysis is provided in Appendix F.

Table 4.3-3. Maximum Emissions from Construction Activities (Unmitigated)

Construction	ROG (lbs./day)	NO_x (lbs./day)	CO (lbs./day)	PM10 (lbs./day)
2005				
Site Grading	87.03	690.77	631.23	168.94
Building Construction	218.34	624.83	626.36	28.66
2007				
Site Grading	–	–	–	–
Building Construction	218.12	597.36	643.55	26.25
Threshold	**82**	**82**	**550**	**82**

Note: Totals for construction emissions are presented for informational purposes only. Project significance is not a comparison of the sum total of all construction phases to the YSAQMD threshold levels. Rather, if one phase of construction is found to have a significant impact, than the entire project is considered to have a significant air quality impact.

Table 4.3-4. Maximum Emissions from Construction Activities (Mitigated)

Construction	ROG (lbs./day)	NO_X (lbs./day)	CO (lbs./day)	PM10 (lbs./day)
2005				
Site Grading	87.03	475.77	631.23	75.16
Building Construction	218.34	430.48	626.36	10.90
2007				
Site Grading	–	–	–	–
Building Construction	218.12	411.54	643.55	10.01
Threshold	**82**	**82**	**550**	**82**

Note: Totals for construction emissions are presented for informational purposes only. Project significance is not a comparison of the sum total of all construction phases to the YSAQMD threshold levels. Rather, if one phase of construction is found to have a significant impact, than the entire project is considered to have a significant air quality impact.

As indicated within Table 4.3-4, construction-related emissions are anticipated to exceed the YSAQMD's daily threshold for ROG, CO, PM10, and NO_x. Implementation of Mitigation Measures 4.3-1 and 4.3-2 will reduce PM10 impacts to a less than significant level. However, ROG, NO_x, and CO emissions cannot be mitigated to a less-than-significant level. Consequently, the Project's ROG, NO_x, and CO impacts are considered ***significant and unavoidable***.

Mitigation Measure 4.3-1: Implement NO_x-Reducing Construction Practices

The Project proponent will implement the following NO_x-reducing construction practices during construction of the proposed Project:

- Restrict the idling of construction equipment to 10 minutes.
- Install high-pressure injectors on all vehicles, where feasible.
- Use only machinery that is retrofitted with lean-NO_x catalysts to reduce NO_x emissions.
- Require use of aqueous diesel fuel, as an alternative fuel, in lieu of diesel fuel, since it has lower emission rates than diesel.
- Use electric equipment when feasible.
- Properly maintain equipment according to manufacturers' specifications

Mitigation Measure 4.3-2: Implement PM10-Reducing Construction Practices

The Project proponent will implement the following PM10-reducing construction practices during construction of the proposed Project:

- Apply soil stabilizers to inactive areas;
- Water exposed surface two times daily.

Impact 4.3-2: Increase in ROG, NO_x, and PM10 Emissions During Project Operation (Less than Significant)

Long-term air quality impacts are those associated with the change in permanent use of the Project site. Two types of air pollutant sources must be considered with respect to the proposed Project: area and mobile sources. Area sources include emissions from onsite activities and natural gas combustion for heating requirements, as well as emissions from personal product use. Mobile source emissions result from vehicle trips, including employees, deliveries, and maintenance activities.

Area source emissions result from fuel and personal product use, as well as onsite activities. Electricity and natural gas are utilized by almost every commercial and residential development. The URBEMIS2002 computer model was used to predict emissions from natural gas usage and landscape maintenance. The numbers shown below are from typical energy consumption and do not include fireplaces and consumer products such as hairspray.

The proposed Project would generate motor-vehicle trips that would cause emissions of air pollutants. Emission calculations for design year with-project conditions are based on the daily trip generation data provided by the Project traffic engineers, kdAnderson Transportation Engineers. The results of these calculations are summarized in Table 4.3-5.

Table 4.3-5. Operational Stationary and Mobile Source Air Emissions during Project Operation (lbs/day)

Operational Phase	ROG (lbs./day)	NO_X (lbs./day)	CO (lbs./day)	PM10 (lbs./day)
Area Source Emissions				
Natural Gas	0.35	4.55	1.93	0.01
Landscaping	0.38	0.04	3.15	0.01
Consumer Products	22.70	–	–	–
Vehicular Emissions	24.26	22.87	235.78	20.81
Total	47.69	27.46	240.86	20.83
Threshold	**82**	**82**	**550**	**82**

As indicated in Table 4.3-4, project-related emissions would not exceed the YSAQMD's thresholds for Project operations. Consequently, this impact is considered ***less than significant***. No mitigation is required.

Impact 4.3-3: Increase in Local CO Concentrations at Nearby Intersections (Less than Significant)

The proposed Project would add to traffic volumes on roads in and around the Project area and would worsen levels of service at nearby intersections. CO modeling was performed to determine the significance of CO at various intersections for design-year with Project conditions. The modeled intersections were selected based on the worst-case level of service of the intersections, as well as the intersection with the greatest lane volumes. The analyzed intersections are First Street/Chestnut Street, First Street/Cherry Street, West A Street/Pitt School Road (2007), and First Street/Valley Glen Drive (2025). The modeled intersections included receptors located 50 feet from the intersection diagonal to represent a worst-case scenario. Background CO concentrations were obtained by averaging the CO data for the last three years available at the nearest monitoring stations in the Project area. Table 4.3-6 summarizes the results of CO dispersion modeling.

Table 4.3-6 indicates that the proposed Project would not generate CO levels in excess of the ambient air quality standards indicated in Table 3.3-1. Consequently, this impact is considered ***less than significant***. No mitigation is required.

Table 4.3-6. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area

Receptor	Future No Project (2007) 1-Hr CO Concentration	Future No Project (2007) 8-Hr CO Concentration	Future With Project (2007) 1-Hr CO Concentration	Future With Project (2007) 8-Hr CO Concentration	Future No Project (2025) 1-Hr CO Concentration	Future No Project (2025) 8-Hr CO Concentration	Future With Project (2025) 1-Hr CO Concentration	Future With Project (2025) 8-Hr CO Concentration
1[a]	2.4	1.1	2.5	1.2	2.2	1.0	2.3	1.1
2[a]	2.4	1.1	2.5	1.2	2.2	1.0	2.2	1.0
3[a]	2.5	1.2	2.6	1.3	2.2	1.0	2.2	1.0
4[a]	2.5	1.2	2.5	1.2	2.2	1.0	2.2	1.0
5[b]	2.4	1.1	2.5	1.2	2.3	1.1	2.3	1.1
6[b]	2.4	1.1	2.4	1.1	2.2	1.0	2.2	1.0
7[b]	2.4	1.1	2.5	1.2	2.3	1.1	2.3	1.1
8[b]	2.4	1.1	2.5	1.2	2.2	1.0	2.3	1.1
9[c]	2.6	1.3	2.6	1.3	2.2	1.0	2.2	1.0
10[c]	2.6	1.3	2.6	1.3	2.2	1.0	2.2	1.0
11[c]	2.6	1.3	2.6	1.3	2.2	1.0	2.3	1.1
12[c]	2.6	1.3	2.6	1.3	2.2	1.0	2.2	1.0
CO Threshold								

[a] First Street/Chestnut Street.

[b] First Street/Cherry Street.

[c] 2007: West A Street/Pitt School Road and 2025: First Street/Valley Glen Drive.

4.4 Biology

4.4.1 Methodology

The analysis of biological resource impacts is based on the assumption that development of the proposed Project would result in temporary and permanent direct impacts on biological resources located in the Project area and temporary or permanent indirect impacts on biological resources located adjacent to the site. In assessing the magnitude of potential impacts, the following assumptions were made regarding the proposed Project and potential impacts on biological resources:

- Access to the Project area would occur along existing paved and dirt roads. Construction staging areas and access roads would occur within the Project footprint or along existing paved and dirt roads. If any staging areas are identified outside these areas, they will be located within previously graded, paved or other disturbed areas that do not support any sensitive biological resources. These staging areas would be evaluated and approved by the City prior to the contractor's use of the site.
- Before construction begins, the Project proponent will obtain the necessary state and federal permits to conduct activities in waters of the United States, if applicable. Construction of the nearby high school and Pond C may require state and federal permits, which the DUSD and City will apply for as needed. For example, grading or other construction activities within Lateral 2, including placing it in a pipeline and re-contouring its profile adjacent to Pond C, may require a Section 1602 Streambed Alteration Agreement from DFG. The discharge of fill into waters of the United States involved with the placement of Lateral 2 into a pipeline as proposed on the school site, would require a Section 404 permit from the Corps and Section 401 certification from the RWQCB. For the proposal site, construction adjacent to Lateral 2 would require a SWPPP as a condition of an NPDES permit under Section 402 of the CWA. All conditions that are attached to the state and federal permits would be implemented. The conditions would be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance.
- Construction in and adjacent to the intermittent drainage in Lateral 2, could cause a disturbance of habitat along the drainage and could result in the disturbance of special-status species or their habitats.
- Lateral 2 does not provide habitat for fisheries resources in the Project area; therefore, impacts on fisheries resources are not discussed in this analysis.
- The removal of non-native annual grassland, a common and widespread habitat type in the Dixon area, along Lateral 2 would not result in a substantial regional decrease in that habitat type.
- All vegetation would be removed in areas graded for construction. Common wildlife species in these areas would be displaced or destroyed during construction, and their natural movement corridors would be disrupted.

4.4.2 Thresholds of Significance

Based on the State CEQA Guidelines, a project would result in a significant impact on biological resources if it would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG or USFWS;
- have a substantial adverse effect on any wetland habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by DFG or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including vernal pools and seasonal wetlands) 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; or
- conflict with any local policies or ordinances protecting biological resources, such as the Dixon General Plan.

4.4.3 Impacts and Mitigation Measures

Impact 4.4-1: Direct and Indirect Impacts on Intermittent Drainage due to Project Construction (Less than Significant with Mitigation)

Development on the Project site would result in direct and indirect impacts on the intermittent drainage in Lateral 2.

Lateral 2 might be considered a water of the United States and could be regulated under the CWA. As discussed under the impact assumptions, the project proponent could be required to obtain a permit under Section 404 and water quality certification under Section 401 if any fill is placed into Lateral 2. However, no such filling is being proposed. This impact would be considered ***less than significant.***

Indirect impacts on water quality downstream of Lateral 2 could result from sedimentation during construction of the proposed development. Since project construction would result in the disturbance of an area greater than one acre, the project developer would be required to comply with the State Water Board's general permit for construction activities, including the filing of a Notice of Intent (NOI) and a SWPPP with the Regional Water Quality Control Board. Compliance with this requirement would be applied through the implementation of Mitigation Measure 4.7.2a, as described in the *Hydrology* section below, which would ensure this impact is ***less than significant***.

Impact 4.4-2: Loss or Disturbance of Nesting Swainson's Hawk and Removal of Potential Swainson's Hawk Foraging Habitat (Less than Significant with Mitigation)

An oak tree in the northwest corner of the Project area provides suitable nesting habitat for Swainson's hawk. In addition, development of the Project area would result in the loss of approximately 92 acres of suitable Swainson's hawk foraging habitat (agricultural lands). The *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California,*" published by DFG (1994), identifies permanent loss of foraging habitat within a 10-mile radius of a known Swainson's hawk nest site to be a significant impact on Swainson's hawk and their developing young.

These impacts are considered ***potentially significant*** under CEQA because they could have a substantial adverse effect (through loss of eggs or young) on a species listed as threatened under CESA. Implementation of Mitigation Measure 4.4-2a and 4.4-2b below would reduce this impact to a ***less-than-significant*** level.

Mitigation Measure 4.4-2a: Conduct a Preconstruction Survey for Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors

To avoid construction-related impacts on nesting special-status (Swainson's hawk, white-tailed kite, northern harrier, and loggerhead shrike) and non-special-status migratory birds and raptors and to avoid violating the California Fish and Game Code and the MBTA, the Project proponent or its contractor will retain a qualified wildlife biologist to conduct a preconstruction tree and ground nesting migratory bird and raptor survey prior to construction occurring during the breeding season (generally between March 1 and August 15). No-disturbance buffers will be established around any occupied nest identified during the preconstruction survey. The extent of these buffers will be determined by a qualified wildlife biologist coordinating with DFG and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed in order to make an appropriate decision on buffer distances.

Mitigation Measure 4.4-2b: Implement the DFG Guidelines for Swainson's Hawk Mitigation

The "Staff Report Regarding Mitigation for Impacts to Swainson's hawks in the Central Valley of California," published by DFG (California Department of Fish and Game 1994), recommends mitigation for the removal of suitable Swainson's hawk foraging habitat, at a ratio determined by the distance to the nearest active nest. Because the nearest active nest is less than 1 mile from the Project area, the required compensation ratio would be 1:1 (one acre replaced for one acre removed). The Project proponent will mitigate for the removal of approximately 92 acres of suitable foraging habitat (agricultural lands) by developing a project-specific mitigation agreement that would be submitted to DFG for approval or by purchasing Swainson's hawk mitigation credits at a DFG-approved mitigation bank or conservation area. The exact mitigation requirement would be determined during coordination with DFG and mitigation credits would be purchased or a conservation area established prior to any ground disturbing activities, including grading. The agricultural mitigation described in Mitigation Measure 4.2-2 will be combined with this mitigation, if feasible.

Impact 4.4-3: Disturbance of Potential Burrowing Owl Nesting Habitat (Less than Significant with Mitigation)

Development of the Project area would result in the disturbance of approximately 0.40 acres of potential nesting habitat along a section of the Lateral 2 ditch in the Project area. Construction along Lateral 2 and adjacent to an agricultural ditch along the southern boundary of the Project area could result in the loss of an occupied burrowing owl breeding or wintering site (burrow) and loss of burrowing owl adults, young, or eggs. As stated in the *Staff Report on Burrowing Owl Mitigation*, published by DFG (California Department of Fish and Game 1994), a site is considered to be occupied if at least one burrowing owl has been observed occupying a burrow within the last three years.

These impacts are considered potentially significant because the burrowing owl has experienced both local and statewide population declines and is considered a "rare" species under CEQA. Implementation of Mitigation Measure 4.4-3 below would reduce this impact to a ***less-than-significant*** level.

Mitigation Measure 4.4-3: Conduct a Preconstruction Survey for Active Burrowing Owl Burrows and Implement the DFG Guidelines for Burrowing Owl Mitigation

The *Staff Report on Burrowing Owl Mitigation*, published by DFG (California Department of Fish and Game 1995), recommends that preconstruction surveys be conducted to locate active burrowing owl burrows in the construction area and in a 250-foot-wide buffer zone around the construction area. The Project proponent or its contractor will retain a qualified wildlife biologist to conduct preconstruction surveys for active burrows according to DFG guidelines. The preconstruction surveys shall include a nesting season survey and a wintering season survey conducted in the winter and spring/summer prior to initiation of the proposed Project. Because at least one winter burrow is known to occur adjacent to the Project area (January 2005 field survey), the following measures will be implemented.

- Occupied burrows shall not be disturbed during the breeding season (February 1–August 31). A minimum 250-foot buffer should be maintained around an occupied burrow during the breeding season, unless otherwise determined during coordination with DFG.

- If avoidance of occupied winter burrows is feasible, no disturbance should occur within 160 feet of these burrows during the nonbreeding season (September 1–January 31).
- When destruction of occupied burrows is unavoidable during the non-breeding season (September 1–January 31), unsuitable burrows shall be enhanced (enlarged or cleared of debris) or new burrows created (installing artificial burrows) at a ratio of 2:1 on nearby protected lands approved by DFG. Newly created burrows shall follow guidelines established by DFG.
- If owls are present at the site and must be moved, passive relocation techniques (e.g. installing one-way doors at burrow entrances) shall be used instead of trapping in order to relocate the owls from the construction site. The passive relocation activities shall be limited to the non-breeding season (September 1–January 31) and a minimum of one week shall be necessary to accomplish passive relocation in order to allow the owls to acclimate to alternate burrows.
- If owls must be moved away from the construction area, the Project proponent will acquire and permanently protect a minimum of 6.5 acres of foraging habitat per occupied burrow identified in the Project area. The protected lands should be located near the Project area. The location of the protected lands shall be determined in coordination with DFG. The Project proponent shall prepare a monitoring plan, and provide long-term management and monitoring of the protected lands. The monitoring plan shall specify success criteria, identify remedial measures, and require an annual report to be submitted DFG. The agricultural mitigation described in Mitigation Measure 4.2-2 will be combined with this mitigation, if feasible.

Impact 4.4-4: Potential Loss or Disturbance of Tree- and Ground-Nesting White-Tailed Kite, Northern Harrier, Loggerhead Shrike, and Non-Special-Status Migratory Birds and Raptors (Less than Significant with Mitigation)

Construction activities (e.g., tree and shrub removal, excavation, grading, trimming) during the breeding season (generally March 1–August 15) could result in the removal or disturbance of trees, shrubs, and vegetation that provide potential nesting habitat for white-tailed kite, northern harrier, loggerhead shrike, and other non-special-status migratory birds and raptors. Removal of occupied migratory birds nests would violate California Fish and Game Code Sections 3503 and 3503.5 and the MBTA.

This impact is considered potentially significant under CEQA because it could have a substantial adverse effect (through loss of eggs or young) on a species that is locally rare. Implementation of Mitigation Measure 4.4-2a (described above under Swainson’s hawk) would reduce this impact to a ***less-than-significant*** level.

4.5 Cultural Resources

4.5.1 Methodology

This analysis is based on existing data and did not include an archaeological survey of the Project area or on-site inspection of identified cultural resources. Impact assessments for cultural resources focus on properties eligible for listing on the NRHP, the CRHR, or those properties considered historical resources or unique archaeological resources under CEQA.

The CEQA Guidelines define three ways that a property may qualify as a historical resource for the purposes of CEQA review:

- if the resource is listed in or determined eligible for listing in the CRHR;
- if the resource is included in a local register of historical resources, as defined in Public Resources Code (PRC) 5020.1(k), or is identified as significant in an historical resource survey meeting the requirements of PRC 5024.1(g) unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or
- the lead agency determines the resource to be significant as supported by substantial evidence in light of the whole record (CEQA Guidelines Section 15064.5[a]).

Each of these ways of qualifying as an historical resource for the purpose of CEQA is related to the eligibility criteria for inclusion in the CRHR (PRC 5020.1[k], 5024.1, 5024.1[g]). A historical resource may be eligible for inclusion in the CRHR if it:

- is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- is associated with the lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

Properties that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR, and therefore are significant historical resources for the purpose of CEQA (PRC 5024.1[d][1]).

In addition, CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of an historical resource as above, and "unique archaeological resources." An archaeological resource will be considered "unique" if it:

- is associated with an event or person of recognized significance in California or American history or recognized scientific importance in prehistory;
- can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions; or
- has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind (PRC 21083.2).

CEQA Guidelines Section 15064.5[c] states that the lead agency must treat an archaeological resource that meets the definition of a historical resource according to the provisions of PRC 21084.1, CEQA Guidelines Section 15064.5, and CEQA Guidelines Section 15126.4. If an archaeological resource does not meet the definition of a historical resource, but does meet the definition of an unique archaeological resource, then the lead agency is obligated to treat the resource according to the provisions of PRC 21083.2 (CEQA Guidelines Section 15064.5[c][3]).

4.5.2 Thresholds of Significance

According to CEQA, a project may have a significant impact on the environment if it could cause a substantial adverse change in the significance of historical resources (CEQA Guidelines Section 15064.5[b]). CEQA further states that a substantial adverse change in the significance of historical resources means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resources would be materially impaired. Actions that would materially impair the significance of historical resources are any actions that would demolish or significantly alter the physical characteristics of historical resources that convey their historical significance and qualify it for inclusion in the CRHR or in a local register that meet the requirements of PRC 5020.01(k) and 5024.1(g).

Evaluation of Identified Cultural Resources

Lateral 2 and the DRCD

For the purposes of this impact analysis it is necessary to consider the significance of Lateral 2 and the DRCD drainage system, the district of which Lateral 2 is a part. As discussed in Chapter 3, this is driven by the age of the system. Neither Lateral 2 or the DRCD drainage system are included in any local register of historical resources, identified as significant in a historical resource survey, or have been determined by the City to be significant as supported by substantial evidence in light of the whole record. In addition, DUSD determined that Lateral 2 is not a historical resource for the purposes of CEQA (Jones & Stokes 2004).

Bloom House

In 1980, Pamela McGuire prepared a State of California Department of Parks and Recreation Historic Resources Inventory form (DPR 523 form) that evaluated the historical significance of the Bloom House. The Bloom House is recorded in the state's Historic Resources Inventory (HRI) database with a rating of 5S, meaning that a local government (in this case the City of Dixon) recognizes the house to be a historically significant resource. A site visit by a qualified architectural historian on January 26, 2005, found that the Bloom House continues to retain sufficient integrity to its period of significance and therefore the designation is still valid. Therefore, the Bloom House is considered to be a historical resource for the purposes of CEQA.

The 1980 evaluation states that the property contains "outbuildings" that are related to the house, but does not describe these buildings. Because the DPR 523 form concludes that the Bloom House is primarily significant for its architectural distinction, it is presumed that the 5S designation is only for the Bloom House and does not extend to the other buildings on the property. Although they are located on the Bloom House property, with the exception of the barn, the existing outbuildings (garage, storage building, second residence) do not appear to be associated with the Bloom House's presumed period of significance of 1900. The three buildings appear to be later additions to the property and do not appear to have individual historical or architectural distinction and are therefore are not historic resources for the purposes of CEQA. The barn may be contemporaneous with the Bloom House, but lacks architectural distinction and therefore also does not appear to be a historical resource for the purposes of CEQA.

4.5.3 Impacts and Mitigation

Impact 4.5-1: Physical Alteration of Lateral 2 (Less than Significant)

The proposed Project would result in physical alteration of Lateral 2 by piping and covering the drainage ditch, significantly altering its historic design attributes. The physical alteration of Lateral 2 is considered ***less than significant*** because Lateral 2 is not a historical resource for the purposes of CEQA. No mitigation is required.

Impact 4.5-2: Physical Alteration of the Bloom House (Significant and Unavoidable)

The Bloom House is located at the site of the proposed Senior Center (Figure 2-3). Because the Senior Center has not yet been designed, during the design phase of the Senior Center, the project proponent and the City of Dixon shall evaluate whether the Bloom House can be retained. The Bloom House and its immediate surroundings (e.g. mature landscaping) are proposed to be retained to the extent feasible. Accordingly, the Project would not result in the physical demolition, destruction, or alteration of the Bloom House and its immediate surroundings (i.e. mature landscaping), and so it would not materially impair the architectural significance of the residence. As such, the Project would not result in a substantial adverse change to the residence. This is considered to be a ***less than significant*** impact, provided that any alterations to the building for reuse would be completed in accordance to the Secretary of the Interior's Standards for the Treatment of Historic Buildings.

However, in the event that the Bloom House cannot feasibly be retained, and it is confirmed that the Bloom House is eligible for inclusion in the CRHR, the demolition of the Bloom House would constitute a ***significant and unavoidable*** impact.

Impact 4.5-3: Damage or Destruction of Archaeological Resources (Less than Significant with Mitigation)

Two cultural resource studies have been conducted in the Project area. These surveys, however, were conducted more than 10 years ago and conditions are likely to have changed significantly, necessitating a comprehensive archaeological survey of the Project area. Further, the historic course of Dickson Creek has archaeological sensitivity. Proceeding with Project construction without an archaeological survey has the potential to damage or destroy archaeological resources that may be identifiable through simple surface inspection by qualified archaeologists. Such damage or destruction could result in a significant impact under CEQA, although it is not anticipated that any archaeological resources on the site would constitute *unique archaeological resources*, as defined under CEQA. Implementation of Mitigation Measure 4.5-3 below will further ensure that potential impacts to archaeological resources would be ***less than significant***.

Mitigation Measure 4.5-3: Retain Qualified Archaeologist(s) to Prepare a Discovery Program for Archaeological Resources and Survey the Project Area Prior to Construction

To reduce the potential for Project construction to damage or destroy archaeological resources, the applicant shall retain a qualified archaeologist(s) to prepare a discovery program that establishes appropriate identification efforts for the archaeological resources (including survey methods), methods for significance evaluations, and accidental discovery procedures. An archaeological survey of the Project area shall be completed by qualified archaeologists, pursuant to the discovery program, prior to construction of the Project. The results of the archaeological survey will determine whether potentially significant archaeological resources are present in the Project area. A list of qualified archaeological consultants is available at the NWIC Northwest Information Center of the California Historical Resources Information System.

Although project-specific survey methods and stop-work procedures will be developed in the discovery program referenced in the previous paragraph, general procedures may be outlined here under two categories: pre-construction discoveries and construction-related discoveries.

Pre-construction discoveries refer to the discovery of archaeological sites as a result of the archaeological survey. In the event that an archaeological site is identified by a qualified archaeologist prior to construction, the archaeologist will record the site on California Department of Parks and Recreation site record forms. The archaeologist will recommend to the City whether the site warrants test excavation to determine its significance (that is, whether the archaeological site meets the definition of a historical resource or a unique archaeological resource). If test excavation is warranted, the City will retain, at developer’s cost, qualified archaeologists to conduct the excavation and evaluation in accordance with the procedures outlined in the discovery program. The City would be responsible to determine appropriate mitigation measures for any archaeological sites that meet the definition of a historical resource or a unique archaeological resource, in consultation with a qualified archaeologist.

Construction-related discoveries are those archaeological discoveries that occur after a cultural resource investigation has occurred; such inadvertent discoveries are usually of archaeological sites that are buried and therefore not detectable by a standard archaeological survey. In the event of an inadvertent discovery during construction, typical and appropriate actions would include:

- cessation of work within 200 feet of the inadvertent discovery;
- notification of the City and a qualified archaeologist;
- determination of whether an inadvertent discovery is an isolated occurrence, highly disturbed, or intact (and therefore potentially significant);
- and further investigation, as needed, in accordance with the discovery program.

The contractors’ responsibilities under the required program shall be listed in the contracts let by the developer. The developer shall provide copies of the contracts to the City for verification of this requirement.

Impact 4.5-4: Damage or Destruction of Native American Burials (Less than Significant with Mitigation)

The proposed Project has the potential to damage or destroy Native American human remains and grave accompaniments. The archaeological survey described in Mitigation Measure 4.5-3 will determine whether human remains are present on the surface of the Project area and will permit an assessment of the potential for buried human remains to be disturbed during Project construction. Such damage or destruction would be considered a significant impact under CEQA. In the event that possible human remains are inadvertently disturbed during construction, the steps described in Mitigation Measure 4.5-3 described above, and 4.5-4 below, shall be implemented to reduce the severity of this impact to a ***less-than-significant*** level.

Mitigation Measure 4.5-4: Stop Work and Make Proper Notifications if Human Remains are Inadvertently Discovered during Construction

To reduce the Project's potential to damage or destroy native American burials that may be present at the site, the contractor shall follow the discovery procedures described below in the event that human remains are inadvertently disturbed during construction.

If potential human remains are discovered during ground-disturbing activities, it is necessary that the developer comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, the developer shall not perform further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

- the coroner of Solano County has been informed and has determined that no investigation of the cause of death is required; and
- if the remains are of Native American origin,
  - ☐ the descendants from the deceased Native Americans have made a recommendation 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 5097.98, or
  - ☐ the NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.

4.6 Geology, Soils, and Hazards

4.6.1 Methodology

The Solano County Soil Survey, prepared by the U.S. Soil Conservation Service (1977), and geological maps for the Sacramento Quadrangle, prepared by the California Division of Mines and Geology (1981), were examined in preparation of this section.

A Phase I Site Assessment was prepared by ENGEO, Inc. for the proposed school site to determine what, if any, hazardous situations exist in the Project vicinity (ENGEO 2003).

4.6.2 Thresholds of Significance

Based on Appendix G of the State CEQA Guidelines and professional standards, the Project would result in a significant impact on public health and safety if it would:

- expose people or structures to risk of loss, injury, or death from earthquakes, strong seismic ground shaking, seismic-related ground failure (including liquefaction), or landslides;
- result in substantial soil erosion or loss of topsoil;
- be located on unstable soil;
- be located on expansive soil;
- create a health hazard or potential public health hazard (excluding mental health) or involve the use, production, or disposal of materials that pose a hazard to people, animal, or plant populations in the Project area; or
- interfere with emergency response plans or emergency evaluation plans.

4.6.3 Impacts and Mitigation Measures

Impact 4.6-1: Expose People and Structures to Risk of Loss, Injury, or Death from Earthquakes, Groundshaking, or Seismic-Related Ground Failure (Less than Significant)

The proposed Project is located in a region that is subject to seismic activity. In the event of such activity, occupants of on-site structures and the structures themselves would be susceptible to injury or damage. To compensate for this potential hazard, structures on the site would be constructed in accordance with the Uniform Building Code. Compliance with this requirement would occur during the building permit process. Compliance would reduce the potential for adverse effects to an acceptable level. This impact is considered ***less than significant***. No mitigation is required.

Impact 4.6-2: Result in Soil Erosion and/or Loss of Topsoil (Less than Significant)

The soils on the Project site are characterized by slow to very slow surface runoff with a slight possibility of erosion. To prevent soil erosion during Project construction, the project contractor would employ best management practices. Implementation of the BMPs would ensure that the Project would not result in substantial soil erosion or the loss of topsoil. Potential impacts would be ***less than significant***. No mitigation is required.

Impact 4.6-3: Be Located on Expansive Soil (Less than Significant)

The soil at the Project site is characterized by a moderate shrink-swell potential, which is a measurement of expansiveness. The proposed structures at the site would be constructed in accordance with the Title 24 of the California Code of Regulations, which would reduce the potential for adverse effects to an acceptable level. This would occur during the building permit review process. Potential impacts would be ***less than significant***. No mitigation is required.

Impact 4.6-4: Expose Employees and Public to Hazardous Materials During Construction (Less than Significant with Mitigation)

The proposed Project would be located on farmlands that may have had pesticides applied to them in the recent past. There is no evidence of chemical mixing or storage areas on the Project site (ENGEO, Inc. 2003), and pesticide use is regulated by the County of Solano, so it is not expected that the site will have a high level of pesticide residues present in its soils. However, it is still possible that construction activities could disturb soils with pesticide contamination, thus potentially exposing construction workers and the public to contaminated dust or soils.

Construction of new sewer pipelines, and grading will require heavy equipment such as earth moving devices. In addition, large trucks will be used in the transportation of construction materials to the site. Such machines have potential to leak hazardous materials that may include oil and gasoline. It is expected that the Project proponent will use standard containment and handling protocols to ensure that these vehicles do not leak any material that might harm the quality of local surface or groundwater. In addition, improper use of fuels, oils, and other construction-related hazardous materials, such as pipe sealant, may also pose a threat to surface or groundwater quality.

These impacts on existing residents, future residents during the phased development of the site, and students at the new high school while the Project phases are being constructed, are considered potentially significant but would be reduced to a ***less-than-significant*** level by implementing Mitigation Measure 4.6-4 below and Mitigation Measure 4.7-2b described below in *Hydrology/Water Quality*.

Mitigation Measure 4.6-4: Conform with Air Quality Control Measures for Construction Activities

The applicant shall comply with the Yolo-Solano County Air Quality Management District's (YSAQMD) set of feasible PM_{10} control measures for construction activities. Implementation of the measures would control dust generated from demolition and excavation/grading activities, truck traffic, wind traversing the soil stockpiles, and loading of transportation vehicles. Effective control of dust would prevent nuisance dust and dust-containing inorganics, polycyclic aromatic hydrocarbons (PAHs), and other constituents from migrating offsite and affecting nearby populations. Implementation of the methods would reduce impacts on onsite construction workers and control any potential impacts associated with emissions of hazardous constituents that could be present in soils disturbed during construction. Compliance with these measures should reduce temporary impacts associated with dust to insignificant levels. Controlling exposure to dust has the secondary effect of also controlling exposures to the chemicals adsorbed to the dust particles.

Impact 4.6-5: Expose Residents to Pesticide Drift from Surrounding Agricultural Lands (Less than Significant with Mitigation)

The proposed Project would be located north of active agricultural lands. It is reasonable to assume that these agricultural lands will occasionally be subjected to aerial application of pesticides and these pesticides could potentially drift into the proposed residential development, creating a health hazard for residents. This risk is greatly reduced by the time and use regulations established under Division 6 of Title 3 of the California Code of Regulations and enforced by the Department of Pesticide Regulation and the Solano County Agricultural Commissioner. Pesticide applications will occur under permit from the Agricultural Commissioner and in accordance with the limitations imposed by state regulations.

The County's Permit G prohibits the ground spraying of Category 1 and 2 materials within 100 feet, and aerial spraying within 500 feet, of residences and unprotected areas. The Dixon High School playing fields and school farm, as well as Pond C, will buffer the Project site from agricultural lands to the east. In addition, the proposed Project would be separated from agricultural lands to the south by Parkway Boulevard which will run along the southern site boundary. The Parkway Boulevard right-of-way will range from approximately 123 to 106 feet in width from SR 113 to its intersection with the north-south collector road.

Compliance with the requirements of the County's Permit 6, would reduce potential impacts resulting from pesticide drift to a less than significant level. To further ensure public protection during ground spraying activities, Mitigation Measure 4.6-5 would be implemented.

Mitigation Measure 4.6-5: Advise Pedestrians and Bicyclists of Spraying Activities
If pedestrian paths and/or bicycle lanes are provided along Parkway Boulevard, the agricultural operator shall ensure that pedestrian and bicycle facilities are signed to warn users of spray operations whenever Category 1 or 2 materials will be sprayed within 200 feet of the pedestrian or bicycle facility. Signs shall also be placed at each street intersecting Parkway Boulevard.

4.7 Hydrology/Water Quality

4.7.1 Methodology

It is assumed that standard construction procedures would be used for land leveling, foundation excavation, soil removal, and treatment for paved areas. Natural drainage systems (i.e., streams) would be backfilled and the land leveled before construction of buildings. All surface drainage would be collected and taken off-site using a new storm drainage system.

4.7.2 Thresholds of Significance

Based on the State CEQA Guidelines and professional standards, a project would result in a significant impact on hydrology or water quality if it would:

- deplete or alter groundwater levels or groundwater quality
- substantially alter the existing drainage pattern of the site or area, including changes that result in substantial erosion or siltation on- or off-site;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam;
- place housing or structures in a 100-year flood hazard zone;
- substantially alter the existing drainage pattern of the site or area, including changes that substantially increase the rate of surface runoff that causes flooding on- or off-site, creating or contributing to an existing local or regional flooding problem;

- create or contribute to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- create project discharges would create or contribute to known water quality problems based on general water quality principles and professional opinion.

4.7.3 Impacts and Mitigation Measures

Impact 4.7-1: Substantially Deplete Groundwater from New Well Field Installation (Less than Significant)

As described in Chapter 2, *Project Description*, a new high volume well facility will be constructed to provide water to both the Dixon High School and the Brookfield Development. The water well would be constructed with a minimum capacity of 1,800 gallons per minute in compliance with the specifications of the Dixon-Solano Municipal Water Service.

Current information on groundwater level trends within the Solano Subbasin have remained relatively stable over the years, with dropping elevations during drought years followed by a natural return in elevations during wet years. To this date, there has been no groundwater storage capacity calculation for the Solano Subbasin as it is described by DWR Bulletin 118 (DWR Bulletin 118 2003). In addition, a report prepared by the Solano County Water agency states that current information indicates there is not an overdraft problem with the Solano groundwater basin. The Water Supply Assessment (Appendix C) concludes that the area is not currently in overdraft, and this impact is considered ***less than significant.***

Impact 4.7-2: Impacts to Surface Water Quality and Groundwater Quality Due to Construction-Related Earth-Disturbing Activities and Construction-Related Hazardous Materials (Less than Significant with Mitigation)

Construction-related earth disturbing activities will occur in the development of the Brookfield-Bertolero Residential Project. These activities could cause soil erosion and sedimentation to local waterways.

Because the proposed Project would disturb more than one acre of land, the Project developer will be required to obtain coverage under the NPDES General Construction Permit, which includes filing of a NOI and the preparation of a SWPPP. The City of Dixon will be responsible to ensure that construction activities comply with the conditions in this permit, which will require development of a SWPPP, implementation of BMPs identified in the SWPPP, and monitoring to ensure that effects on water quality are minimized.

As part of the compliance with NPDES General Construction Permit requirements, the Project proponent will implement multiple erosion and sediment control BMPs in areas with potential to drain to surface water. These BMPs will be selected to achieve maximum sediment removal and represent the best practicable technology (BPT) that economically achievable. BMPs to be implemented as part of this mitigation measure may include, but are not limited to, the following measures:

- Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, Grass buffer strips, high infiltration substrates, grassy swales and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas.
- Drainage facilities in downstream offsite areas will be protected from sediment using BMPs acceptable to the City and the RWQCB.

Grass or other vegetative cover shall be established on the construction site as soon as possible after disturbance.

Final selection of BMPs will be subject to review by the City. The City will verify that an NOI and a SWPPP have been filed before allowing construction to begin. The City or its agent shall perform routine inspections of the construction area to verify that the BMPs specified in the SWPPP are properly implemented and maintained. The City will notify it's contractors immediately if there is a noncompliance issue and will require compliance. Compliance with the NPDES General Construction Permit will ensure that potential impacts are ***less than significant***.

Construction of new utility lines and grading activities will require heavy equipment such as earth moving devices. In addition, large trucks will be used in the transportation of construction materials to the site. Such machines have the potential to leak hazardous materials that may include oil and gasoline. It is assumed that the Project proponent will use standard containment and handling protocols to ensure that these vehicles do not leak any material that might harm the quality of local surface or groundwater. In addition, improper use of fuels, oils, and other construction-related hazardous materials, such as pipe sealant, may also pose a threat to surface or groundwater quality.

These impacts are considered potentially significant. However, the implementation of Mitigation Measures 4.7-2a below would ensure that impacts would be lowered to ***less-than-significant*** levels.

If groundwater quality or surface water quality levels have been degraded in excess of water quality standards, Mitigation Measure 4.7.2b would be required and would reduce this impact to a ***less-than-significant*** level.

Mitigation Measure 4.7-2a: Implement a Spill Prevention and Control Program

The Project proponent shall develop and implement a spill prevention and control program (SPCCP) to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities for all contractors. The program shall be completed before any construction activities begin. Implementation of this measure would comply with state and federal water quality regulations and reduce the impact to a less-than-significant level.

The City shall review and approve the SPCCP before onset of construction activities. The City will routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. The City will notify it's contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in the EPA's CFR (40 CFR 110) is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor's superintendent shall notify the City of Dixon and the City will take action to contact the appropriate safety and clean-up crews to ensure the spill prevention plan is followed. A written description of reportable releases must be submitted to the RWQCB. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

Mitigation Measure 4.7-2b: Implement Measures to Maintain Groundwater or Surface Water Quality

If an appreciable spill has occurred and results determine that project activities have adversely affected surface or groundwater quality, a detailed analysis will be performed by a Registered Environmental Assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards, and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the Project proponent will select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures shall be subject to approval by the City of Dixon.

Impact 4.7-3: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including Changes that Result in Substantial Erosion or Siltation On- or Off-Site (Less than Significant)

The Project area is fairly level. Standard measures for erosion control and management of the stormwater runoff shall be included in the SWPPP as set forth in the NPDES construction permit. New facilities will be designed to the required capacity. Once built, storm drainage from the site and the adjoining Country Faire subdivision will be directed to Pond C. Pond C has been designed to accommodate the flows from this Project and the rest of Pond C's drainage area.

Drainage improvements will be designed by a civil engineer as part of the Project proponent design process, in accordance with the Solano County Water Agency flood control design criteria and City of Dixon design standards, and will be shown on the improvement drawings. The Project engineer shall include a site grading plan and an erosion control plan as part of the required improvement drawings. The Project proponent shall ensure, as a performance standard, that the Project is designed to ensure adequate drainage in the case of a 100-year storm event. With the above plans incorporated into the Project design, the impact would be ***less than significant***. No mitigation is required.

Impact 4.7-4: Expose People or Structures to a Significant Risk of Loss, Injury or Death Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam (Less than Significant)

Monticello Dam is located approximately 15 miles to the northwest of the Project site, on Lake Berryessa. In the highly unlikely occurrence of a failure at Monticello Dam, the City of Dixon could be subject to flooding (inundation). Because the risk of such an occurrence is considered low, therefore this impact is ***less than significant***. No mitigation is required.

Impact 4.7-5: Place Housing or Structures in a 100-Year Flood Hazard Zone (Less than Significant with Mitigation)

A small portion of the Brookfield Development is located within the 100-year flood zone (zone A). In addition, some of the development is also located within zone C, which is an area defined as with minimal flooding. Placing housing or structures within a 100-year floodplain is considered potentially significant. Grading and filling will alter the Project site's current elevation and will alter its susceptibility to flooding. In addition, drainage improvements will direct drainage from the Project site to the future Pond C stormwater detention basin. Implementation of Mitigation Measure 4.7-5 would ensure this impact is reduced to ***less-than-significant*** levels.

Mitigation Measure 4.7-5: City of Dixon to Ensure Storm Drainage Capacity Sufficient

The Project proponent shall construct an internal stormwater conveyance system, which is anticipated to consist of catch basins and pipelines, to convey the surface and nuisance flows from the Project site to the City's storm water drainage facilities. The Project proponent shall ensure, as a performance standard, that the Project is designed to ensure that no people or structures are subject to flooding as a result of the 100-year storm event.

Impact 4.7-6: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including Changes that Substantially Increase the Rate of Surface Runoff that Causes Flooding On- or Off-Site, Creating or Contributing to an Existing Local or Regional Flooding Problem (Less than Significant)

The Brookfield Development site drainage will be directed to the City's Pond C, located east of the site. Pond C has been approved, but is awaiting construction which is planned to occur at the same time as construction of the subdivision and high school is underway. Pond C has been designed to accommodate storm drainage from the City's Basins C and F, which includes the Project site as well as Country Faire subdivision and the proposed high school. Under City ordinance, the developer will be required to contribute storm drainage mitigation fees. Pond C will provide for the controlled release of drainage to the Dixon Main Drain in satisfaction of the DRCD's standards. Therefore, the proposed Project's contribution to storm water flows would not substantially increase nor alter the amount and direction of runoff from the existing site. With the above plans incorporated into the Project design, the impact would be ***less than significant***. No further mitigation is required.

Impact 4.7-7: Create or Contribute to Runoff that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff (Less than Significant)

Pond C will collect drainage runoff from the City's Basins C and F. It will be able to operate in two different modes, one for flood protection, and one for water quality control. When operated in flood protection mode it will accept runoff at up to 146 cfs, based on a 100-year, 4-day storm (West Yost &

Associates 2003). The storage capacity will be 190 acre-feet. Based on the 100-year, 4-day storm, the peak discharge into Lateral 2 will be 77.5 cfs. This will reduce the peak water levels in the agricultural drainage system from Pond C down to the Dixon Main Drain. As designed, discharges in Lateral 2 will not exceed the capacity of the stormwater drainage system. This impact is ***less than significant***. No mitigation is required.

Impact 4.7-8: Create Project Discharges that Would Create or Contribute to Known Water Quality Problems (Less than Significant)

When Pond C is operated in water quality mode, the pond will be able to accept runoff at up to 24 cfs and capture 33 acre-feet before releasing stormwater to Lateral 2. The pond will be operated in this mode during the dry season and during routine winter storms. It will be able to capture the first flush during any routine storm, as well as any urban runoff during the dry season. Additionally, by allowing time for sedimentation to occur, the pond would act to remove stormwater pollutants from urban runoff, including pollutant loading during first flush events. This would improve the quality of the stormwater entering Lateral 2. This impact would be ***less than significant***. No mitigation is required.

4.8 Land Use and Planning

4.8.1 Methodology

The impact analysis presented below considers the designated land uses of the Project site as well as the proposed Project's compatibility with general educational facilities policies.

4.8.2 Thresholds of Significance

Based on the State CEQA Guidelines and professional standards, a project would result in a significant impact on land use if it would:

- physically divide an established community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or
- conflict with existing land uses in the project area.

4.8.3 Impacts and Mitigation Measures

Impact 4.8-1: Physical Division of an Established Community (Less than Significant)

The Project site encompasses actively farmed agricultural lands located along the periphery of the City of Dixon within a transition area between the more developed, urban land uses, and the passive agricultural land uses that surround the city. The proposed Project would add to traffic in the Project vicinity, but it would not physically separate existing developed areas, rather the Project would act as a logical extension of the developed areas of the city. Therefore potential impacts are considered ***less than significant.*** No mitigation is required.

Impact 4.8-2: Conflict with Solano County and Dixon General Plans (No Impact)

The Project area is designated as Exclusive Agriculture in the *Solano County General Plan* and is zoned as Intensive Agriculture. The proposed development is within the urban limit of the City of Dixon. Solano County encourages urban development to occur within its cities and future growth to occur within their urban limits. The Project is within the City's sphere of influence, which is coterminous with the City's urban limit at this location. In accordance with the policies of the County general plan, the proposed urban development is considered consistent with the County general plan when accompanied by annexation to the City of Dixon.

The *Dixon General Plan* designates the Project area FR, or "future residential after 2010," and the Project would include the proposed annexation of the area to the City. As pointed out in the regulatory setting section (Chapter 3), annexation involves pre-zoning, which in this case would necessarily involve zoning the land for use as residential development. This zoning is consistent within the FR designation (City of Dixon 1993). The Project will be phased, in accordance with the memorandum entered into by the City and the developer. In order to comply with Measure B housing allocation limits, development will be phased between 2008 and 2014. Therefore, the Project would have ***no impact***. No mitigation is required.

Impact 4.8-3: Conflict with Solano LAFCO Standards and Procedures (No Impact)

In order for the City of Dixon to be approved by Solano LAFCo, the proposed Project would need to adhere to the standards established by the LAFCO. The two standards of the most concern in relation to this Project are Standards 8 and 9 and it appears that the Project would not conflict with either rule. The Project conforms to Standard 8, since it is within the sphere of influence and urban limit of the City of Dixon. The Project also conforms to Standard 9, under evaluation criterion 2, since the proposed annexation area abuts the developed portions of the City of Dixon, it is a logical extension of existing infrastructure and is the Project site within both the sphere of influence and urban limit of the City.

As part of the annexation process, the City would be required to submit a variety of data and documentation regarding land conversion and development issues to LAFCO, verifying the above statements and providing a thorough explanation of the rationale for the proposed annexation.

Since the Project would not conflict with any LAFCO standards, there would be ***no impact***. No mitigation is required.

Impact 4.8-4: Conflict with Existing Land Uses in the Project Area (Less than Significant with Mitigation)

The proposed Project area is located adjacent to residential development, agricultural land, and a proposed high school and detention pond. The proposed development would, as discussed in other sections, result in significant traffic impacts on the adjacent residential area. Impacts associated with pesticide drift from the agricultural lands are discussed in section 4.6, *Geology, Soils, and Hazards*. Conversely, in the future, existing agricultural operations will be restricted in how, when, and whether they may apply pesticides due to the proximity of residences. This conflict is not unusual in the area, given the proximity of agriculture to developed portions of the City. The regulations applied by the County Agricultural Commissioner act to reduce this conflict by protecting residents from pesticide exposure and providing clear operating parameters for farmers. Another possible conflict arising from the situation of a development adjacent to agricultural lands is the potential for trespassing onto agricultural lands by residents. However, the design of the development will include fencing around the property.

There is an existing natural gas well on the Project site that is scheduled for abandonment in 2006. As discussed in Chapter 3 *Environmental Setting*, well operations, maintenance, and abandonment are regulated by the Division of Oil, Gas, and Geothermal Resources. The requirements of the Public Resources Code and California Code of Regulations will ensure that the well site is cleaned up and properly plugged upon abandonment. The Project is not expected to begin home construction until 2007 and development will phased over a period of time. This will provide flexibility so that completion of well abandonment activities can be finalized before there is a conflict. With implementation of Mitigation Measure 4.8-1, the impact will be ***less than significant***.

Mitigation Measure 4.8-1: Well Abandonment

The City shall condition any tentative subdivision map for the Project site to require the abandonment of the existing gas well prior to the issuance of building permits or the construction of any homes on the well site. The developer shall provide the City with written documentation that well abandonment has been completed to the satisfaction of the Division of Oil, Gas, and Geothermal Resources.

4.9 Noise

4.9.1 Methodology

CEQA requires determination of the significance of noise impacts for proposed projects. Assessing the significance of noise impacts associated with the proposed project involved establishing thresholds at which significant impacts are considered to occur at noise-sensitive land uses. Next, noise levels associated with project-related activities were predicted and compared to the significance thresholds. Where predicted that a noise level would exceed a threshold, the predicted impacts were considered significant.

The assessment of potential construction noise impacts relies upon methodology developed by the Federal Transit Administration (FTA) (Federal Transit Administration 1995). Traffic noise modeling was conducted using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic data provided by the Project traffic engineer, kdAnderson. Traffic noise modeling was conducted for existing conditions, buildout conditions, and buildout plus project conditions.

4.9.2 Thresholds of Significance

Criteria for determining the significance of noise impacts were developed based on questions contained in the environmental checklist form in Appendix G of the State CEQA Guidelines, consideration of applicable state and local regulations, and professional judgment. Based on the City of Dixon General Plan Noise Guidelines and the other relevant standards discussed above, the following thresholds of significance have been developed for this Project. Noise resulting from the proposed Project is considered significant if:

- Construction noise would exceed 90 dBA at noise sensitive uses between 7:00 a.m. and 7:00 p.m. (FTA) (Federal Transit Administration 1995);
- Construction noise would exceed 50 dBA at noise sensitive uses between 7:00 p.m. and 7:00 a.m. (California Model Noise Ordinance);
- Existing noise-sensitive land uses would be exposed to traffic noise in excess of 60 dBA L_{dn} (Table 9-6 from City's Noise Element), and a change in noise level relative to design-year base line conditions of greater than 3 dB;
- Existing noise-sensitive land uses would be exposed to traffic noise of 60 dBA L_{dn} or less (Table 9-6 from City's Noise Element), and a change in noise level relative to design-year base line conditions of greater than 5 dB;
- Existing noise-sensitive land uses would be exposed to a distinctly noticeable increase in noise (greater than 5 dB) from project operations.

4.9.3 Impacts and Mitigation Measures

Impact 4.9-1: Exposure of Existing Residential Uses and Future Residential Uses on the Project Site from Grading and Building Construction Activities (Less than Significant with Mitigation)

Noise Construction noise impacts could occur throughout the construction period of the Project. Construction is anticipated to start in 2008, with buildout estimated in approximately 2014. Each phase of construction would involve the use of various types of equipment and activities. Preparation of building pads would involve grading using graders, scrapers, and other heavy equipment. Noise-generating activities associated with construction of houses would involve delivery of materials, placement of concrete foundations, assembly of framing, and exterior finish work. Grading and development of building pads with heavy, diesel-powered equipment would generally be the noisiest part of the construction process.

Existing residential uses and future residential uses could be exposed to noise from construction activities. Potential noise impacts associated with grading and construction have been assessed using methodology developed by the Federal Transit Administration (FTA) (Federal Transit Administration 1995). Table 4.9-1 summarizes typical construction noise levels for various types of equipment (Federal Transit Administration 1995). Construction equipment can operate intermittently or fairly continuously, with multiple pieces of equipment operating concurrently. Typically, construction-site noise levels are about 80–90 dBA, measured 50 feet from the activity.

Table 4.9-1. Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81
Backhoe	80
Bulldozer	85
Compactor	82
Concrete Pump	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Pneumatic Tool	85
Saw	76
Scraper	89
Truck	88

Source: Federal Transit Administration 1995.

To assess a typical reasonably foreseeable construction noise condition, a scenario in which a grader (85 dBA) and a scraper (89 dBA) operate concurrently and continuously in the same area has been assessed. The combined sound level of these two pieces of equipment would be approximately 90 dBA at a distance of 50 feet from the construction site.

Table 4.9-2 below indicates construction-period noise levels at various distances based on a source level of 90 dBA (measured at 50 feet). Distance attenuation and acoustical ground absorption are accounted for in the calculation. The closest existing residences (Country Faire subdivision) are located less than 100 feet from the nearest potential grading activity and are separated from the site by a concrete slat privacy fence. The results in Table 4.9-2 indicate that noise from grading could be as high as 83 dB at the nearest existing residences which would not exceed the daytime threshold but would exceed the nighttime thresholds.

Noise-generating activities associated with framing and exterior finish work are often associated with saws and pneumatic tools, typically hammers and drills. Table 4.9-1 indicates that these tools produce noise up to 85 dBA at 50 feet. Table 4.9-3 below shows construction-period noise levels at various distances based on a source level of 85 dBA at 50 feet.

The results in Table 4.9-3 indicate that construction noise associated with framing and exterior finish work could be as high as 77 dBA at the closest existing residences (100 feet) which would not exceed the daytime threshold but would exceed the nighttime thresholds.

Table 4.9-2. Noise Levels from Grading Operations

Entered Data

Construction condition: site leveling

Source 1: grader – sound level (dBA) at 50 feet = 85

Source 2: scraper – sound level (dBA) at 50 feet = 89

Average height of sources – Hs (ft) = 10

Average height of receiver – Hr (ft) = 5

Ground type (soft or hard) = soft

Calculated Data

All sources combined – sound level (dBA) at 50 feet = 90

Effective height (Hs+Hr)/2 = 7.5

Ground factor (G) = 0.62

Distance Between Source and Receiver (ft)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Sound Level (dBA)
50	0	0	90
100	-6	-2	83
200	-12	-4	75
300	-16	-5	70
400	-18	-6	67
500	-20	-6	64
600	-22	-7	62
700	-23	-7	60
800	-24	-7	59
900	-25	-8	58
1,000	-26	-8	56
1,200	-28	-9	54
1,400	-29	-9	53
1,600	-30	-9	51
1,800	-31	-10	50
2,000	-32	-10	49

Notes: This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers which may reduce sound levels further.

Calculations based on FTA 1995.

Table 4.9-3. Noise Levels from Framing/Exterior Finish Operations

Entered Data	
Construction condition: site leveling	
Source: pneumatic tool – sound level (dBA) at 50 feet =	85
Average height of sources – Hs (ft) =	10
Average height of receiver – Hr (ft) =	5
Ground type (soft or hard) =	soft
Calculated Data	
All sources combined – sound level (dBA) at 50 feet =	85
Effective height (Hs+Hr)/2 =	7.5
Ground factor (G) =	0.62

Distance Between Source and Receiver (ft)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Sound Level (dBA)
50	0	0	85
100	-6	-2	77
200	-12	-4	69
300	-16	-5	65
400	-18	-6	61
500	-20	-6	59
600	-22	-7	57
700	-23	-7	55
800	-24	-7	53
900	-25	-8	52
1,000	-26	-8	51
1,200	-28	-9	49
1,400	-29	-9	47
1,600	-30	-9	46
1,800	-31	-10	44
2,000	-32	-10	43

Notes: This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers which may reduce sound levels further.

Calculations based on FTA 1995.

Backup warning systems, which are required by California labor law for heavy equipment, typically employ audible alarms in the form of backup beepers. These beepers can produce sound levels of 47–51 dBA, measured at a distance of 100 feet. This corresponds to 53–57 dBA measured at 50 feet. Backup beepers tend to be audible over large distances, even when the sound may not be readily measurable. In general, the sound level generated by backup beepers is low enough that it would not increase the overall sound level produced by heavy equipment operating concurrently with the beepers. Accordingly, no attempt is made to project the sound level produced by backup beepers over distance. However, given the nature of the sound produced by backup beepers, it is likely that they would be audible over several thousand feet when background levels are low. The results in Table 4.9-2 and 4.9-3 indicate that grading and framing/exterior finish activities have the potential to exceed the nighttime threshold of 50 dBA. This impact is therefore considered to be significant.

Implementation of Mitigation Measures 4.9-1a through 4.9-1d would reduce this impact to a ***less-than-significant*** level.

Mitigation Measure 4.9-1a: Employ Noise-Reducing Construction Practices

The construction contractor shall employ noise-reducing construction practices such that noise from construction does not exceed:

- 90 dBA at noise sensitive uses between 7:00 a.m. and 7:00 p.m.
- 50 dBA at noise sensitive uses between 7:00 p.m. and 7:00 a.m.

The City shall ensure that these practices are undertaken. In the event that the construction engineer is unable to mitigate construction-related noise to the levels above, the construction contractor shall cease construction activities and employ additional mitigation measures sufficient to meet the noise levels above.

Construction practices that can be used to limit noise shall include, but are not limited to:

- limit hours of construction to daytime, from 7 a.m. to 5 p.m. (7 p.m. during the summer);
- locate equipment as far as practical from noise sensitive uses during operation;
- all heavy equipment and generators shall be equipped with sound control devices such as mufflers;
- selecting haul routes that affect the fewest number of people;
- use noise-reducing enclosures around stationary, noise-generating equipment; and
- construct barriers between noise sources and noise sensitive land uses or take advantage of existing barrier features (terrain, structures) to block sound transmission.

Mitigation Measure 4.9-1b: Prepare a Noise Control Plan

The construction contractor shall prepare a detailed noise control plan based on the construction methods proposed. This plan shall include specific measures to limit noise and will identify specific measurement that will be taken to ensure compliance with the noise limits specified above. The noise control plan shall be reviewed and approved by the City of Dixon before any noise-generating construction activity begins.

Mitigation Measure 4.9-1c: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program

The construction contractor shall notify residences within 500 feet of the construction areas of the construction schedule in writing before construction. The construction contractor will designate a noise disturbance coordinator who will be responsible for responding to complaints regarding construction noise. The coordinator will determine the cause of the complaint and will ensure that reasonable measures are implemented to correct the problem. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on the construction site fences and will be included in the written notification of the construction schedule sent nearby residents.

Mitigation Measure 4.9-1d: Locate Construction Equipment as Far Away from Residences as Feasible

Stationary construction equipment that generates noise levels in excess of 60 dBA L_{eq} shall be located as far away from existing residential areas as possible. If required to minimize potential noise conflicts, the equipment shall be shielded from noise sensitive receptors by using temporary walls, sound curtains, or other similar devices. Heavy-duty vehicle storage and start-up areas shall be located a minimum of 150 feet from occupied residences where feasible.

Impact 4.9-2: Exposure of Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels (Less than Significant)

The proposed Project would not be expected to result in exposure of persons to or generation of groundborne vibration or noise. No sources of substantial groundborne vibration, such as pile driving, are proposed as part of the Project. No sources of groundborne noise or vibration currently exist in proximity to the proposed Project that would expose people at the site to excessive noise levels. This impact is therefore considered ***less than significant***.

Impact 4.9-3: Exposure of Offsite, Noise-Sensitive Land Uses to Increased Traffic Noise (Less than Significant)

Table 4.9-4 summarizes predicted traffic-noise levels along roadways in the Project area under existing, 2025 conditions both with and without the Project. The FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic data provided by the Project traffic engineer were used to develop predicted traffic noise levels.

Table 4.9-4 provides comparisons between project and no-project conditions for each year evaluated. The results in Table 4.9-4 indicate that project-related increases in traffic noise would be 3 dB or less for the all roadways evaluated. Solid walls located around the Valley Glen subdivision along Parkway Boulevard and South First Street will reduce predicted traffic noise levels by at least 5 dB resulting in traffic noise levels that are less than 60 L_{dn}.

Because traffic noise levels on evaluated roadways are not predicted to exceed the 60 dB-L_{dn} and result in more than a 3 dB increase, this impact is considered ***less than significant***. No mitigation is required.

Impact 4.9-4: Exposure of New Noise-Sensitive Land Uses to Traffic Noise (Less than Significant)

As discussed above, Table 4.9-4 summarizes predicted traffic-noise levels along roadways in the Project area. Traffic noise predictions for 2025 conditions are used to assess the ultimate noise exposure of noise sensitive uses on the Project site. Table 4.9-4 also shows the distances to the 60, 65, and 70 L_{dn} contours along each roadway segment evaluated. The results in Table 4.9-4 indicate that the proposed noise-sensitive land uses located along Parkway Boulevard and Valley Glenn Drive would be not be exposed to exterior noise exceeding 60 L_{dn}. This impact is therefore considered ***less than significant***. No mitigation is required.

Impact 4.9-5: Exposure of New Noise-Sensitive Land Uses to Noise from the Future Dixon High School (Significant and Unavoidable)

The EIR prepared for the future Dixon High School to be constructed north of the Project site evaluated potential noise impacts from high school on adjacent residences (City of Dixon 2003). The following discussion is based on the evaluation presented in the Dixon High School EIR.

Normal outdoor activity areas at the school would be limited to parking areas, open quad areas, lighted baseball and softball diamonds, lighted tennis courts, the lighted football stadium, and other recreational areas. Outdoor activities and other normal operational activities, such as vehicular circulation and the use of the public address systems, bells, alarms, could be sources of noise. Whereas outdoor activities in unlighted areas would be limited to daytime school hours, activity in lighted areas could occur during evening hours. Given the limited and localized nature of these activities and the distance to the nearest noise-sensitive receptors, noise from these activities is not expected to exceed the City planning standards or noise ordinance limits.

The lighted football stadium would include seating for 500 people and night lighting to accommodate nighttime events. Sources of noise potentially associated with events at this facility would include noise from crowd cheers, public address announcements, and band music. The crowd noise would be the loudest source of noise. Public address announcements and band music would be lower in overall sound level but generally more noticeable because of the tonal character of voice and music. For the purposes of this assessment, the potential for noise impacts from the stadium is based on crowd noise.

Studies of the sound level produced by various levels of vocal effort indicate that an average person shouting produces a sound level of 82 dBA at 1 meter (Harris 1979). This corresponds to a sound level of 58 dBA at 50 feet. Assuming that 500 people cheer in unison, the combined source level for 500 people would be a maximum of approximately 85 dBA at a reference distance of 50 feet. Residences on the Project site would be located approximately 700 feet directly south of the center of the proposed football stadium. At this distance the maximum crowd sound level would be approximately 62 dBA. Presuming 10 1-minute cheering events per hour and a background level of 40 dBA (based on ambient sound level measurements), the 1-hour average sound level from the crowd would be about 54 dBA L_{eq} at nearest residences on the Project site.

This assessment indicates that noise from stadium events would not exceed the City's maximum noise level standards of 55 dBA (7:00 a.m. to 10:00 p.m.) or 60 dBA (10:00 p.m. to 7:00 a.m.) at noise-sensitive land uses on the Project site. However, noise from the stadium would be substantial greater that the existing ambient noise level which in the evening hours is about 40 dBA. Public address announcements and music would also likely be audible at nearby residences. This impact is considered ***significant and unavoidable***.

Implementation of the mitigation measures identified in the Dixon High School EIR, and the following Mitigation Measure 4.9-5 will reduce this impact but not to a less-than-significant level.

Mitigation Measure 4.9-5: Notify Potential Buyers of Residents of Potential Noise from School Activities

As a condition of approval, subdivision maps shall provide that all potential buyers of residences on the Project site shall be notified in writing that activities at the school may be a source of noise.

Table 4.9-4. Traffic Noise Model Results

			L_{dn} (100 feet from roadway centerline)				Distance (feet) to L_{dn} Noise Contour for 2025 Plus Project Conditions		
Roadway	From	To	Existing	2025 No Project	2025 with Project	*Increase with Project*	70 L_{dn}	65 L_{dn}	60 L_{dn}
First Street	North of West A Street		56	60	60	0	22	47	102
	West A Street	East Chestnut	55	59	60	1	21	46	99
	East Chestnut	Cherry Street	54	59	60	1	21	46	99
	Cherry Street	County Fair Drive	54	59	60	1	20	44	94
	County Fair Drive	Valley Glenn Drive	59	63	64	1	41	89	191
	Valley Glenn Drive	Parkway Boulevard	58	63	64	1	40	86	185
	Parkway Boulevard	Midway Road	58	64	64	0	39	84	181
	South of Midway Road		57	63	63	0	35	76	164
Pitt School Road	North of West A Street		50	59	60	1	20	43	93
	South of West A Street		47	60	61	1	24	52	111
West A Street	West of Pitt School Road		56	65	65	0	46	99	212
	Pitt School Road	First Street	57	63	63	0	34	74	159
	East of First Street		56	60	60	0	22	47	101
East Chestnut	West of First Street		44	50	50	0	N/A[b]	N/A[b]	21
	East of First Street		42	44	44	0	N/A[b]	N/A[b]	N/A[b]
Cherry Street	West of First Street		41	52	52	0	N/A[b]	N/A[b]	29
	East of First Street		35	36	36	0	N/A[b]	N/A[b]	N/A[b]
County Fair Drive	West of First Street		34	35	35	0	N/A[b]	N/A[b]	N/A[b]
	East of First Street		46	48	48	0	N/A[b]	N/A[b]	N/A[b]
Valley Glenn Drive	Parkway Boulevard	First Street	46	52	53	1	N/A[b]	N/A[b]	32
	East of First Street		N/A [a]	N/A [a]	48	N/A [a]	N/A[b]	N/A[b]	N/A[b]
Parkway Boulevard	West of Valley Glenn Drive		N/A [a]	62	63	1	N/A[b]	73	157
	Valley Glenn Drive	First Street	36	62	63	1	N/A[b]	69	150
	First Street	Valley Glenn Drive	N/A [a]	61	62	1	N/A[b]	65	140
	East of Valley Glenn Drive		N/A [a]	58	60	2	N/A[b]	N/A[b]	97
Midway Road	West of First Street		55	57	57	0	N/A[b]	30	66
	East of First Street		51	59	59	0	N/A[b]	41	88
Valley Glenn Drive (2)	North of Parkway Boulevard		N/A [a]	52	53	1	N/A[b]	N/A[b]	35

[a] Not applicable. Roadway does not exist under existing and no project conditions.

[b] Not applicable. Contour falls within roadway right-of-way where sound walls are located between residences and the roadway sound levels would be about 5 dB and distances to contours would be about half the value shown.

4.10 Public Utilities and Services

4.10.1 Methodology

Information used in this analysis is based on conversations with individuals from the Dixon Fire, Police, and Public Works Departments. The ability of utility and service providers to serve the proposed Project is based upon their stated existing service capacity.

4.10.2 Thresholds of Significance

For the purposes of this analysis, an impact pertaining to public services, utilities, or recreational facilities was considered significant if it would result in any of the following, which are based on professional practice and Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.):

- disturbance to existing public services and utility infrastructure from construction activities;
- the need for new or altered fire, police, school, or park service or facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives;
- the need for new or altered gas, electric, water, wastewater, stormwater, or solid waste service or facilities which could cause significant environmental effects;
- the need for energy or water supplies in excess of existing capacity.

4.10.3 Impacts and Mitigation Measures

Impact 4.10-1: Increased Demand for Fire Protection Services (Significant and Unavoidable)

The Project area is situated in an area that is transitioning from rural to urban land uses. As such this area is not yet fully served by municipal services and improvements, such as a grid of improved streets, water or sewer lines, and fire stations. According to the Draft Environmental Impact Report for the DUSD (State Clearinghouse Number 2003062163) (Jones & Stokes 2004), current fire services would not be sufficient to serve the Project area because the response time for the Project area's fire station would fall below the ISO criteria for response times. To offset this increased demand for fire protection services, a new fire station has been programmed for construction in southwest Dixon and is now in the design stage. This station, when operational, would service the proposal site with an ISO-compliant response time.

The City's Capital Improvement Program has scheduled the station for completion in Fiscal Year 2008/2009. The Project will be phased, with the first homes coming for sale in 2008 and the final development finishing in 2014. While fire department staffing is not a CEQA issue (no physical change in the environment), the Project could provide a share of the staffing costs of the new station under the proposed development agreement. However, this is not certain, and in the event that the proposed fire station is delayed, there would be a significant impact on fire protection services for those portions of the Project that would be built by that time. This temporary impact on existing fire services would be ***significant and unavoidable***.

Impact 4.10-2: Increased Demand for Law Enforcement Services (Less than Significant)

Project implementation would increase the need for Dixon-provided law enforcement services in the Project area. The current average response time for the Dixon Police Department is less than five minutes[1]. As the population grows and the City expands to its expected build-out population, the average response time will predictably increase unless the Department facilities or services are enhanced, typically through the addition of Department staff.

The City of Dixon's General Plan does not have any specific goals or requirements for police response time. In order to maintain response times that adhere to the Department's goals, additional police officers and police vehicles will have to be added to the Department, and sub-beats will need to be added or expanded to keep pace with new development. In 2004, the City Council approved a five-year strategic plan for the Department that addresses staff hiring plans, and capital investments are dealt with through the City's capital improvement program, as needed.

The strategic plan for law enforcement will avoid impacts on services as a result of this Project. The impact would be ***less than significant***. No mitigation is necessary.

Impact 4.10-3: Increased Demand for Landfill Space (Less than Significant)

As described in Chapter 3, solid waste collected in Dixon is transported to the Hay Road Landfill. The remaining permitted disposal capacity at the landfill is estimated to be adequate to handle the projected waste generation through buildout of the General Plan.

According to EPA, the national average for residential waste generation is approximately 4.4 pounds of solid waste per capita per day (Environmental

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[1] More accurate average response times are not currently available. The Department is working with the Solano County Sheriff's Office to calculate this data.

Protection Agency 2004). The Brookfield Project proposes to develop approximately 400 single-family units and 120 senior housing units at full build-out. As described below in 4.12 “Population and Housing”, the Project would result in an estimated population of 1,484 persons. Therefore, the Project is estimated to produce approximately 1,204.5 tons of municipal solid waste each year.

This is within the capacity of the Hay Road landfill. The impact would be ***less than significant***. No mitigation is necessary.

Impact 4.10-4: Increased Demand for Water Services (Less than Significant)

Annual projected water demand for the Project, at full build out, is estimated to be 631 acre-feet.

According to the *Water Supply Assessment for the Brookfield Homes Annexation, Dixon, California (2005)*, the groundwater basin used by DSMWS is in no apparent overdraft condition and can provide enough water without exceeding its safe yield to serve the development proposed for the remainder of the DSMWS service area outlined in the DSMWS Water Master Plan, including the Brookfield Homes Project. Based on the analysis of the WSA, there is a sufficient water supply to meet the demands of the Project, as well as the other proposed and assumed future developments and other water users within the DSMWS Service Area for the next 20 years or more. Therefore potential impacts resulting from an increased demand for water services within the DSMWS Service Area would be ***less than significant***.

As noted in the Project Description, the developer would facilitate the installation of facilities to serve the new High School, including roads and a water well (Figure 2-4). The water well would provide water service to the proposed Project, the new high school, and other portions of the City. Domestic water pipelines would be installed to the Project site, the high school, and the Valley Glen subdivisions. Pursuant to Dixon-Solano Water Service Agency specifications, the water well would have a minimum production capacity of 1,800 gallons per minute. Installation of the water well is described in the City of Dixon’s Capital Improvement Program as a project for year 2005. These improvements were discussed and their general impacts analyzed in the EIR approved for the new high school project in 2004.

Impact 4.10-5: Disturbance of the Existing Irrigation Pipeline at the Project Site During Construction Activities (Less than Significant with Mitigation)

The Project will not need agricultural irrigation water; however the project site is underlain by the SID’s Weyand Lateral B irrigation pipeline. Because Weyand

Lateral B is not designed for urban loadings, it will need to be relocated and rebuilt. Implementation of Mitigation Measure 4.10-4 would reduce the impact of the Project on this facility to ***less than significant***.

Mitigation Measure 4.10-5: Relocate the Weyand Lateral B Pipeline
During construction activities, the Project developer will coordinate with SID and Caltrans, if necessary, to relocate and/or replace the Weyand Lateral B pipeline so that it can remain in operation. The existing pipeline will be replaced with a 30-inch, rubber gasket reinforced concrete pipe, with manholes located every 500 feet at minimum, or other equivalent pipeline as acceptable to SID. Any work within the Caltrans right-of-way shall be under encroachment permit from Caltrans.

Impact 4.10-6: Increased Demand for Sewer/Wastewater Services (Less than Significant)

Sewage transport and treatment is provided by the City of Dixon's Public Works Department. With its permitted capacity of 1.31 mgd and projected buildout capacity of 2.4 mgd, which are part of the facility's goal to maintain a capacity 5–6 years ahead of the population's needs, the current facility would be adequate to accommodate the demand generated by the proposed Project for wastewater treatment (Tribett pers. comm.). The Project demand will be phased, as the Project develops between 2008 and 2014. The City has funding available for necessary improvements to the wastewater treatment plant and its ponds and is close to satisfying the RWQCB regarding the cease and desist order (Salmons pers. comm.). However, because the City has not finalized the treatment plant improvement plans, the types and locations of improvements are currently unknown. Further, the planned improvements would require review and approval by the RWCQB through an additional review process. Standard sewage-reducing design features for residential developments (such as low-flow toilets and showerheads) will be incorporated during Project design.

This impact is considered ***less than significant.*** No mitigation is required.

Impact 4.10-7: Increased Demand for Stormwater Drainage Facilities (Less than Significant)

Stormwater drainage facilities will be incorporated into the Project design, draining stormwater from the Project site to Pond C. No additional demands would be made on the City's stormwater system. This impact is considered ***less than significant***. No mitigation is required.

Impact 4.10-8: Disruption of Sewer/Wastewater Service (Less than Significant with Mitigation)

Connecting the proposed Project to existing sewer lines would require excavation. Connections to the sewer main would be required. During excavation activities, existing infrastructure could be disturbed. Without close coordination among construction contractors and service providers, wastewater services could be disrupted or sewer lines damaged. Implementation of Mitigation Measure 4.10-7 would reduce this impact to a ***less-than-significant*** level.

Mitigation Measure 4.10-8: Coordinate Construction Activity with Service and Utility Providers and Dixon Public Works Department
Before beginning construction activities, the Project developer will coordinate with the City of Dixon Public Works Department and Dixon/Solano Municipal Water Service to identify and avoid damage to existing water, wastewater, and stormwater infrastructure on or adjacent to the Project site. In addition, the Project developer will inform affected public service and utility providers of school construction activities. The Project developer will provide applicable and sufficient construction activity information to the service providers, such as schedule, roads used to access the Project site, types of vehicles and machinery used for construction, and number of employees working at the Project site, and it will coordinate construction activity with the provider to maintain current levels of service. The Project developer will also coordinate the installation of improvements and extensions necessary for the proposed Project with service providers.

Impact 4.10-9: Disruption of Fire Protection and Law Enforcement Service (Less than Significant with Mitigation)

Construction activities would include the movement or transport of large vehicles, machinery, and supplies to and from the site. The increase in construction vehicle traffic on local roadways could prevent or delay emergency vehicles traveling to the site or surrounding areas. This delay may increase the response times of fire protection and law enforcement services to the Project sites and adjacent areas. This impact is considered significant. Implementation of Mitigation Measure 4.10-8 would reduce this impact to a ***less-than-significant*** level.

Mitigation Measure 4.10-9: Prepare a Traffic Management Plan and Coordinate with Public Service Providers
The Project developer will coordinate with fire protection and law enforcement officials to identify roadways that will be used during construction and to determine how to avoid impeding emergency vehicles. The developer will prepare a traffic management plan to maintain traffic flow on area roadways during construction, and will inform the Dixon Fire and Police Departments of

construction activity hours and the roadways that will be used by construction vehicles.

Impact 4.10-10: Increased Demand for Electricity (Less than Significant)

As discussed in Chapter 2, the proposed Project would involve the construction of approximately 400 homes, ranging in size from approximately 1,600 to 4,000 square feet on lots of varying sizes, and a 120-unit senior citizen complex. Because the amount of electricity used by an individual residence depends on a variety of factors, such as total square footage, solar aspect, energy efficiency (e.g., structural materials and energy efficient appliances and lighting fixtures), and the duration of occupancy (occupant work hours), is it difficult to precisely assess the energy demand of a residential development.

In order to provide a roughly proportional estimate of the electricity demand of a an average residence in Solano County, statistics compiled by the CEC for total utility electricity deliveries by county were used. These statistics include the total number of residential accounts (units) in Solano County and the total kilowatt hours (kWh) (in millions) delivered by electrical utilities (PG&E) in the County in 2000 (CEC 2000). Dividing the total kWh (in millions) by the number of residential accounts, results in an estimate of yearly electricity usage of approximately 7,500 kWh for each residential account (CEC 2000). As applied to the Project, assuming an average household rate of 7,500 kWh per year, the proposed development would increase the yearly electricity demand in the area by approximately 3,900,000 kWh (7,500 kWh x [400 SFD + 120 senior units]). Given that this increase in less than 0.5 percent of the total kWh delivered to residential accounts in Solano County in 2000 and the likelihood that residences to be constructed as part of the project would be more energy efficient than existing homes in the region, it is anticipated that the project would not put undue stress on PG&E nor necessitate new energy-related infrastructure to be built, other than extension of existing lines to the site. This impact is ***less than significant***. No mitigation is required.

4.11 Traffic

The State CEQA Guidelines state that the environmental setting or baseline for analysis is normally the environmental conditions at the time that the environmental analysis is commenced. In the case of this Project, because it is expected to begin construction in 2007, the baseline for analysis is the expected road and traffic conditions in the year 2007. The analysis of the base condition is intended to consider the impact of this Project within the context of near term future conditions in the City of Dixon. The base condition includes completion of the Parkway Boulevard extension, from Valley Glen Drive to Pitt School Road, and the completion and opening of the new Dixon High School. This approach allows the EIR to separate out the effects that are the result of the proposed Project.

4.11.1 Methodology

Intersection Methodology

Level of Service Analysis has been employed to provide a basis for describing existing traffic conditions and for evaluating the significance of project traffic impacts. LOS measures the *quality* of traffic flow and is represented by letter designations from A to F, with a grade of A referring to the best conditions, and F representing the worst conditions.

The methodologies contained in the *2000 Highway Capacity Manual* were used to provide a basis for describing existing traffic conditions and for evaluating the significance of project traffic impacts. The method employed for unsignalized intersections calculates the average total delay for each controlled movement, and a weighted average can be calculated and for the intersection as a whole. This methodology considers gap acceptance and average delay of motorists on minor streets and in turn lanes to establish service levels. Intersection levels of service presented in this analysis are based on the weighted average total delay per vehicle for all vehicles yielding right of way at the intersection based on the thresholds shown in Table 3.11-1.

Because traffic associated with schools can often be concentrated into short time periods immediately before and after the school day, poor traffic conditions and congestion can occur for short periods of time at locations near schools where the overall peak hour LOS remains acceptable. For this reason, this analysis also investigated conditions along the Project's westerly north-south collector that will provide the main access to the new high school. This included the Parkway Boulevard/West Collector Street intersection during the peak 15 minutes before school. The analysis assumed that a **noticeable but not significant impact** would occur if traffic flows during that period exceeded the capacity of the intersections (i.e., greater than or equal to LOS D).

The methodologies contained in the *2000 Highway Capacity Manual* were used to provide a basis for describing existing traffic conditions and for evaluating the significance of project traffic impacts. The method employed for unsignalized intersections calculates the average total delay for each controlled movement. A weighted average is then calculated based on the delays for each approach. This delay corresponds to a level of service for the intersection as a whole. This methodology considers gap acceptance for left turning vehicles along the major street and average delay of motorists on minor streets. These delays are used to establish the levels of service for each intersection. The levels of service at each intersection are presented in this analysis are based on the weighted average total delay per vehicle for all vehicles yielding right of way at the intersection. The level of service is based on the delay thresholds shown in Table 3.11-1.

Signal Warrants

Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrant is met, signalization may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously uncontrolled major street, and may increase the occurrence of particular types of accidents.

For this section of the EIR, available data comes in the form of a.m. and p.m. peak hour volumes; thus unsignalized intersections with unacceptable levels of service (LOS D–F) were evaluated using the Peak Hour Warrant (Warrant No. 3) from the Manual of Uniform Traffic Control Devices (MUTCD). The Peak Hour Warrant was applied where the minor street experiences long delays in entering or crossing the major street for at least one hour of the day, or the plotted point representing major street traffic (both directions) and the corresponding minor street traffic (one direction only) falls above the applicable traffic curves.

Even if the Peak Hour Warrant is met, a more detailed signal warrant study is recommended before a signal is installed. The more detailed study should consider other warrants, including volumes during the eight highest hours of the day, pedestrian traffic, and accident histories.

4.11.2 Thresholds of Significance

For the purposes of this analysis, an impact pertaining to traffic was considered significant if it would result in any of the following, which are based on professional judgment and Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.):

- Result in a substantial increase in the number of vehicle trips in relation to the existing traffic load and capacity of the street system;
- Exceed, either individually or cumulatively, a level of service standard established by the City or Caltrans;
- Result in inadequate emergency access;
- Result in inadequate parking capacity;
- Conflict with adopted policies supporting alternative transportation modes.

4.11.3 Impacts and Mitigation Measures

2007 Base Conditions

Traffic Volume Projections

Traffic along the study roadways was developed based on the most recent traffic model. In addition to the completion of both projects and the associated traffic volumes along the roadway segments the model also included additional growth projected throughout the City. Turning movements were developed based on the historical growth between the 2001 calibrated model year and the 2007 projected volumes derived from the City model. Figure 4.11-1 displays the a.m. and p.m. peak hour volumes and projected lane configurations in 2007 without the Project. The S. 1st Street/Parkway Boulevard intersection is proposed to be signalized by Brookfield as part of this Project.

Intersection Levels of Service

Table 4.11-1 displays the a.m. and p.m. peak hour LOS at the study intersections under the 2007 base conditions. A total of ten study intersections were analyzed (Figure 4.11-2). One additional intersection was analyzed, the westerly north-south roadway, the School Collector Roadway, into the Project site. This roadway provides the main access into the high school. The LOS analysis showed that four intersections will operate at LOS below the City thresholds. These intersections include 1st Street/A Street, South 1st Street/Chestnut Street, South 1st Street/Cherry Street and West A Street/Pitt School Road. Three of the identified intersections will all operate at LOS F in the a.m. peak period; the West A Street/Pitt School Road intersection will also operate at LOS F in the p.m. peak hour. The LOS F condition along South 1st Street is due to the heavy volume that will be placed on the roadway network from the 1,600 student high school. The 1st Street/A Street intersection would operate at LOS D in both the a.m. and p.m. peak periods.

Traffic Signal Warrants

The South 1st Street/Chestnut Street intersection and the Pitt School Road/West A Street intersections will also meet the peak hour signal warrant (Warrant #3). Both intersections meet the warrant in the a.m. peak hour with the West A Street/Pitt School Road intersection also meeting the warrant in the p.m. peak hour.

Project Impacts

Trip Generation

The impacts of new development are identified by estimating the number of vehicle "trip ends" that are likely to be generated by the use, determining the directional distribution of these trips and assigning project trips to the study area street system. Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends.

Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends. The trip generation of the Project was computed using trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, 7th Edition, 2003) based on the projected use. The site is identified as a 401 unit subdivision with a 120 unit senior care facility with an estimated population of 150 persons (this includes staff, as well as residents). Table 4.11-2 displays the daily, a.m. peak hour, and p.m. peak hour trip generation for the proposed Project. The proposed Project is expected to generate 4,237 daily trips, 322 a.m. peak hour trips and 438 p.m. peak hour trips.

The future Dixon High School will also generate traffic that would enter SR 113. The Dixon High School traffic was considered part of the overall future traffic and is not included in the trip generation numbers for the Brookfield Project.

Table 4.11-2. Project Trip Generation

		Trip Rate			Trips		
Land Use	Amount	Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
Single Family	401 units	9.57	0.75	1.01	3,838	301	405
Senior Assisted Living	150 persons	2.66	0.14	0.22	399	21	33
Net New Trips					4,237	322	438

Trip Distribution

The distribution of project traffic was determined based on the location of the Project relative to current and projected traffic patterns once the Parkway Boulevard extension is completed. Table 4.11-3 presents the distribution pattern used for the residential subdivision and the senior facility for the near term (2007) and long range (cumulative) conditions.

Trips generated by the proposed Project were assigned to the local street system and superimposed onto the existing traffic volumes. These volumes were used to calculate LOS during the a.m. and p.m. peak hours.

Table 4.11-1. Peak Hour Intersection Levels of Service—Base Condition (2007)

		AM Peak Hour		PM Peak Hour		
Location	Control	LOS	Average Delay	LOS	Average Delay	Meets Peak Hour Traffic Signal Warrants?
1. 1st Street/A Street	Signal	D	45.8	D	37.2	N/A
2. 1st Street/Chestnut Street						
Overall average	EB/WB stop	F	124.4	C	19.7	Yes
NB Left turn			9.2		8.8	
SB Left turn			8.6		8.1	
EB			187.5		24.8	
WB			15.6		14.4	
3. 1st Street/Cherry Street						
Overall average	EB/WB stop	F	63.6	B	13.3	No
NB Left turn			8.8		8.4	
SB Left turn			8.5		–	
EB			69.0		16.6	
WB			24.5		14.2	
4. 1st Street/Country Faire Drive						
Overall average	EB/WB stop	B	13.1	B	10.1	No
NB Left turn			8.6		7.8	
SB Left turn			8.2		8.0	
EB			26.4		15.9	
WB			13.9		12.0	
5. 1st Street/Valley Glen Drive						
Overall average	EB stop	C	22.1	B	11.5	No
NB Left turn			8.9		8.0	
EB			23.5		13.0	
6. 1st Street/Parkway Boulevard	Signal	C	32.5	C	25.1	N/A
7. 1st Street/Midway Road						
Overall average	EB/WB stop	B	10.4	B	11.4	No
NB Left turn			7.5		7.6	
SB Left turn			7.6		7.6	
EB			11.4		12.8	
WB			10.5		11.5	
8. Parkway Blvd/Valley Glen Drive						
Overall average	SB stop	A	9.5	A	8.6	No
SB			9.9		9.7	
EB Left turn			7.5		7.5	
9. West A Street/Pitt School Road						
Overall average	AWS	F	70.0	F	69.8	Yes—to be signalized with Southwest Development
NB Left turn			15.4		15.1	
SB Left turn			15.9		16.7	
EB			142.2		132.0	
WB			33.8		58.4	
10. Parkway Blvd/School Collector						
Overall average	SB stop	C	19.8	A	9.7	No—to be signalized under Brookfield project
SB			11.1		9.8	
EB Left turn			23.6		9.5	

Notes:
NB = northbound.
SB = southbound.
EB = eastbound.
WB = westbound.
N/A = not applicable.
AWS = all way stop.

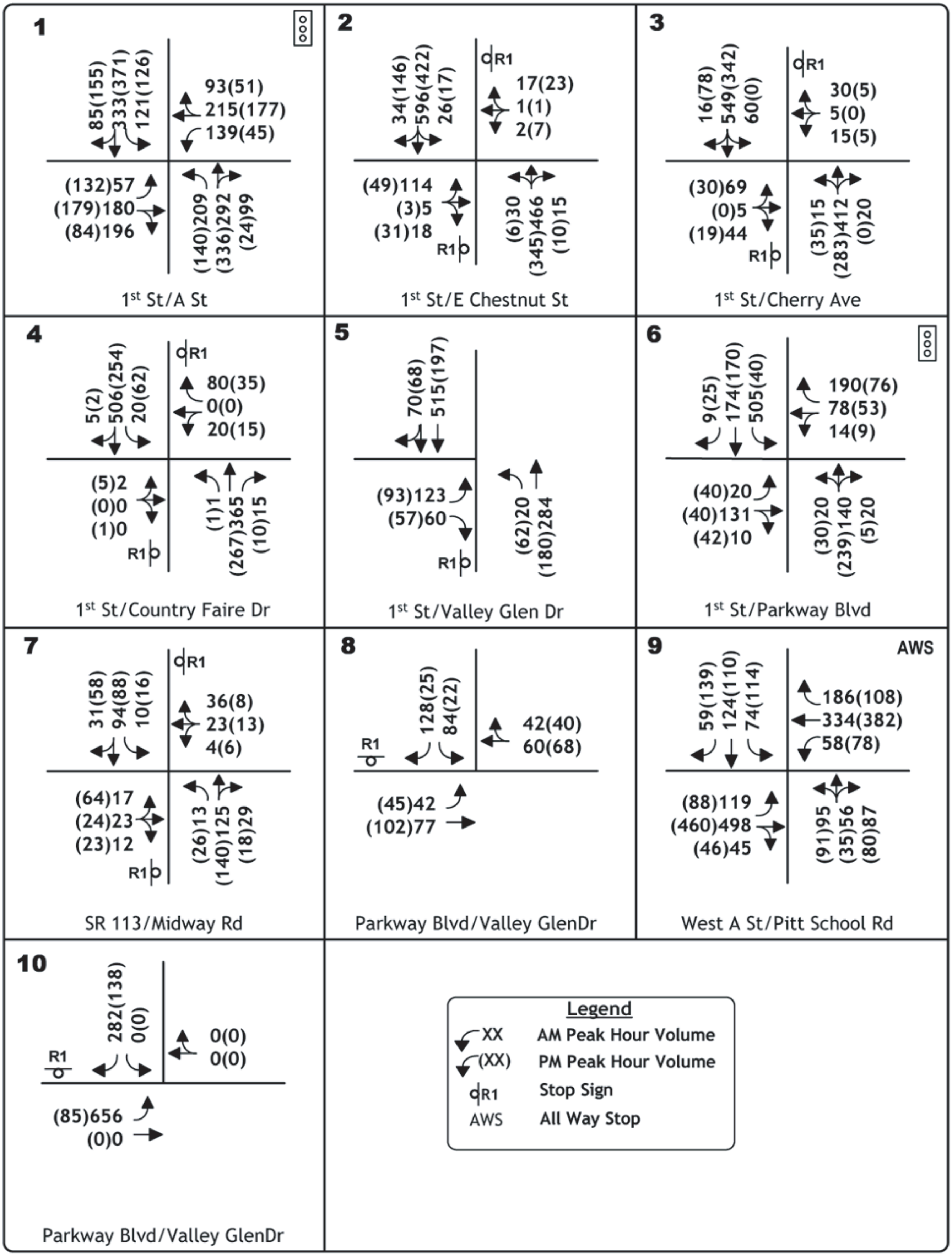

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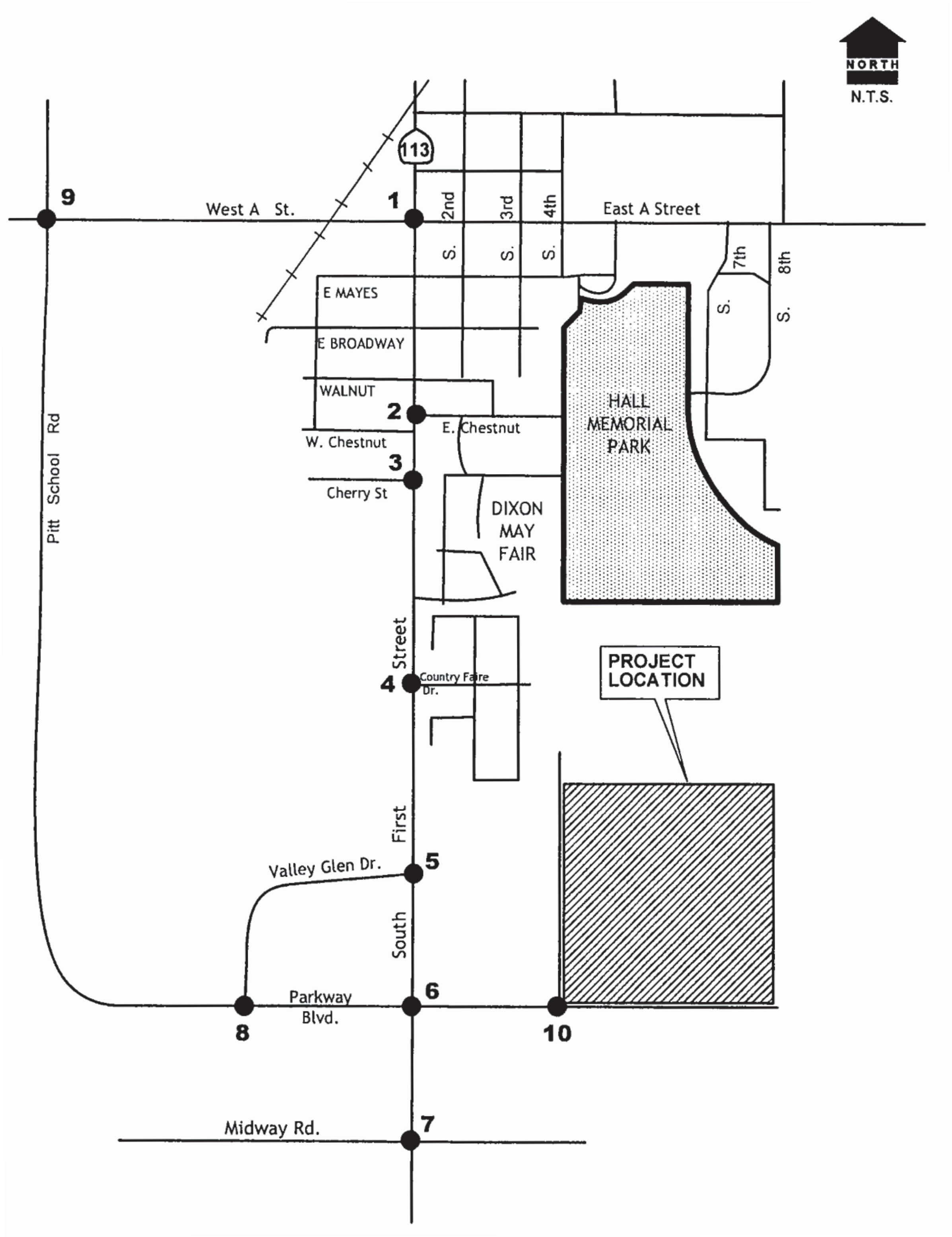
Figure 4.11-1
2007 Traffic Volumes and Lane Configurations



Source: KD Anderson Transportation Engineers

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Figure 4.11-2
Study Area Intersections

Table 4.11-3. Trip distribution

	Percentage of Total Trips	
Direction	Residential (%)	Senior Assisted Living (%)
North via S. 1st Street	30	40
West via Parkway Boulevard		
West on West A Street	11	7
North on Pitt School Road	13	18
East on West A Street	2	0
South via 1st Street	10	5
West via West A Street (via S. 1st Street)	3	18
East via East A Street	20	10
West via Midway Road	7	2
West to Valley Glen Subdivision	4	0
Total	**100**	**100**

Trip Assignment

The impacts of developing the Project have been identified by superimposing project traffic onto the background conditions. Traffic generated by the Project is shown in Figure 4.11-3. This traffic was then added to the 2007 Base Condition peak hour volumes. Figure 4.11-4 illustrates the 2007 baseline traffic, plus the project-generated traffic anticipated for the study intersection in both a.m. and p.m. peak hours. A traffic operations analysis was then conducted to provide a basis for evaluating the impacts of the Project.

Intersection Levels of Service

Table 4.11-4 displays the a.m. and afternoon peak hour LOS at each of the study intersections with, and without, the Project.

The 1st Street/A Street intersection will continue to operate at LOS D. Five intersections will operate at unacceptable levels of service. They include the 1st Street/A Street, South 1st Street/Chestnut Street, South 1st Street/Cherry Street and West A Street/Pitt School Road intersections. These intersections are all expected to operate at unacceptable LOS in 2007, without the Project. The fifth intersection, South 1st Street at Valley Glen Drive will degrade to a LOS F condition in the a.m. peak hour with the Project.

Traffic Signal Warrants

Three intersections meet Warrant #3, the peak hour warrant, for signalization. All intersections meet the warrant in the a.m. peak hour. The South 1st Street/Chestnut Street intersection and the South 1st Street/Cherry Street intersection meet the warrant primarily due to the high school traffic. The Pitt School Road/West A Street intersection also meets the warrant in the p.m. peak hour. As noted previously, the anticipated traffic from the high school is a major factor in each of the South 1st Street signals meeting the peak hour warrant.

The two intersections along South 1st Street are spaced about 400 feet apart. City policy is to install traffic signals along corridors over a maximum spacing between major intersections. In considering traffic flow along South 1st Street, the installation of signals at both intersections could hinder traffic operations. The installation of a traffic signal at one of the intersections would likely reroute traffic from the unsignalized intersection to the signalized intersection primarily for left turning traffic. A field review indicated that Chestnut Street provides a wider street cross section leading to South 1st Street. Jefferson Street, connecting the two streets, also appears to be adequate to accommodate a change in traffic. Given the existing and projected traffic volumes along both streets, the condition and width of the roadways and the accessibility to each street the Chestnut Street intersection should be considered for signalization. The Cherry Street intersection should continue to allow full access movements as outside of the a.m. peak hour full access should be available without significant side street delays.

Improvements Needed Under the Base (2007) Conditions

Pitt School Road/West A Street: After completion of the Parkway Boulevard extension the Pitt School Road/West A Street intersection will decline to LOS F in both a.m. (70.0 seconds) and p.m. (69.8 seconds) peak periods. Signalization of this intersection will result in a LOS C conditions in both a.m. (25.4seconds) and p.m. (26.6 seconds) peak hours.

South 1st Street/Chestnut Street: The South 1st Street/Chestnut Street intersection will decline to LOS F (124.4 seconds) and meet Warrant #3, the peak hour warrant in the a.m. peak hour. Signalization of this intersection will result in a LOS B condition (15.3 seconds) in the a.m. peak hour. This intersection is suggested to be signalized over Cherry Street as the intersection meets the peak hour warrant in the Base (2007) condition while Cherry Street operates at LOS F condition in the a.m. peak hour but does not meet the peak hour warrant. Chestnut Street was also selected based on the existing roadway width and the ability for the roadway to accommodate an increase in traffic. In addition, East Chestnut Street provides direct access to Hall Park. Under this scenario and assuming left turning eastbound Cherry Street traffic moves to the signal at Chestnut Street, the Cherry Street intersection is projected to improve to LOS B (12.5 seconds) in the a.m. peak hour.

Table 4.11-4. Peak Hour Intersection Levels of Service Base (2007) Plus Project

		A.M. Base Conditions		A.M. Base plus Project Conditions		P.M. Base Conditions		P.M. Base plus Project Conditions		
Location	Control	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	Meets Peak Hour Traffic Signal Warrants?
1. 1st Street/A Street	Signal	D	45.8	D	53.9	D	37.2	D	44.4	N/A
2. 1st Street/Chestnut Street										
Overall Average	EB/WB stop	F	124.4	F	244.1	C	19.7	D	30.9	Yes
NB Left turn			9.2		9.4		8.8		9.4	
SB Left turn			8.6		9.0		8.1		8.4	
EB			187.5		373.0		24.8		41.9	
WB			15.6		18.7		14.4		18.1	
3. 1st Street/Cherry Street										
Overall Average	EB/WB stop	F	63.6	F	80.5	B	13.3	C	17.4	Yes
NB Left turn			8.8		9.0		8.4		8.9	
SB Left turn			8.5		9.0		–		–	
EB			69.0		145.8		16.6		23.3	
WB			24.5		33.8		14.2		18.3	
4. 1st Street/Country Faire Drive										
Overall Average	EB/WB stop	B	13.1	C	15.5	B	10.1	B	11.5	No
NB Left turn			8.6		8.8		7.8		8.2	
SB Left turn			8.2		8.6		8.0		8.3	
EB			26.4		35.1		15.9		21.6	
WB			13.9		16.6		12.0		14.4	
5. 1st Street/Valley Glen Drive										
Overall Average	EB/WB stop	C	22.1	F	53.6	B	11.5	C	17.1	No
NB Left turn			8.9		9.1		8.0		8.3	
SB Left turn			–		8.3		–		8.0	
EB			23.5		74.7		13.0		24.5	
WB			–		16.5		–		13.6	

Table 4.11-4. Continued

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		A.M. Base Conditions		A.M. Base plus Project Conditions		P.M. Base Conditions		P.M. Base plus Project Conditions		
Location	Control	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	Meets Peak Hour Traffic Signal Warrants?
6. 1st Street/Parkway Blvd	Signal	C	32.5	D	38.9	C	25.1	C	30.2	N/A
7. 1st Street/Midway Road										
Overall Average	EB/WB stop	B	10.4	B	10.8	B	11.4	B	12.5	No
NB Left turn			7.5		7.6		7.6		7.7	
SB Left turn			7.6		7.6		7.6		7.7	
EB			11.4		12.0		12.8		14.2	
WB			10.5		10.8		11.5		12.0	
8. Parkway Blvd/Valley Glen Drive										
Overall Average	SB stop	A	9.5	B	10.1	A	8.6	A	9.3	No
SB			9.9		10.6		9.7		10.6	
EB Left turn			7.5		7.7		7.5		7.6	
9. West A Street/Pitt School Road										
Overall Average	AWS	F	70.0	F	80.6	F	69.8	F	86.2	Yes
NB Left turn			15.4		17.6		15.1		16.7	
SB Left turn			15.9		17.0		16.7		18.1	
EB			142.2		170.4		132.0		175.0	
WB			33.8		38.5		58.4		67.6	
10. Parkway Blvd/School Collector										
Overall Average	SB stop	C	19.8	B	10.4	A	9.7	A	8.7	No
SB			11.1		11.5		9.8		9.6	
EB Left turn			23.6		9.8		9.5		7.7	

Notes: NB = northbound. EB = eastbound. N/A = not applicable.
SB = southbound. WB = westbound. AWS = all way stop.

* Meets peak hour signal warrant.

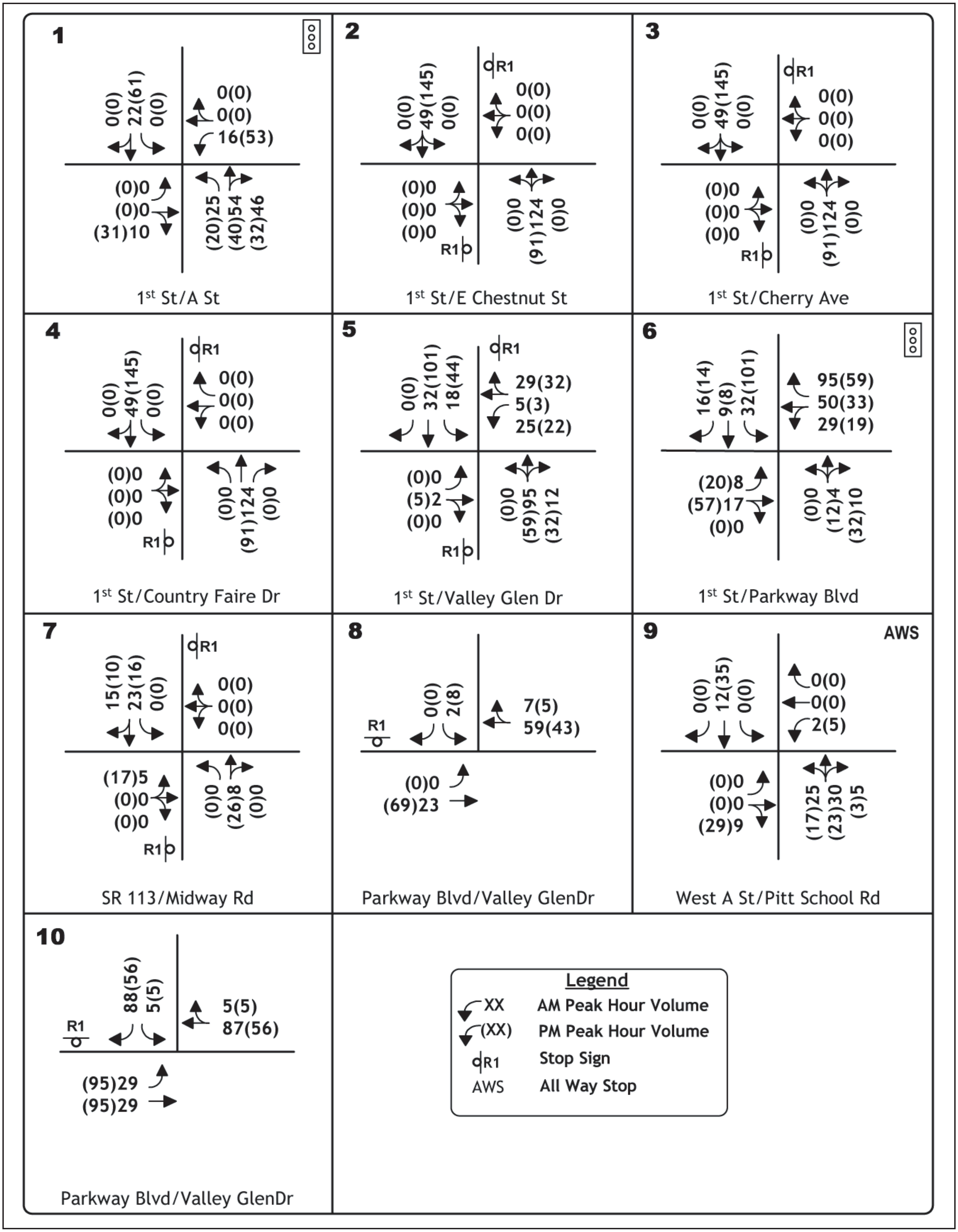

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Figure 4.11-3
Project Traffic Volumes and Lane Configurations

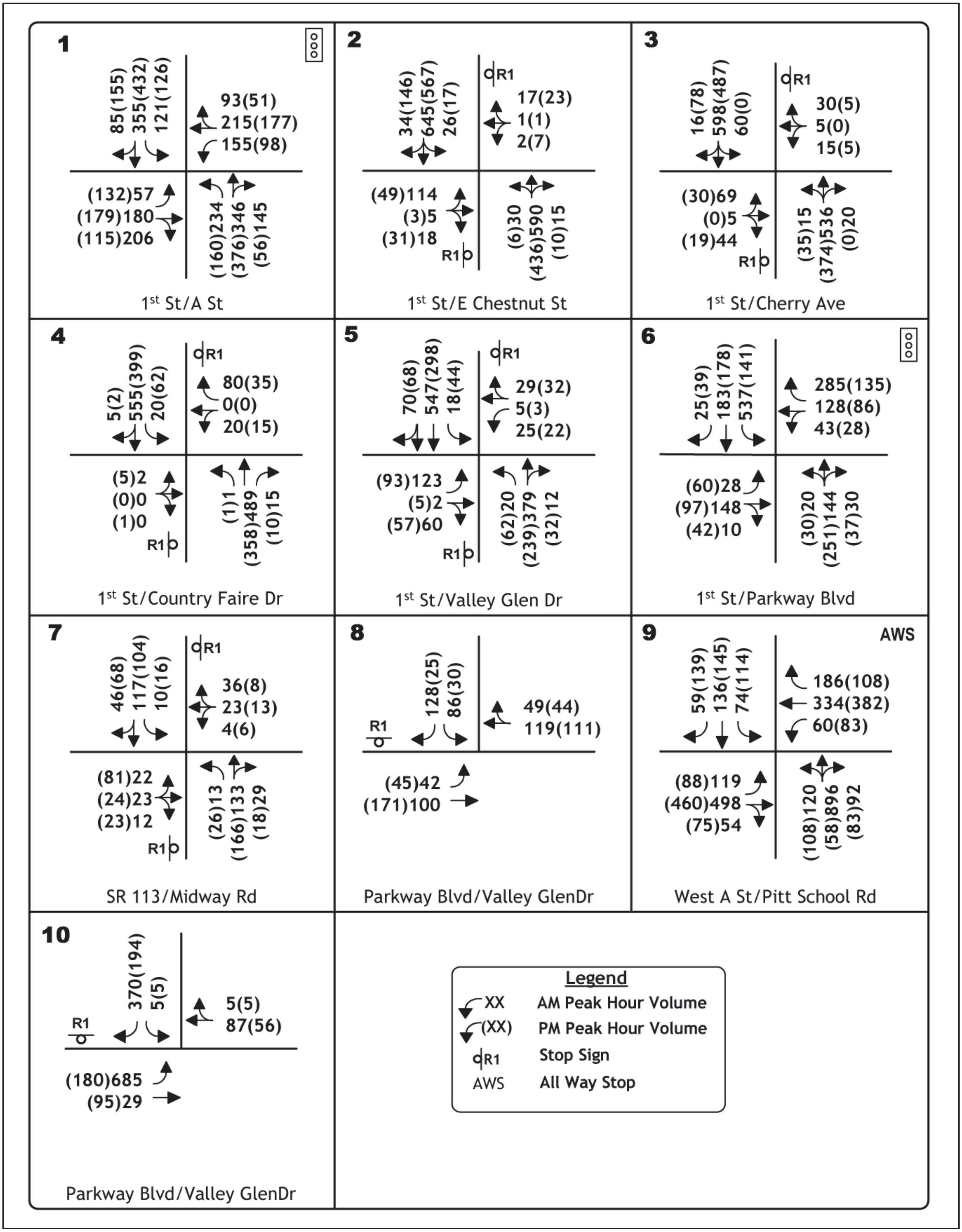

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Figure 4.11-4
2007 Plus Project Traffic Volumes and Lane Configurations

Bicycle and Pedestrian Impacts

Implementation of the proposed Project may increase the number of pedestrians and cyclists on south Dixon streets. The City of Dixon encourages walking and bicycling within the community, especially in and near the downtown area. Given the topography of the area and the size of the City, it would be reasonable to expect some students to consider walking and/or bicycling as alternative transportation modes. High school students living in the Project site would be expected to walk or ride bicycles to the school.

Facilities for cyclists and pedestrians are currently lacking in the vicinity of the Project. South 1st Street does not currently have continuous bicycle lane facilities or sidewalk south of the Country Faire subdivision. Sidewalks are available along Country Faire Drive, and along the west side of South 1st Street to Valley Glen.

While pedestrian and bicycle facilities are lacking along South 1st Street, especially in the Project vicinity, bicycle and pedestrian access will be available through the high school and Hall Park to the north. This connection will provide an alternative bicycle and pedestrian access. Bicycle and pedestrian access to the west, along either Parkway Boulevard or Valley Glen Drive should be developed so that students walking or riding to the high school from the west have dedicated bicycle and pedestrian facilities. Development of Parkway Boulevard east of South 1st Street, and the major interior roadways leading directly to the high school, should include both sidewalks for pedestrians and bike lanes and/or bike paths for bicycle riders.

Impact 4.11-1: Implementation of Project Will Add Traffic to the Pitt School Road/West A Street Intersection (Less than Significant with Mitigation)

This intersection will operate within City LOS thresholds once signalized, as identified in the Base Condition. Signalization of this intersection will improve the level of service to LOS C in both a.m. (26.9 seconds) and p.m. (28.0 seconds) peak periods. Implementation of Mitigation Measure 4.11-1 will reduce this impact to ***less than significant***.

Mitigation Measure 4.11-1: Pay Fair Share of Signalization at the Pitt School Road/West A Street Intersection

The Project shall pay its fair share of the installation of signalization at the Pitt School Road/West A Street Intersection, pursuant to the City's traffic impact fee. Based on the City's methodology for determining fair share cost (the Project traffic divided by the difference between the future traffic and the base (2007) condition), the Project's fair share for this intersection is 3.1 percent.

Impact 4.11-2: Implementation of the Project Will Add Traffic to the South 1st Street/Chestnut Street Intersection (Less than Significant with Mitigation)

This intersection will operate within City LOS thresholds once signalized, as identified in the Base Condition. The South 1st Street/Cherry Street intersection will operate at LOS B (14.0 seconds) in this scenario. Signalization of this intersection will improve the level of service to LOS B in the a.m. (15.7 seconds) peak period. Implementation of Mitigation Measure 4.11-2 will reduce this impact to ***less than significant***.

Mitigation Measure 4.11-2: Pay Fair Share of Signalization at the South 1st Street/Chestnut Street Intersection

As provided under Mitigation Measure 4.11-1, the Project shall pay its fair share of the installation of signalization at the South 1st Street/Chestnut Street Intersection. Based on the City's methodology for determining fair share cost, the Project's fair share for this intersection is 20.9 percent.

Impact 4.11-3: Implementation of the Project Will Add Traffic to the South 1st Street/Valley Glen Drive Intersection (Less than Significant with Mitigation)

This intersection will operate at LOS F (53.6 seconds delay) with the Project constructed. The Project will meet Warrant #3, the peak hour warrant. Signalization of this intersection under the Project condition will improve the level of service to LOS B in the a.m. (16.1 seconds) peak period. Implementation of Mitigation Measure 4.11-3 will reduce this impact to ***less than significant***.

Mitigation Measure 4.11-3: Pay Fair Share of Signalization at the South 1st Street/Valley Glen Drive Intersection

This intersection should be signalized during development of the Project and the applicant pay its fair share of that improvement. The City and the Project applicant should arrange a method for the applicant to be reimbursed as future development outside of this Project occurs. The Project should pay its fair share of the Project. The Project fair share for this intersection is 22.7 percent.

Impact 4.11-4: Implementation of the Project Could Result in Safety Conflicts for Pedestrians, Cyclists and Motorists (Less than Significant with Mitigation)

The School Collector roadway providing access to the high school, as well as the other main roadways proposed for the development, may allow high speeds along each of the roadways due to the geometry (i.e. straight roads). It is expected that students living in the Brookfield area and those living in the Valley Glen area will generate significant pedestrian and bicycle activity along these collector roads. In addition, motorists entering these collector roads from the side streets may have to contend with high speed through traffic. Implementation of Mitigation Measures 4.11-4a and 4.11-4b will reduce this impact to ***less than significant***.

Mitigation Measure 4.11-4a: Implement Traffic Calming Measures to Reduce Traffic Speeds Along the Collector Roadways

The Project shall implement traffic calming measures along the collector roadways to minimize speeding along the surface streets. Such measures could include, but are not limited to: roadway narrowings, the use of traffic circles and/or roundabouts at intersections to reduce speeds, or the use of other effective traffic calming measures approved by the City. A traffic calming report should be prepared during the design phase of the tentative tract map to develop a traffic calming plan for the Project site. Traffic calming measures shall be adopted as conditions of approval of all tentative tract maps approved for the site.

Mitigation Measure 4.11-4b: Construct Pedestrian and Bicycle Facilities to Reduce Safety Conflicts

Sidewalk, bike lanes and/or bike paths should be installed throughout the site to provide access for pedestrians and bicyclists. These facilities should be located along all major roadways (i.e. South 1st Street, Parkway Boulevard and the three collector roadways) consistent with City standards and long range plans. Provisions for these facilities shall be adopted as conditions of approval of all tentative tract maps approved for the site.

Impact 4.11-5: Implementation of the Project Will Add Traffic to the Parkway Boulevard/School Collector Intersection (Less than Significant)

Development of the Project will add traffic to this future tee intersection from three directions. This will create queues for southbound traffic and eastbound left turning traffic. The developer proposes, as part of this Project, to install turn pockets and traffic signals at this intersection. Implementation of these improvements will reduce this impact to ***less than significant***.

As described in Chapter 2, *Project Description*, as part of the Project, an eastbound left turn lane shall be constructed on Parkway Boulevard to provide a location for turning vehicles to queue while waiting to turn onto the northbound School Collector roadway. Based on the queue analysis, the eastbound queue is projected to be four vehicles, or 100 feet; however, the peaking element should be considered to maximize the number of vehicles outside the through travel way. A left turn lane 300 feet long shall be provided. The turn lane shall be indicated on the tentative tract map submitted for approval.

The School Collector roadway should also have turn lane provided to separate left and right turning traffic. Most traffic is expected to turn right onto westbound Parkway Boulevard, therefore, a short left turn pocket of about 100 feet should be provided. This will reduce the right turn queue to four vehicles while creating a left turn queue of one vehicle. The turn lane shall be indicated on the tentative tract map submitted for approval.

Impact 4.11-6: Implementation of the Project Will Add Traffic to the South 1st Street/Parkway Boulevard Intersection (Less than Significant with Mitigation)

This intersection will operate at LOS D (38.9 seconds) with the Project constructed. Addition of a signal phase overlap will improve the level of service at the intersection to LOS C (27.6 seconds). Brookfield is proposing, as part of this Project, to install traffic signals at this intersection. These improvements, along with Mitigation Measure 4.11-6 below will reduce this impact to ***less than significant***.

Mitigation Measure 4.11-6: Add Signal Phase Overlap for The Westbound Right Turn Lane
A signal phase overlap shall be added for the westbound lane of Parkway Boulevard, subject to approval by the City.

4.12 Population and Housing

4.12.1 Methodology

This section describes the impact analysis related to population and housing for the proposed Brookfield development. This section describes the methods used to determine the proposed Project's impacts, lists the thresholds used to conclude whether an impact would be significant, and discusses potential impacts associated with the proposed Project.

Potential impacts on population and housing are based on the potential for construction and operation of the proposed Project to affect the population and housing resources, as described in Chapter 3, *Environmental Setting*.

The proposed Project would involve an amendment to the existing *Dixon General Plan* designation and would include prezoning of the site to support the proposed construction of approximately 400 homes at the site, ranging in size from approximately 1,600 to 4,000 square feet on lots of varying sizes, and a 120-unit senior citizen complex. The overall density of the single family residential uses would be approximately 5.7 du/ac (not counting roads) and the density of the senior housing would be approximately 20 du/ac. The population of the Project, at full build-out, was divided into two separate components; single family homes and senior housing units. The population of the single family residential component was estimated by multiplying the number of proposed housing units (approximately 400) by the average household size identified in the

Dixon Housing Element (3.17 persons) for a total of 1,244 persons. An assumption was made, as a conservative estimate, that the senior housing units would not exceed two persons per unit. Accordingly, the 120 senior housing units would result in an estimated population of 240 persons. Combined, the two components would result in an estimated 1,484 persons.

4.12.2 Thresholds of Significance

Thresholds of significance for population and housing impacts are based on Appendix G of the State CEQA Guidelines, the model impact checklist, as adapted to the circumstances of this Project.

Population and housing impacts are deemed to be significant if the Project would:

- induce substantial population growth in an area, either directly (e.g., by building new homes and businesses) or indirectly (e.g., by extending roads or other infrastructure or creating jobs);
- displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere; or
- displace a substantial number of people, necessitating the construction of replacement housing elsewhere.

4.12.3 Impacts and Mitigation Measures

Impact 4.12-1: Directly or Indirectly Induce Population Growth (Less than Significant)

The proposed Project would result in an estimated population of 1,484 people. Although the Project would increase the population of the site, this increase is considered comparable to the population of the site that is envisioned by the City's General Plan. If the proposed Project is approved and the site developed, the Project has the potential to contribute directly and indirectly to future residential growth in the City. The ultimate contribution of the Project to population growth in the area is dependent upon which Project alternative is developed.

The proposed Project's senior facility would increase local employment, which could impact housing needs in the area. When viewed in the context of the City's current and projected rates of growth, the population growth attributed to the Project is not anticipated to contribute to substantial growth in the City.

Given the mobility of workers within the region and the location of the site within an area planned for urban development, the growth projected and the demand for new housing generated by the Project is considered ***less than***

significant in the context of the level of projected growth in the area. No mitigation is required.

Impact 4.12-2: Displace an Existing Housing Units and Residents (Less than Significant)

As described in Chapter 3, existing site improvements include a two-story, single-family residence (Bloom House), a garage, a storage building, a barn, and a smaller, secondary residence. Should these residences remain unaffected by Project construction, no displacement of housing units or residents would occur.

Should Project implementation include removal of the secondary unit, this loss would be replaced on-site with approximately 401 single-family housing units and 120 senior housing units. Removal of the existing secondary unit is considered less than significant given the substantial numbers of new units to be constructed at the site. Further, displacement of the residents of the existing secondary unit is not considered significant because this unit would be off-set by the number of residential units that would be created on-site, coupled with the relative availability of units that are available in the surrounding area. This impact is considered ***less than significant***. No mitigation is necessary.

4.13 Parks and Recreation

4.13.1 Methodology

The impact analysis presented below considers the potential impacts of the Project's increase in the demand for neighborhood parks and recreational facilities.

Potential impacts to parks and recreation are based on the potential for Project implementation to increase the demand on existing resources or demand for new facilities, as described in Chapter 3, *Environmental Setting*.

4.13.2 Thresholds of Significance

Thresholds of significance for assessing potential impacts to parks and recreation are based on Appendix G of the State CEQA Guidelines, the model impact checklist.

The Project would have a significant impact to parks and recreation 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 that might have an adverse physical effect on the environment.

4.13.3 Impacts and Mitigation Measures

Impact 4.13-1: Increased Use of Existing Parks or Recreational Facilities (Less than Significant)

The proposed Project could result in an increase in the use of existing neighborhood or community parks as a result of an increase in population. As discussed in Chapter 3 under *Parks and Recreation*, the City's General Plan and the Parks Master Plan contain major planning policies concerning the financing and construction of park facilities. The General Plan and Parks Master Plan recommend a level of service with a total parkland ratio of at least 5 acres per 1,000 people and a total of 1.2 acres of neighborhood parks per 1,000 people. The City currently contains approximately 71 acres of park land, as listed in Chapter 3. According to the information in the General Plan and the Parks Master Plan, at build out of the planned park lands identified in these documents, the total acreage of all parks in the City will be approximately 113.77, providing a ratio of 5.2 acres per 1,000 persons. As for neighborhood parks, a total of 28 acres would be provided at build out, providing 1.2 acre of neighborhood parks per 1,000 people. These ratios exceed the levels of service recommended by the General Plan and the Parks Master Plan.

Dixon's Park Improvement Fee ordinance applies to all new developments within the City and requires developers of new dwelling units to pay a park improvement fees during the building permit process. The resulting increase in use or demand of recreational facilities by future residents of the development would be offset through application of the Park Improvement Fee Ordinance. Under the City's Quimby Act requirements, the subdivider will be required to pay in-lieu fees for parks and recreation facilities. Potential impacts would be ***less than significant***. No mitigation is necessary.

Impact 4.13-2: Include Recreational Facilities or Require Construction or Expansion of Recreational Facilities (No Impact)

The proposed Project does not include the construction of recreational facilities that could themselves have an impact on the environment. There would be ***no impact*** from the construction of recreational facilities, and no mitigation is necessary.

Chapter 5
Project Alternatives

Introduction

CEQA requires that an EIR examine a reasonable range of feasible alternatives to the project or its location that would meet most or all of the project objectives and substantially reduce or avoid one or more of its environmental impacts. Project alternatives are not required to be analyzed in the same level of detail as the project, but must be analyzed sufficiently to allow them to be compared to the project and to one another. The alternatives discussed in the draft EIR must be potentially feasible, but the draft EIR is not required to determine their ultimate feasibility. A final determination of feasibility will be made as a finding should the City approve this Project.

In addition to project alternatives, the EIR must examine the *no-project* alternative. This discloses the impacts that might reasonably be expected to occur if the project were not approved and instead the current plans were carried through. CEQA requires consideration of the no-project alternative whether or not it meets project objectives or would substantially reduce or avoid one or more of the project's significant impacts.

This EIR examines a total of four alternatives: No-Project Alternative (Alternative 1), More Senior Housing Alternative (Alternative 2), Larger Lots Alternative (Alternative 3), and Larger Water Supply Alternative (Alternative 4).

This chapter first examines each of the alternatives. It then reviews and explains the reasons for the elimination of other possible alternatives from further study.

Project Objectives

The Project has the following objectives:

- Develop a well-designed residential neighborhood consisting of several types of single-family residential units and a senior living/care facility that incorporates smart growth elements for the residential areas with particular focus on pedestrians, traffic calming street designs, and generous use of street trees.

- Contribute to the City’s available housing stock to address the City’s share of regional housing needs, including the development of workforce (i.e., affordable) and senior housing.
- Dedicate land for and construct necessary infrastructure and utilities to serve the new Dixon High School to significantly reduce the cost to the Dixon Unified School District (DUSD).
- Provide for various infrastructure improvements that would benefit both the Project and the community. These would include: public roadway improvements to serve the new high school, wet and dry utilities within those roadways, a new high volume water well facility to serve the southeastern portion of the City, and drainage facilities to collect and convey storm water runoff to the City’s future Pond C detention basin.

5.1 Alternative 1 (No-Project)

Under Alternative 1, the proposed Project would not be built.

The proposal site is located within the City of Dixon’s sphere of influence, in a several-hundred-acre area that has been designated as “Future Residential—FR (After 2010)” by the City’s general plan. The City intends to annex and permit the development of its sphere of influence after 2010, according to the general plan. As a result, under Alternative 1, the site would likely be annexed and developed as residential subdivisions within the next 10–20 years. Assuming a mix of 80 percent single-family, lower density (Low-Density: average 3.1 dwelling units/gross acre) and 20 percent multiple-family, higher density (Medium Density High: average 13.6 dwelling units/gross acre), the site could accommodate approximately 489 dwelling units. Of these, approximately 233 could be single-family and 256 could be multiple-family dwellings.

This assumes that development of the site would occur at a density between the minimum and maximum allowable density in the Low Density (LD) and Medium Density-High (MDH) general plan designations. Allowable densities within those general plan designations range from 1.64 to 4.67 dwellings/gross acre and from 10.9 to 16.34 dwellings/gross acre, respectively.

Alternative 1 further assumes that access to future residential development of the site will be from SR 113 by way of the extension of Parkway Boulevard.

Alternative 1 would not meet the Project objective calling for the dedication of land to, and reduction in, high school costs for the DUSD.

Impacts and Mitigation

Alternative 1 assumes residential build-out in the Project area some time after the year 2010 and before 2025. Given that the total number of dwelling units proposed under Alternative 1 is somewhat less than that under the proposed PROJECT (489 v. 520), the impacts of Alternative 1 would be less than those of the proposed Project in several areas.

Alternative 1 would convert existing agricultural land to residential uses and have a significant and unavoidable impact on agriculture, similar to the proposed Project. Alternative 1 would likely delay the impacts to aesthetics; biological resources; cultural resources; geology, soils and hazards; hydrology and water quality; land use; but it would not avoid them. Because Alternative 1 would result in the same developed area as the Project, it would have basically the same impact on these resources as is described for the Project. Implementing the same mitigation measures identified for the proposed Project would reduce the impacts of Alternative 1 on those resources to ***less-than-significant*** levels.

There would still be impacts in every resource area, although the impacts on air quality, traffic, noise, and public services would be somewhat different than the proposed Project, as explained below.

Alternative 1 would reduce the viability of the Dixon USD’s new High School project by eliminating the land dedication, street construction and new water well that would have served both the school and the proposed Project. Under Alternative 1, development of the area would not occur before 2010 and, therefore, the full cost of these improvements, plus the cost of acquiring 40 acres, would fall upon the Dixon USD. This would substantially increase the cost of the new school.

Air Quality

Alternative 1 would delay the impacts on air quality, but it would not avoid them. The area is slated for residential development in the City of Dixon General Plan. The construction of the housing would still generate emissions levels resulting in a significant and unavoidable impact. Future development is anticipated to generate somewhat fewer average daily automobile trips (ADT) than expected from the built-out proposed Project. In comparison to the Project, Alternative 1 would have fewer overall residential units and would have a substantial number of multi-family units. An individual dwelling unit within a multi-family development generates approximately 2/3 the number of daily trips that are generated by a single-family unit. (Institute of Transportation Engineers 2003) Thus there would be slightly lower vehicle emissions levels generated than in the proposed Project, and there would be less impact on air quality.

Noise

Alternative 1 would introduce new residences into an area that is currently used for agriculture and that only generates significant amounts of noise during field leveling or plowing.

Impact 5.1-2: Exposure of Existing Noise-Sensitive Land Uses to Traffic Noise (Less Than Significant with Mitigation)

This impact would be less than under the proposed Project, because Alternative 1 would be expected to generate somewhat less traffic. Implementation of Mitigation Measure 4.9-1d (as described in Chapter 4) would reduce this impact to a ***less-than-significant*** level.

Traffic/Access

The residential development that would take place in Alternative 1 is grossly estimated to generate approximately 3,800 average daily trips (assuming approximately 2,230 ADT from the single-family residences and approximately 1,570 ADT from the multi-family units). In comparison, the Project is estimated to generate 4,237 ADT. When broken down by AM and PM peak hours, the estimated traffic levels of Alternative 1 (298 AM peak hour trips and 401 PM peak hour trips) are very similar to those of the Project (322 AM and 438 PM peak hour trips) Therefore, this Alternative would have basically the same traffic impacts, including cumulative impacts, as the proposed Project. If the same mitigation measures were applied to Alternative 1 as for the Project, the impacts would be less than significant.

5.2 Alternative 2 (More Senior Housing)

Under Alternative 2, the 101 units of cottage residential development west of the north-south school collector would be limited to detached, single-family senior housing units. No change would otherwise be made to the type of units or density. Otherwise, all other aspects would be the same as the proposed Project. The multiple unit Senior Facility would remain as proposed. The purpose of this alternative would be to reduce traffic generation, thereby reducing congestion along SR 113.

Alternative 2 would have similar characteristics to the Project, but with a new housing component that would generate less traffic than the Project. It meets all of the Project’s objectives.

Impacts and Mitigation Measures

Alternative 2 would have essentially the same impacts and related level of significance as the proposed Project, with the following exception.

Air Quality

Alternative 2 would reduce the impacts on air quality associated with the Project by reducing the number of vehicle trips being generated. The construction of the housing would still generate emissions levels resulting in a significant and unavoidable impact.

However, as discussed below under *Traffic/Access*, future development under Alternative 2 would be expected to generate substantially fewer ADT than the proposed Project. Therefore, there would be lower vehicle emissions levels generated than in the proposed Project, and a less than significant impact on air quality.

Impact 5.2-1: Increase in ROG, NO_X, CO, and PM10 Emissions During Project Operation (Less than Significant)

Alternative 2 would result in substantially less vehicle-related emissions than the proposed Project. As discussed in Chapter 4, Project-related emissions would not exceed the YSAQMD's thresholds for Project operations. Consequently, this impact is considered ***less than significant***.

Noise

Alternative 2 would introduce new residences into an area that is currently used for agriculture and that only generates significant amounts of noise during field leveling or plowing.

Impact 5.2-2: Exposure of Existing Noise-Sensitive Land Uses to Traffic Noise (Less Than Significant)

This impact would be less than under the proposed Project, because Alternative 2 would be expected to generate substantially less traffic. Assuming that Alternative 2 would be subject to equivalent mitigation measures to those identified for the Project, its impact would be ***less than significant***.

Public Utilities and Services

The seniors development would have a different level of demand for public services than a non-age restricted development. Specifically, police calls would probably be lower, while demand for Fire Department emergency medical services would be expected to be higher. The level of difference is not expected to be substantial.

Traffic/Access

The level of traffic generated by Alternative 2 would be less than the proposed Project. Senior residents within age-restricted retirement communities would have fewer cars and generate approximately one-third the ADT per single-family dwelling of non-age-restricted housing (Institute of Transportation Engineers. 2003). Under the Project, the cottage residential development would generate approximately 967 ADT. Alternative 2, in comparison, would generate approximately 330 ADT from this same area. Overall traffic generation under Alternative 2 is grossly estimated at approximately 3,600 ADT. This translates to approximately 274 AM and 372 PM peak hour trips. This is substantially fewer peak hour trips than expected from the Project (the Project is estimated to generate 322 AM and 438 PM peak hour trips).

Impact 5.2-3: Study Intersections Will Carry Additional Traffic (Less than Significant with Mitigation)

The impact of Alternative 2 on all study intersections would be less than that of the Project. This reduction in impact would be most noticeable at those study intersections where the proposed Project is expected to substantially decrease the LOS, such as South 1st Street/Valley Glen Drive. Assuming that Alternative 2 would be subject to equivalent mitigation measures to those identified for the Project, its impact would be ***less than significant***.

Parks and Recreation

The seniors development is expected have a different level of demand for parks and recreation services than a non-age restricted development. Use of the active park facilities (playing fields) would be expected to be less, while participation in certain recreation programs such as the Senior Citizens Program would be greater. The level of difference is not expected to be substantial.

Impact 5.2-4: Additional Participation in the Senior Citizens Program Would Increase Facility Upkeep (Less than Significant with Mitigation)

The City charges for program participation. Costs for upkeep can be offset by participation fees. Implementation of participation fees will reduce the level of this impact to ***less than significant***.

5.3 Alternative 3 (Larger Lots)

Under Alternative 3, the single-family residential development east of the school connector (i.e., Villages 3, 4, 5, and 6) would consist solely of 10,000 square-foot lots. This would place larger lots than are currently being proposed near the proposed detention basin and existing agricultural uses east and south of the Project site. In contrast, the Project proposes a mixture of lot sizes, from 5,000 square-feet to 10,000 square-feet in area. Under Alternative 3, the number of lots (and associated residences) within this portion of the Project would be 212, rather than the 281 lots currently being proposed.

Alternative 3 would meet all of the Project's objectives. However, because its larger lots would presumably cost more than the lots being proposed under the Project, it would produce less affordable housing to address the City's share of regional housing needs.

Impacts and Mitigation Measures

This alternative would have slightly lower demand for services, but would otherwise have similar impacts and levels of significance to those of the proposed Project, except as noted below. While the area being urbanized by Alternative 3 remains the same as the Project's area, the lower density established under this alternative would necessitate the conversion of additional agricultural lands elsewhere in order for the City to accommodate the same number of residences being proposed by the Project.

Air Quality

Alternative 3 would reduce the impacts on air quality associated with the Project by reducing the number of vehicle trips being generated. The construction of the housing would still generate emissions levels resulting in a significant and unavoidable impact.

However, as discussed below under *Traffic/Access*, future development under Alternative 3 would be expected to generate substantially fewer ADT than the proposed Project. Therefore, there would be lower vehicle emissions levels generated than in the proposed Project, and a ***less than significant*** impact on air quality.

Impact 5.3-1: Increase in ROG, NO$_x$, CO, and PM10 Emissions During Project Operation (Less than Significant)

Alternative 3 would result in substantially less vehicle-related emissions than the proposed Project. As discussed in Chapter 4, Project-related emissions would not exceed the YSAQMD's thresholds for Project operations. Consequently, this impact is considered ***less than significant***.

Noise

Alternative 3 would introduce new residences into an area that is currently used for agriculture and that only generates significant amounts of noise during field leveling or plowing.

Impact 5.3-2: Exposure of Existing Noise-Sensitive Land Uses to Traffic Noise (Less Than Significant with Mitigation)

This impact would be less than under the proposed Project, because Alternative 3 would be expected to generate substantially less traffic. Assuming that Alternative 3 would be subject to equivalent mitigation measures to those identified for the Project, its impact would be ***less than significant***.

Public Utilities and Services

Alternative 3 would have approximately 69 fewer residences than the proposed Project. As a result, its demand for public utilities and services would be less than that generated by the proposed Project.

Impact 5.3-3: Demand for Public Utilities and Services Will Increase (Significant and Unavoidable)

In all areas but one, Alternative 3 will have a less than significant effect on utilities and services and less demand than would be produced by the Project. However, despite reducing the level of demand, Alternative 3 would nonetheless result in an increased demand for fire services that cannot be met until the new fire station and Parkway Boulevard grade separation are constructed. If construction is delayed, this will be a ***significant and unavoidable*** impact (same impact as the Project).

Traffic/Access

The overall level of traffic generated by Alternative 3 would be less than that anticipated to result from the proposed Project. Each single family home typically generates approximately 9.57 ADT (Institute of Transportation Engineers 2003). Accordingly, Alternative 3 would generate approximately 660 fewer ADT than the Project. This level of traffic generation translates to approximately 272 AM and 370 PM peak hour trips. This is substantially fewer peak hour trips than expected from the Project (the Project is estimated to generate 322 AM and 438 PM peak hour trips).

Impact 5.3-4: Study Intersections Will Carry Additional Traffic (Less than Significant)

The impact of Alternative 3 on all study intersections would be less than that of the Project. This reduction in impact would be most noticeable at those study intersections where the proposed Project is expected to substantially decrease the LOS, such as South 1st Street/Valley Glen Drive. Assuming that Alternative 3 would be subject to equivalent mitigation measures to those identified for the Project, its impact would be ***less than significant***.

5.4 Alternative 4 (Larger Water Supply Facility)

Alternative 4 would provide water storage, as well as a new high capacity domestic water well, adjacent to the Project site (Figure 5.4-1). The site would lie directly east of the northeastern corner of the Project and directly north of Pond C. Water storage would be provided by two above-ground tanks, each holding from 750,000 to 1 million gallons. The well and tank site would be located south of the new high school site. The tanks would be approximately 35 feet in height and 80 feet in diameter. The tanks would be surrounded on the west, north, and east sides by a five-foot tall berm. A spillway on the south side of the tanks would direct any water released in the case of a catastrophic tank failure to Pond C.

This alternative would provide more reliable water pressure to the proposed Project, high school, and other service areas within the sphere of influence. It would also provide the necessary 3,500 gallon per minute fire flows required for the school. Alternative 4 otherwise resembles the Project and therefore would meet all of the Project objectives.

Impacts and Mitigation Measures

Alternative 4 would not affect the intensity of development or design being proposed by the Project. Therefore, it would have largely the same impacts as the Project, with three exceptions. It would supply sufficient water to the Project to meet domestic water pressure and fire water supply needs. This will enable the Fire Department to connect to high pressure hydrants with full fire flows in the case of a fire within the Project subdivision or seniors facility. While not reducing response times, this would reduce fire hazard by improving the ability to supply water to firefighters.

Alternative 4 would have a visual impact on the future school and the Project's residential development.

Alternative 4 would increase the potential for inundation of the surrounding area in the event that either or both of the storage tanks were to fail. This is an impact in addition to those described for the Project.

Impact 5.4-1: The Water Storage Tanks will Create a Visual Impact (Less Than Significant with Mitigation)

Alternative 4 would introduce a structure of considerable height and mass into the viewshed of the future school and the Project’s residential development. A 5-foot berm will surround the two water storage tanks, but because the tanks would be approximately 35 feet tall, they will be visible over the crest of the berms. Each tank will also be approximately 80 feet wide, located side-by-side, which would create a visual mass in the foreground of views. The height and mass of the water storage tanks would be visually inconsistent with the associated features of the future school and the Project’s residential development.

Eastern portions of the future school’s athletic fields will have views of the berm and tanks. Baseball fields will be located directly north of the berm and tanks, and athletes and spectators would have direct views of both features. Views from the track/football field and softball fields, west of the baseball fields, would also have views of both features.

The Project’s residential development would have direct views of the berm and water storage tanks, as well. Residents located along East Connector face the street and would be the viewers most greatly affected by the visual presence of both features. Residents located along North Collector are oriented away from the berm and water storage tanks, towards the roadway, and residents will not have direct views of either feature. Residents interior to East Connector are mostly oriented in directions away from both features. In addition, residences along East Connector and residential landscaping would provide a visual buffer to interior residences whose fronts or backs face east. Therefore, these residents would not be visually affected by either feature. It should be noted that a small number of interior residents may have views of the tanks because the height of the tanks is greater than the roofline of adjacent residences.

The berm and water storage tanks would introduce structures of considerable height and mass into the foreground viewshed of athletes and spectators using eastern portions of the future school’s athletic facilities and residences along East Connector. Because of this, the impact is considered significant.

Implementation of Mitigation Measure 4.1-1a described in Chapter 4, and Mitigation Measure 5.4-1 below would reduce this impact to ***less than significant***. A visual buffer would help to screen the berm and water storage tanks from viewers. To maintain structural integrity, vegetation would be planted adjacent to the outboard side of the berm and not directly on the berm. Plant species would be selected for their height and aesthetic qualities to provide a buffer that not only reduces the appearance of the vertical scale of the water storage tanks but also provides an attractive buffer with seasonal variation.

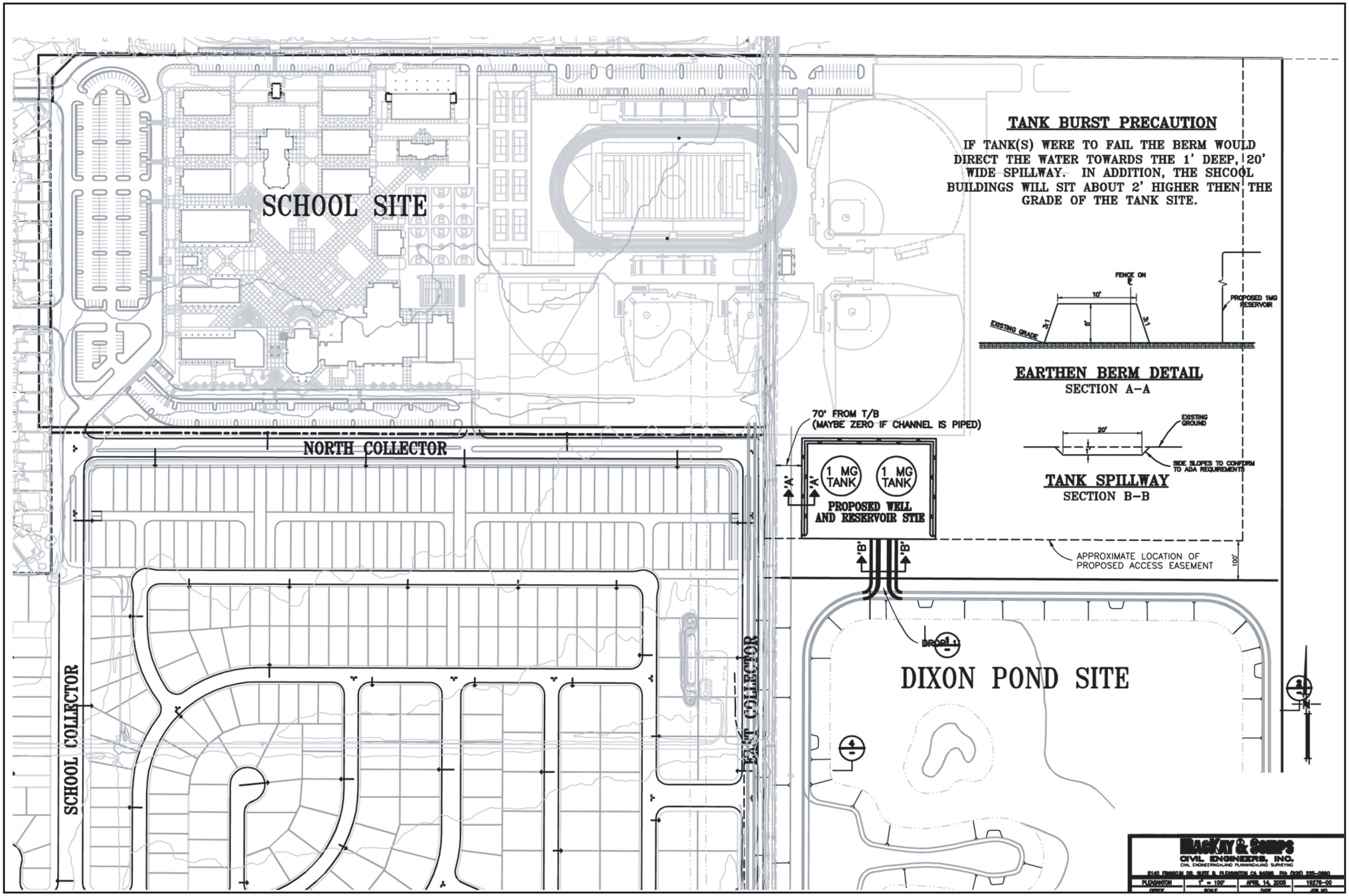

Figure 5.4-1
Proposed Reservoir Site

Mitigation Measure 5.4-1: Provide Neutral Paint Scheme.
Upon completion of their construction, the storage tanks shall be painted a neutral color, in common with similar tanks elsewhere in Dixon. Any fencing of the tanks or well facility shall be of a similar neutral color so as not to attract attention to the tank or the fencing.

Impact 5.4-2: The Water Storage Tanks will Create a Hazard (Less Than Significant)

The Title 5 of the California Code of Regulations controls the siting of new schools. Section 14010 (h) of that Title states that a new school site shall not be located near an above ground water storage tank that can pose a safety hazard, as determined by a risk analysis study conducted by a professional.

Education Code Section 17213 and Public Resources Code Section 21151.8, (and Section 14011(h) of Title 5) provide that when the school district is preparing an environmental document for a new school, it must consult with the administering agency regarding any facilities within 1/4 mile of the site that might emit hazardous air emissions or handle hazardous materials, and if so they need to find that the facilities do not constitute an actual or potential endangerment at the school site. This was done when the EIR for the new Dixon High School was prepared, but at that time no storage tanks were being proposed for the new domestic water well.

Conversely, Public Resources Code Section 21151.4 provides that an EIR cannot be certified for any project within 0.25 mile of a school that might reasonably be anticipated to emit hazardous air emissions or would handle an extremely hazardous substance above state threshold quantities, unless the lead agency has consulted with the school district regarding potential impact and been given written notification of the Project not less than 30 days prior to certification of the EIR. The City has been coordinating the location of the well with the Dixon Unified School District throughout the process of preparing this EIR. No hazardous chemicals or air emissions would be associated with the water storage tanks.

The proposed water storage tanks would be built to ensure their integrity in an earthquake. In addition, the tanks are proposed to be surrounded by berms on three sides that would channel any release of water to the adjoining Pond C. As a result, there would be no inundation of the nearby school or residential areas.

Potential Alternatives Considered and Dismissed from Further Analysis

CEQA requires an EIR to identify any potential alternatives that were initially considered, but that did not qualify for further analysis. The EIR must explain why those alternatives were not included.

The selection criteria that were used to select alternatives for review are simple:

- Does the potential alternative meet most or all of the Project objectives?
- Is the potential alternative feasible?
- Would the potential alternative substantially reduce one or more of the Project's significant effects?

During the process of developing alternatives to the Project, the City considered the following potential alternatives. These potential alternatives were rejected for the reasons described below.

Alternative Site: The significant impacts associated with the Project would be replicated regardless of the location of the project site, if the level of development remained the same. For example, available lands surrounding the City within its sphere of influence are generally prime agricultural lands. So, although an alternative site might meet most of the Project's objectives, it would not substantially reduce any of its impacts. Further, alternative sites would not enable the DUSD to gain land dedication, street improvements, and other assistance from the development relative to the future Dixon High School site. As a result, alternative sites would fail to meet an important Project objective.

No Senior Living/Care Component: The Project could be redesigned to eliminate the senior housing component and replace it with multi-family housing units that are not age-restricted. This would meet most Project objectives and comply with the City's general plan, including the 20 percent multi-family residential objective. The City's Medium Density–High (MDH) residential designation would be applied to the site in place of the HD designation. Because the MDH designation does not allow the residential densities allowable under the HD designation, the total number of dwelling units would be somewhat less than the proposed Project. However, this alternative would have essentially the same impacts as the proposed Project, with the exception of air quality and traffic. The seniors complex would generate less traffic than would a similar number of multi-family residential units. The traffic study prepared for this Project estimates the trips generated by the seniors facility to be 299 ADT (including employee trips). A similar number of multi-family residential units would be expected to generate approximately 400 ADT. As a result, replacement of the senior living/care component with multi-family residences would have a greater impact than the proposed Project. Since this potential alternative would not substantially reduce any Project effects, it is dismissed from further consideration.

No Multi-family Residential Component: The Project could be revised to include only single-family development. *Dixon General Plan* and Measure B require that future development within the City occur at a ratio of 80 percent single-family to 20 percent multi-family residential. An alternative that eliminated the multi-family residential component from development of the site would be inconsistent with both the City's general plan and Measure B. Therefore, it is infeasible for legal reasons.

Larger Multi-family Residential Component: The Project could be revised to provide for multi-family residential development within the area identified as single-family residential *cottages* in the proposed Project. This would offer substantially more multi-family residences than the proposed Project. However, it would also exceed the Measure B allocation assigned to the site. In addition, while this alternative would share all of the impacts of the proposed Project, it would also increase traffic in the vicinity of Parkway Boulevard and Highway 113 to a greater extent than the proposed Project. Therefore, it does not meet all three of the criteria established for viable alternatives.

Chapter 6

Cumulative and Growth-Inducing Impacts

6.1 Cumulative Impacts

A cumulative impact is one that results from the combined effects of numerous past, present, and future projects or activities. Where a significant cumulative impact exists, the key question is whether the project would make a cumulatively considerable contribution to that impact. A project may make a cumulatively considerable contribution even when the project's individual impact is less than significant. However, a project's impact may be rendered less than cumulatively considerable when the project is required to implement or fund its fair share of a mitigation measure, or take part in a program that is designed to alleviate the impact (CEQA Guidelines Section 15130).

Approach to Cumulative Impact Analysis

This cumulative impact analysis is based primarily on the projections of the City of Dixon and County of Solano general plans regarding future development in the Project area. The City of Dixon Project and Development Summary (2004) was consulted to determine whether any other projects are planned in the area that would involve an amendment to one of the general plans or were otherwise unanticipated by regional planning in some way. This analysis addresses the qualitative impacts of these individual projects, in addition to the projections contained in the City and County general plans.

Proposed Projects

The following projects are currently proposed or in the process of being developed.

Milk Farm Partners. This project would involve the annexation and development of property located north of Highway 80, between SR 113 and Pedrick Road. The project would consist of highway commercial office and research facilities. Since the project site is in an area that is partially outside the Dixon sphere of influence, designated primarily for agricultural use (with a small portion designated for highway development) by the *Solano County General*

Plan (City of Dixon GP map), adoption of the project would therefore require an amendment to the *Dixon General Plan* and the City of Dixon sphere of influence.

Dixon Downs Project. This project, being proposed by Magna International, would consist of a phased, mixed-use development including thoroughbred horse racing/training facilities, a 1,800-seat grandstand, a 5,000-seat finish line pavilion, dining, conference rooms, and office/hotel/retail space. The 260-acre proposal site is located north of Vaughn Road, south of Highway 80, and west of Pedrick Road. According to the Northeast Quadrant Specific Plan, the land use designations for this project area are Employment Center and Business/Industrial. Therefore, the project development would require a specific plan amendment.

Southwest Quadrant Specific Plan and Annexation. Pre-zoning for this plan was approved by the Dixon City Council on November 14, 1995. A new EIR was certified for a somewhat revised plan in 2004. The annexation was completed June 14, 1996. There are currently 5 developments proposed in this specific plan area. However, they are accounted for in the plan and do not need to be listed separately in order to be analyzed.

Dixon High School. The DUSD has approved construction of a new high school to accommodate up to 1,600 students. The site is located directly north of the Project. The high school would be share use of the extension of Parkway Boulevard, the new school collector, and east-west collector being proposed as part of the Brookfield Project. In addition, it would be served by the water well being proposed as part of the Brookfield Project. Construction of the high school will include placing Lateral 2 into an underground pipe as it crosses the school site.

City Detention Pond C. The City of Dixon has approved construction of Pond C on approximately 40 acres located east of the Project site. Pond C is being designed to accommodate storm drainage waters from the Project, approved high school, Country Faire and Valley Glen subdivisions, and other areas within the southeastern area of the City’s sphere of influence. Excavation of Pond C will provide a portion of the fill to be used for construction within the proposed Project. Construction of Pond C will include work within Lateral 2 to change the contour of the ditch.

Assessment of Cumulative Impacts

Cumulative Project-related impacts were analyzed for the same resources and topics analyzed in Chapters 3 and 4 of this EIR. The cumulative impacts of the Project and related development in the Project area on each resource or topic are described below.

There are no significant cumulative impacts relative to cultural resources, geology/soils/hazards, hydrology/water quality, or public utilities as a result of the combined effects of past, present, and probable future projects. Therefore, this analysis will not discuss the individual contributions of this Project to those impacts.

Aesthetics—Light and Glare

The new sources of light that would be introduced from street lights at the proposed Project would increase the amount of ambient light that residents already receive from the fairgrounds and park, and will receive from the new Dixon High School, during nighttime events. While both the existing and anticipated nighttime events are on an occasional basis, nearby residents would have an increased number of nights per year during which they would be subjected to nighttime light. As development of vacant lands continues to occur, residents that adjoin these growth areas, such as the residents of the Country Faire subdivision, will lose the darkened part of their night sky (i.e., light pollution will obscure the view of the stars and other astronomical bodies).

Impact 6.1-1: Increased Night Light and Glare

The change in lighting, from an unlit agricultural field to a residential subdivision with street lights, would make a considerable contribution to the light from the park, May Fair, and future school. Implementation of Mitigation Measure 4.1-2 identified in Chapter 4, section 4.1, *Aesthetics* would reduce this impact, but the contribution of the Project would still be ***cumulatively considerable.***

Agricultural Resources

The proposed Project is located on agricultural lands within the boundaries set for the City of Dixon's expansion. There are approximately 1,000 acres within the City of Dixon sphere of influence that are currently being used for agricultural purposes (Salmons pers. comm.). Most of this land is slated for development as either residential, commercial, or industrial uses in the *Dixon General Plan*. Developing all these acres of agricultural land will have a cumulative impact on the amount of farmland, including Prime Farmland, available for use in Solano County. Additionally, the Milk Farm and Dixon Downs developments would change land from agricultural uses to developed uses.

Impact 6.1-2: Conversion of Farmland

The proposed Project would take approximately 94 acres of Prime Farmland out of production, adding to the cumulative effect. Prime farmland is a finite resource. And, it surrounds the City of Dixon such that the City has little choice but to convert farmland if it is to grow to meet population and housing demand. The policies of the General Plans of Solano County and Dixon strongly encourage new development to occur within areas that are within the City's urbanizing area, and discourage the conversion of agricultural lands to urban uses where urban services are not available. The City of Dixon has required acquisition of conservation easements on agricultural land when major development would lead to conversions. Additionally, the cities of Davis and Dixon have partnered whereby agricultural conservation easements will be purchased from willing agricultural land owners. However, while these activities will help conserve those lands, they cannot avoid the continued conversion of agricultural lands adjoining the cities as the cities grow.

This is a ***cumulatively considerable*** impact, and no feasible mitigation is available.

Air Quality

The Yolo County portion of the SVAB is currently in non-attainment by the State of California's standards for ozone and PM10. The region is also in non-attainment by federal standards for ozone. This is the result of numerous stationary and mobile emissions sources that contribute to cumulative air quality levels. The Yolo County portion of the SVAB is in attainment for CO by both state and federal standards.

As discussed in Chapter 4, section 4.3, *Air Quality*, the proposed Project is not anticipated to exceed the impact thresholds established by the YSAQMD for air quality during operations or in terms of traffic emissions generated. These thresholds are intended to apply to both individual and cumulative impacts. Therefore, the contributions from this Project are ***less than cumulatively considerable***.

Biology

The proposed Project is located on agricultural lands that, as currently used, are capable of providing foraging habitat to Swainson's hawk (open fields) and habitat to burrowing owl (along Lateral 2). There are approximately 1,000 acres within the City of Dixon sphere of influence that are currently being used for agricultural purposes or as open space that also have this capability (Salmons pers. comm.). Most of this land is slated for development as either residential, commercial, or industrial uses in the *Dixon General Plan*. Developing all these acres will have a cumulative impact on the amount of land available for Swainson's hawk and burrowing owl habitat in the Project region and may have a negative impact on the status of the birds' regional populations. Additionally, the Milk Farm and Magna developments would change land from agricultural uses to developed uses.

Impact 6.1-3: Loss of Swainson's Hawk and Burrowing Owl Habitat

The proposed Project would develop approximately 94 acres, adding to the cumulative effect. Implementation of Mitigation Measures 4.4-2b and 4.4-3 identified in Chapter 4, section 4.4, *Biology* would reduce this impact, but the Project contribution would still be ***cumulatively considerable***.

Noise

The results in Table 4.9-4 indicate that traffic noise levels in 2025 are predicted to exceed 60 dB-L_{dn} along some roadways in the Project area on which adjacent residential uses are located. Significant cumulative traffic noise impacts are considered to occur along these roadways. The Project's contribution to these significant cumulative noise impacts is cumulatively considerable if the increase in noise associated with the project exceeds 1 dB. The result in Table 4.9-4 indicates no roadway segments where traffic noise is predicted to exceed 60 dB L_{dn} at residential uses *and* the Project would increase noise by more than 1 dB. Therefore, this impact is therefore considered to be ***less than cumulatively considerable***. No mitigation is required.

Public Services and Utilities

Wastewater Facilities: The salt concentration in the groundwater supply contributes to related groundwater degradation at the City's wastewater treatment plant. The Project will serve up to 401 single-family and 120 senior multi-family dwelling units with groundwater that will, in turn, result in increased flows to the wastewater treatment plant. Existing and other proposed development also contribute wastewater to the wastewater treatment plant that carries groundwater salts. Continued reliance on groundwater for the source of potable water may require significant mitigation at the wastewater disposal facility in order to meet the cease and desist order of the RWQCB.

Impact 6.1-4: Contribution to Groundwater Degradation at Dixon's Wastewater Treatment Plant

As discussed in Chapter 4, the City is currently designing changes to its facilities that are expected to resolve the salt problem in the future, assuming approval by the RWQCB. However, at this time, new contributions of salt-carrying wastewater are important. Therefore, the Project will make a ***cumulatively considerable*** contribution to the degradation of groundwater at the wastewater treatment plant.

Traffic

Year 2025 traffic volumes were developed using the City's 2025 travel demand forecasting model. This offers projections of traffic impacts based on expected future development. The model includes development of the proposed school site and the proposed Brookfield property. For this analysis, future traffic volume forecasts were developed using growth rate data derived from the City's traffic model. These growth rates were then applied to the existing turning movements to develop the future volumes.

Assumptions regarding the future roadway network in the area of the school were based on information in the traffic model. The future roadway network maintains much of the existing roadway system intact. This includes the roadway along South 1st Street between A Street and Cherry Street, with additional turn lanes at South 1st Street and the school collector. The right-of-way from A Street to Cherry Street is generally 60 feet. This provides for 5 feet of curb, gutter and sidewalk and 5 feet of a landscape strip on each side of the street, two 12-foot lanes and two 8-foot parking lanes. South of Cherry Street, South 1st Street will include left, through and right turn lanes at the major intersections, curb, gutter and sidewalk and bike lanes. The major intersections include Country Faire Drive, Valley Glen Drive and Parkway Boulevard.

Parkway Boulevard is identified as a four-lane roadway in the future between South 1st Street and Pitt School Road. The easterly extension of Parkway Boulevard to the Project site will be a two-lane roadway with additional turn lanes at the S. 1st Street intersection.

Figure 6.1-1 presents the projected future traffic volumes at the study intersections along South First Street and on Parkway Boulevard.

The impacts of developing the Brookfield Project have been identified by superimposing Project traffic onto background Year 2025 conditions. Figure 6.1-2 illustrates the projected cumulative traffic volumes.

Intersection Levels of Service

Table 6.1-1 displays the a.m. and p.m. peak hour LOS at each study intersection under the cumulative condition. As shown, future traffic throughout the area will cause a significant deterioration in traffic operations at eight of the study intersections. This will be due primarily to the increase in local traffic related to the high school. The Project itself will also contribute to traffic at these intersections.

The eight intersections will operate at LOS D or worse in both a.m. and p.m. peak hours. One intersection, the S. 1st Street/Parkway Boulevard intersection will operate at LOS D while the remaining seven will operate at LOS E or F. The two intersections that will operate above the City LOS threshold include

Table 6.1-1. Peak Hour Intersection Levels of Service Cumulative Conditions

Page 1 of 2

		A.M. Future Conditions		A.M. Future plus Project Conditions		P.M. Future Conditions		P.M. Future plus Project Conditions		
Location	Control	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	Meets Peak Hour Traffic Signal Warrants?
1. 1st Street/A Street	Signal		132.0		157.2	F	238.2		272.5	N/A
2. 1st Street/Chestnut Street										
Overall Average	EB/WB stop	F	>999		>999	F	865.9	F	>999	Yes
NB Left turn			11.0		11.3		11.5		12.5	
SB Left turn			11.2		12.0		11.0		11.5	
EB			>999		>999		>999		>999	
WB			102.1		206.6		188.4		453.9	
3. 1st Street/Cherry Street										
Overall Average	EB/WB stop	F	>999	F	>999	F	421.4	F	763.2	Yes
NB Left turn			10.8		11.1		12.5		13.9	
SB Left turn			10.5		11.3		–		–	
EB			>999		>999		865.1		>999	
WB			>999		>999		124.8		234.8	
4. 1st Street/Country Faire Drive										
Overall Average	EB/WB stop	F	130.9	F	211.8	E	36.2	F	60.8	No
NB Left turn			10.7		11.0		9.7		10.4	
SB Left turn			10.2		10.9		10.7		11.3	
EB			154.0		232.3		117.3		203.8	
WB			164.5		268.0		59.4		107.2	
5. 1st Street/Valley Glen Drive										
Overall Average	EB/WB stop	F	482.7	F	>999	F	344.8	F	943.2	Yes
NB Left turn			8.9		12.7		11.9		12.9	
SB Left turn			–		9.4		–		9.3	
EB			23.5		>999		515.2		>999	
WB			–		85.5		–		105.9	

Table 6.1-1. Continued

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Location	Control	A.M. Future Conditions		A.M. Future plus Project Conditions		P.M. Future Conditions		P.M. Future plus Project Conditions		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
6. 1st Street/Parkway Blvd	Signal		38.0	D	39.5	D	42.6	D	51.0	N/A
7. 1st Street/Midway Road										
Overall Average	EB/WB stop	F	247.6	F	310.7	F	>999	F	>999	Yes
NB Left turn			9.2		9.4		9.4		9.5	
SB Left turn			8.8		8.8		10.5		10.6	
EB			390.1		478.4		>999		>999	
WB			123.0		174.1		>999		>999	
8. Parkway Blvd/Valley Glen Drive										
Overall Average	SB stop	B	12.7	B	13.7	C	17.7	C	23.0	Yes
SB			13.6		14.8		28.8		40.1	
EB Left turn			8.4		8.6		9.7		10.0	
9. West A Street/Pitt School Road	Signal	E	55.5	E	57.8	F	93.9	F	104.9	N/A
10. Parkway Blvd/School Collector										
Overall Average	SB stop	B	11.9	C	16.0	A	9.2	A	9.9	Yes
SB			15.1		23.7		10.1		11.5	
EB Left turn			10.5		11.9		7.7		8.1	

Notes: NB = northbound. EB = eastbound. N/A = not applicable.
SB = southbound. WB = westbound. AWS = all way stop.

* Meets peak hour signal warrant.

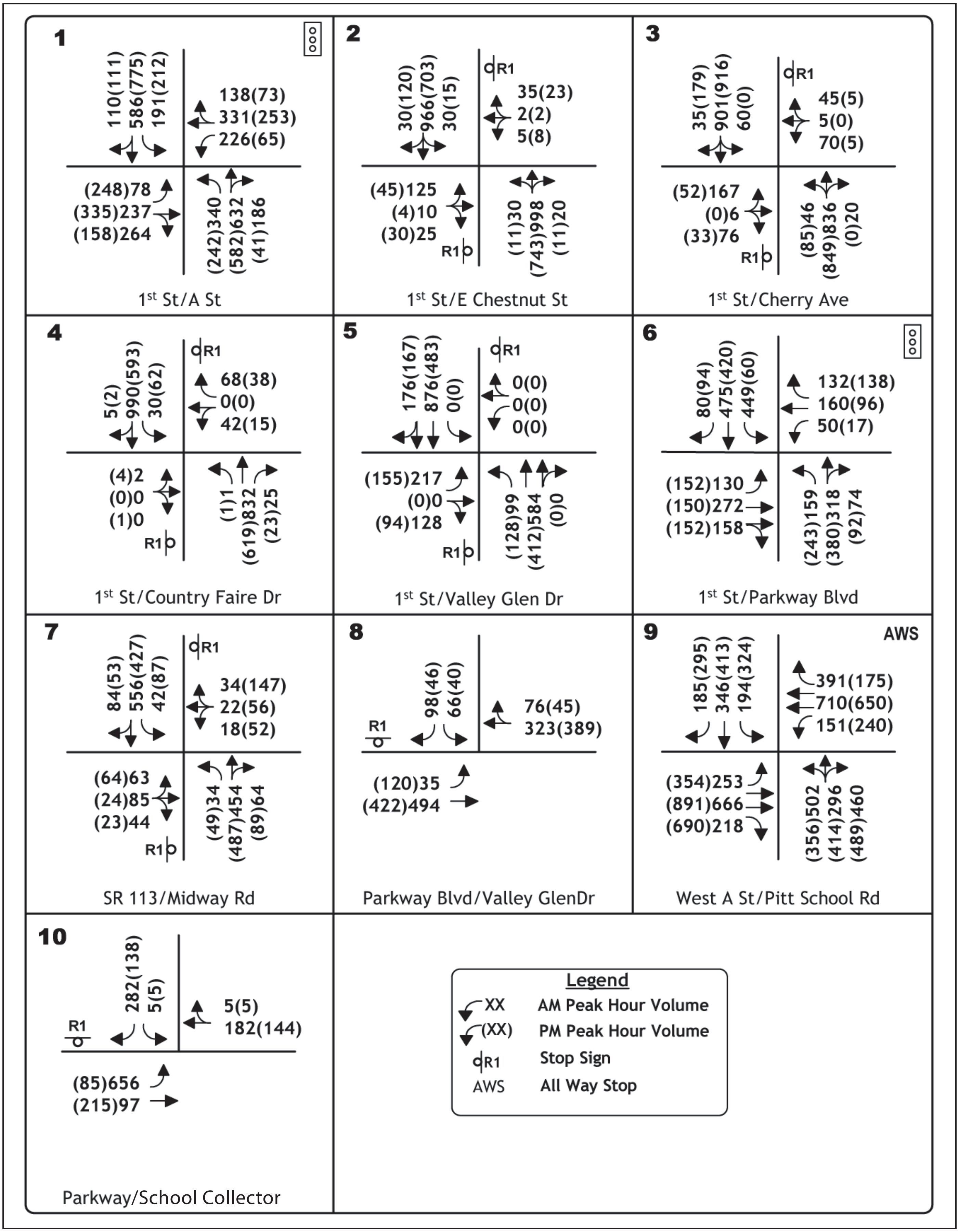

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Figure 6.1-1
Future Traffic Volumes and Lane Configurations

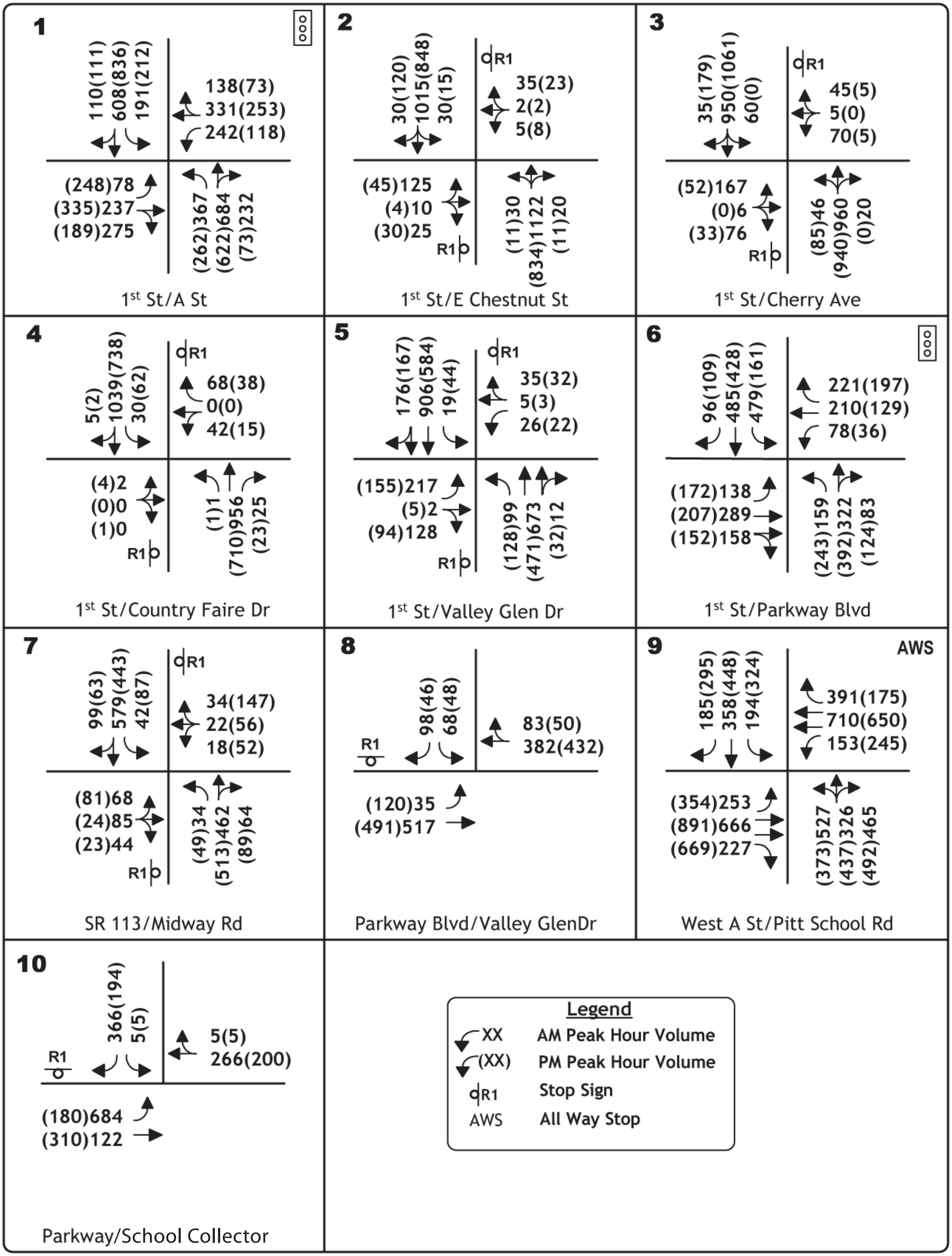

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Figure 6.1-2
Future Plus Project Traffic Volumes and Lane Configurations

Parkway Boulevard at Valley Glen Drive and Parkway Boulevard at the School Collector.

Table 6.1-1 also displays the a.m. and p.m. peak hour LOS at each study intersection assuming development of the Brookfield Project. Similar to cumulative conditions without the Project, eight intersections will operate below the City's LOS C threshold. The Project traffic will incrementally increase the delays to each of the intersections. Only two intersections, Parkway Boulevard at Valley Glen Drive and Parkway Boulevard at the School Collector will continue to operate at LOS C or better.

The mitigations listed in Chapter 4, section 4.11, *Traffic* would reduce the individual impact of the Project, but the Project contribution would still make a ***cumulatively considerable*** impact on traffic congestion levels in excess of the City's LOS thresholds for those intersections where improvements are infeasible and no *fair share* payment is contemplated. A more detailed discussion of these cumulative effects and potential mitigation measures follows.

The cumulative impact analysis examines the traffic impacts of the Project, in conjunction with other planned/projected development. The following discussion includes mitigation measures intended to reduce the cumulative impacts of the Project.

Impact 6.1-5: The 1st Street/A Street Intersection Will Operate at LOS F

The level of service at this intersection will continue to be LOS F in both a.m. (157.2 seconds) and p.m. (272.5 seconds). The incremental difference in delay at the 1st Street/A Street intersection resulting from development of the Project is more than the City's threshold of significance (i.e., 5 second increase). The intersection is signalized and cannot be enlarged, due to existing development. Therefore, there are no feasible mitigation measures. This contribution of this impact is ***cumulatively considerable***.

Impact 6.1-6: Future Growth in the City Will Cause the South 1st Street/Chestnut Street Intersection to Operate at LOS F

Future growth throughout the City will reduce the LOS at the intersection to LOS F in both a.m. and p.m. peak hours assuming the intersection is unsignalized (>999 seconds). However, installation of a traffic signal (identified in the Base (2007) and Project scenario) will improve the LOS in the future to LOS C in both a.m. (20.4 seconds) and p.m. (30.5 seconds) peak hours. Therefore, implementation of Mitigation Measure 4.11-2 will reduce the Project's contribution to this impact to ***less than cumulatively considerable***.

Impact 6.1-7: Future Traffic Will Decrease the Level of Service at the 1st Street/Cherry Street Intersection to LOS D (29.9 seconds) in the a.m. Peak Hour

Under cumulative conditions, the intersection is expected to decline to LOS D (31.9 seconds) conditions in the a.m. peak hour. This condition exceeds the City's standard and the incremental difference in delay at the intersection is greater than the City's threshold of significance (i.e., 5 second increase). As stated in Impact 4.11-2 (Chapter 4, section 4.11, *Traffic*), the Project's individual contribution to intersection congestion will be less than significant. However, cumulative impact analysis requires that individual impact to be examined in the context of the cumulative impact to determine whether the Project would make a considerable contribution to the cumulative impact.

Avoiding this impact would necessitate allowing right-only access at this intersection. To reduce the level of service at this intersection the westbound movement from the Dixon May Fair would have to be eliminated. This would result in LOS C (25.0 seconds) condition, provided a new access could be provided; otherwise, the intersection will operate with a significant and unavoidable impact. However, this mitigation is not feasible because the Dixon May Fair has not agreed to eliminate this access and to do so would severely impinge on their operations. The Project will make a ***cumulatively considerable*** contribution to this cumulative effect.

Impact 6.1-8: Congestion at the 1st Street/Country Faire Drive Intersection

Installation of a traffic signal would improve the LOS under cumulative conditions to LOS A in both a.m. (9.7 seconds) and p.m. (9.3 seconds) peak hours. The Project would avoid making a considerable contribution to this impact by paying its fair share to signalize the intersection. Implementation of Cumulative Mitigation Measure 6.1-1 will reduce the contribution of this Project to ***less than cumulatively considerable.***

Cumulative Mitigation Measure 6.1-8: Pay Fair Share of Signalization

The Project shall contribute its fair share for the future installation of a signal at this intersection. The Project's fair share is 20.0 percent. The City shall require payment, in conjunction with Caltrans requirements, as part of its traffic impact fees.

Impact 6.1-9: Congestion at the 1st Street/Parkway Boulevard Intersection

Installation of intersection improvements will improve the LOS in the future to LOS C in both a.m. (30.1 seconds) and p.m. (33.8 seconds) peak hours. As provided in Mitigation Measure 4.11-6, signal phase overlaps will be added. In order to avoid contributing to the cumulative impact, the Project should pay its fair share to add a northbound right turn lane. Implementation of Cumulative Mitigation Measure 6.1-2 will reduce the contribution of this Project to ***less than cumulatively considerable.***

Cumulative Mitigation Measure 6.1-9: Pay Fair Share of Additional Turn Lane

The Project's fair share to add a northbound right turn lane for this intersection is 20.5 percent. The City shall require payment, in conjunction with Caltrans requirements, as part of its traffic impact fees.

Impact 6.1-10: Congestion at the 1st Street/Midway Road Intersection

Future growth south of Dixon will cause the 1st Street/Midway Road intersection to operate at LOS F in the a.m. and p.m. peak hours. Installation of a traffic signal will improve the LOS in the future to LOS B (17.6 seconds) in the a.m. peak hour and LOS C (34.8 seconds) in the p.m. peak hour. In order to avoid contributing to the cumulative impact, the Project should pay its fair share to signalize the intersection. Implementation of Cumulative Mitigation Measure 6.1-3 will reduce the contribution of this Project to ***less than cumulatively considerable.***

Cumulative Mitigation Measure 6.1-10: Pay Fair Share of Signalization

The Project's fair share to signalize this intersection is 5.3 percent. The City shall require payment, in conjunction with Caltrans requirements, as part of its traffic impact fees.

Impact 6.1-11: Congestion at the Pitt School Road/West A Street Intersection

Future growth in the City will cause the Pitt School Road/West A Street intersection to operate at LOS E in the a.m. peak hour (55.5 seconds delay) and LOS F in the p.m. peak hour (93.9 seconds). Installation of the intersection improvements will improve the LOS in the future to LOS C in both a.m. (32.1 seconds) and p.m. (33.9 seconds) peak hours. In order to avoid contributing to the cumulative impact, the Project should pay its fair share to add a second northbound left turn lane, a northbound free right turn lane, a southbound right turn lane and signal phase overlaps. Implementation of Mitigation Measure 4.11-1 will reduce the contribution of this Project to ***less than cumulatively considerable.***

6.2 Growth-Inducing Impacts

Pursuant to Section 15126.2 of the State CEQA Guidelines, a project is to be considered growth-inducing when it would remove an obstacle to growth or when it fosters residential or economic growth. A project may be growth-inducing even when development has been previously planned for the area because CEQA requires the project to be considered in the context of the "baseline" reflected by the current environment. Accordingly, if a project would foster growth or remove obstacles to growth beyond the existing level, it would be growth-inducing. A key question in growth-inducing impact analysis is: *if the project were not built, could growth still occur?*

High-Yield Water Well

As discussed in the Final EIR prepared for the new Dixon High School and City of Dixon Pond C projects, the water well that is to be installed to serve the proposed Project and the new school campus would have the capacity to serve adjoining, undeveloped areas as well. Because domestic water is not currently available to the lands outside the Dixon city limits, but within its sphere of influence, this will remove an obstacle to growth in that area. Although the area within the city's sphere is recognized as suitable for growth in both the city and county general plans, and under the provisions of the Solano County LAFCO, providing water will enable that planned growth to occur. This Project component will have a growth-inducing effect.

Parkway Boulevard Extension

The proposed Project will extend Parkway Boulevard eastward from its current intersection with SR 113. This new road will provide indirect access to lands east of the Brookfield Project that lie within the City's sphere of influence. The future Parkway Boulevard and proposed road on the eastern edge of the Project will provide new access to lands in the vicinity.

In the *Dixon General Plan*, the undeveloped agricultural lands within the City's sphere of influence, east and south of the City limits, are planned for residential development, business/industrial development, and an employment center at such time as they are annexed to the City. They are currently planned for agricultural use on the *Solano County General Plan*, with the recognition that they will eventually be converted to urban use because they are within the City's urban line.

Over the long-term, extending Parkway Boulevard would have a growth-inducing impact on the agricultural lands that are currently outside the City limits, but within its sphere of influence.

Storm Drain Improvements

The Project will provide a storm drain connection between the Country Faire subdivision and Pond C. As a result, the existing retention basin at the south end of the Country Faire subdivision will be filled in, subdivided, and developed. The filled retention basin would provide space for perhaps up to 10 residential lots, depending on the size and configuration. Ten homes, on land that would be surrounded by existing development, is a minor addition to the City's housing stock. The growth-inducing effect of the Project would be less than significant in this regard.

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Appendix A

Plant and Wildlife Species Observed in the Brookfield Project Area

Appendix A

Plant and Wildlife Species Observed in the Brookfield Project Area

Plant Species Observed in the Brookfield-Bertolero Project Area, January 21, 2005

Common Name	Scientific Name
Wild oat	*Avena fatua*
Shepard’s purse	*Capsella bursa-pastoris*
Yellow star-thistle	*Centaurea solstitialis*
Orange	*Citrus* sp.
Field bindweed	*Convolvulus arvensis*
Nutsedge	*Cyperus eragrostis*
Cut-leaved filaree	Erodium cicutarium
Smooth cat’s-ear	Hypochaeris glabra
Henbit	Lamium amplexicaule
Bearded sprangletop	*Leptochloa fascicularis*
Italian ryegrass	*Lolium multiflorum*
Common mallow	Malva neglecta
Olive	*Olea europaea*
Annual bluegrass	*Poa annua*
Valley oak	*Quercus lobata*
Wild radish	*Raphanus sativa*
Curly dock	*Rumex crispus*
Russian thistle	*Salsola tragus*
Pepper tree	*Schinusmolle*
Common groundsel	*Senecio vulgaris*
Milk thistle	*Silybum marinum*
Annual sowthistle	*Sonchus oleraceus*
Sorghum	*Sorghum halepense*
Chickweed	*Stellaria media*
Clover	*Trifolium* sp.

Wildlife Species Observed in the Brookfield-Bertolero Project Area, January 21, 2005

Common Name	Scientific Name
American crow	Corvus brachyrhynchos
Burrowing owl	*Athene cunicularia*
European starling	*Sturnus vulgaris*
House finch	*Carpodacus mexicanus*
Killdeer	*Charadrius vociferous*
Northern harrier	Circus cyaneus
Red-tailed hawk	*Buteo jamaicensis*
White-crowned sparrow	*Zonotrichia leucophrys*

Appendix B

Background Information on Acoustics

Appendix B
Background Information on Acoustics

Sound Terminology

Sound travels through the air as waves of minute air pressure fluctuations caused by some type of vibration. In general, sound waves travel away from the sound source as an expanding spherical surface. The energy contained in a sound wave is consequently spread over an increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the sound source. The following terms are commonly used in acoustics.

Decibel

Sound-level meters measure the pressure fluctuations caused by sound waves. Because of the ability of the human ear to respond to a wide dynamic range of sound pressure fluctuations, loudness is measured in terms of decibels (dB) on a logarithmic scale. This results in a scale that measures pressure fluctuations with a convenient range of values and corresponds to our auditory perception of increasing or decreasing loudness.

A-Weighted Decibels

Most sounds consist of a broad range of sound frequencies. Because the human ear is not equally sensitive to all frequencies, several frequency-weighting schemes have been used to develop composite decibel scales that approximate the way the human ear responds to sound levels. The “A-weighted” decibel scale (dBA) is the most widely used for this purpose. Typical A-weighted sound levels for various types of sound sources are summarized in Table 1.

Table 1. Weighted Sound Levels and Human Response

Sound Source	Sound Level (dBA)*	Response
Carrier deck jet operation		
	— 140 —	
Civil defense siren (at 100 feet)		
	— 130 —	Painfully loud
Jet takeoff (at 200 feet)		
	— 120 —	Threshold of feeling and pain
Riveting machine (at 1 foot)		
Rock music concert		
	— 110 —	
Pile driver (at 50 feet)		
Ambulance siren (at 100 feet)		
Heavy truck (at 50 feet)	**— 100 —**	Very loud
Pneumatic drill (at 50 feet)		
Freight train cars (at 50 feet)		
	— 90 —	
Garbage disposal in home		
Freight train cars (at 100 feet)		
Freeway traffic (at 50 feet)		
	— 80 —	
Vacuum cleaner (at 10 feet)		
Air conditioning unit (at 20 feet)		
	— 70 —	Moderately loud
Speech in normal voice (at 15 feet)		
Residence-typical movement of people, no TV or radio		
	— 60 —	
Soft whisper (at 5 feet)		
	— 50 —	
Recording studio		
	— 40 —	Quiet
	— 30 —	
	— 20 —	
	— 10 —	
	— 0 —	Threshold of hearing

* Typical A-weighted sound levels in decibels. AA@ weighting approximates the frequency response of the human ear.

Equivalent Sound Level

Time-varying sound levels are often described in terms of an equivalent constant decibel level. The equivalent sound level (L_{eq}) is the average of sound energy occurring over a specified time period. In effect, L_{eq} is the steady-state sound level that in a stated time period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. Equivalent sound levels (L_{eq}) are often used to develop single-value descriptions of average sound exposure over various periods of time. Such average sound exposure values often include additional weighting factors for annoyance potential attributable to time of day or other considerations. The L_{eq} data used for these average sound exposure descriptors are generally based on A-weighted sound-level measurements.

Day-Night Average Sound Level

Average sound exposure over a 24-hour period is often presented as a day-night average sound level (L_{dn}). L_{dn} values are calculated from hourly L_{eq} values, with the L_{eq} values for the nighttime period (10:00 p.m. to 7:00 a.m.) increased by 10 dB to reflect the greater disturbance potential from nighttime noises.

Community Noise Equivalent Level

The community noise equivalent level (CNEL) is also used to characterize average sound levels over a 24-hour period, with weighting factors included for evening and nighttime sound levels. L_{eq} values for the evening period (7:00 p.m. to 10:00 p.m.) are increased by 5 dB, while L_{eq} values for the nighttime period (10:00 p.m. to 7:00 a.m.) are increased by 10 dB. For given set of sound measurements, the CNEL value will usually be about 1 dB higher than the L_{dn} value. In practice, CNEL and L_{dn} are often used interchangeably.

Percentile-Exceeded, Maximum, and Minimum Sound Level

The sound level exceeded during a given percentage of a measurement period is the percentile-exceeded sound level (L_x). Examples include L_{10}, L_{50}, and L_{90}. L_{10} is the A-weighted sound level that is exceeded 10% of the measurement period, L_{50} is the level exceeded 50% of the period, and so on. L_{50} is the median sound level measured during the measurement period. $L_{90,}$ the sound level exceeded 90% of the time, excludes high localized sound levels produced by nearby sources such as single car passages or bird chirps. L_{90} is often used to represent the background sound level. L_{50} is also used to provide a less conservative assessment of the background sound level.

The maximum sound level (L_{max}) and the minimum sound level (L_{min}) are the maximum and minimum sound levels respectively, measured during the measurement period. When a sound meter is set to the slow response setting as is typical for most community noise measurements, the Lmax and L_{min} values are the maximum and minimum levels measured over a one second period.

Ambient Sound

Ambient sound is the all-encompassing sound associated with a given community site, usually being a composite of sounds from many sources, near and far, with no particular sound being dominant.

Equivalencies between Various Sound Descriptors

The L_{dn} value at a site calculated from a set of measurements taken over a given 24-hour period will be slightly lower than the CNEL value calculated over the same period. Except in situations where unusually high evening sound levels occur, the CNEL value will be within about 1.5 dB of the L_{dn} value for the same set of sound measurements.

The relationship between peak hourly L_{eq} values and associated L_{dn} values depends on the distribution of traffic over the entire day. There is no precise way to convert a peak hourly L_{eq} value to an L_{dn} value. However, in urban areas near heavy traffic, the peak hourly L_{eq} value is typically 2–4 dB lower than the daily L_{dn} value. In less heavily developed areas, the peak hourly L_{eq} is often equal to the daily L_{dn} value. For rural areas with little nighttime traffic, the peak hourly L_{eq} value will often be 3–4 dB greater than the daily L_{dn} value.

Working with Decibel Values

The nature of the decibel scale is such that the individual sound levels for different sound sources cannot be added directly to give the combined sound level of these sources. Two sound sources producing equal sound levels at a given location will produce a composite sound level that is 3 dB greater than either sound alone. When two sound sources differ by 10 dB, the composite sound level will be only 0.4 dB greater than the louder source alone.

Most people have difficulty distinguishing the louder of two sound sources if they differ by less than 1.5–2.0 dB. Research into the human perception of changes in sound level indicates the following:

- a 3-dB change is just perceptible,
- a 5-dB change is clearly perceptible, and
- a 10-dB change is perceived as being twice or half as loud.

A doubling or halving of acoustic energy will change the resulting sound level by 3 dB, which corresponds to a change that is just perceptible. In practice, this means that a doubling of traffic volume on a roadway, doubling the number of people in a stadium, or doubling the number of wind turbines in a wind farm will, as a general rule, only result in a 3-dB, or just perceptible, increase in noise.

Outdoor Sound Propagation

There are a number of factors that affect how sound propagates outdoors. These factors, described by Hoover and Keith (1996), are summarized below.

Distance Attenuation

As a general rule, sound from localized or point sound sources spreads out as it travels away from the source and the sound level drops at a rate of 6 dB per doubling of distance. If the sound source is long in one dimension, such as traffic on a highway or a long train, the sound source is considered to be a line source. As a general rule, the sound level from a line source will drop off at a rate of 3 dB per doubling of distance. If the intervening ground between the line source and the receptor is acoustically “soft” (e.g., ground vegetation, scattered trees, clumps of bushes), an attenuation rate of 4.5 dB per doubling of distance is generally used.

Attenuation from Barriers

Any solid structure such as a berm, wall, or building that blocks the line of sight between a source and receiver serves as a sound barrier and will result in additional sound attenuation. The amount of additional attenuation is a function of the difference between the length of the sound path over the barrier and the length of the direct line of sight path. Thus, the sound attenuation of a barrier between a source and a receiver that are very far apart will be much less than the attenuation that would result if either the source or the receiver is very close to the barrier.

Molecular Absorption

Air absorbs sound energy as a function of the temperature, humidity of the air, and frequency of the sound. Additional sound attenuation on the order of 1 to 2 dB per 1,000 feet can occur.

Anomalous Excess Attenuation

Large-scale effects of wind speed, wind direction, and thermal gradients in the air can cause large differences in sound transmission over large distances. These effects when combined result in anomalous excess attenuation, which can be applied to long-term sound-level estimates. Additional sound attenuation on the order of about 1 dB per 1,000 feet can occur.

Other Atmospheric Effects

Short-term atmospheric effects relating to wind and temperature gradients can cause bending of sound waves and can influence changes in sound levels at large distances. These effects can either increase or decrease sound levels depending on the orientation of the source and receptor and the nature of the wind and temperature gradient. Because these effects are normally short-term, it is generally not practical to include them in sound propagation calculations. Understanding these effects, however, can help explain variations that occur between calculated and measured sound levels.

Guidelines for Interpreting Sound Levels

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different sound-level ranges. The following is a summary of federal and state guidelines.

Federal Agency Guidelines

The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies administer their programs to promote an environment free of noise that jeopardizes public health or welfare. The U.S. Environmental Protection Agency (EPA) was given the responsibility for:

- providing information to the public regarding identifiable effects of noise on public health or welfare,
- publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety,
- coordinating federal research and activities related to noise control, and
- establishing federal noise emission standards for selected products distributed in interstate commerce.

The federal Noise Control Act also directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations.

Although EPA was given major public information and federal agency coordination roles, each federal agency retains authority to adopt noise regulations pertaining to agency programs. EPA can require other federal agencies to justify their noise regulations in terms of the federal Noise Control Act policy requirements. The Occupational Safety and Health Administration retains primary authority for setting workplace noise exposure standards. The Federal Aviation Administration retains primary jurisdiction over aircraft noise standards, and the Federal Highway Administration (FHWA) retains primary jurisdiction over highway noise standards.

In 1974, in response to the requirements of the federal Noise Control Act, EPA identified indoor and outdoor noise limits to protect public health and welfare (communication disruption, sleep disturbance, and hearing damage). Outdoor L_{dn} limits of 55 dB and indoor L_{dn} limits of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Sound-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dB (both outdoors and indoors).

FHWA regulations (23 CFR 772) specify criteria for evaluating noise impacts associated with federally funded highway projects and for determining whether these impacts are sufficient to justify funding noise abatement actions. The FHWA noise abatement criteria are based on worst hourly L_{eq} sound levels, not L_{dn} or 24-hour L_{eq} values. The worst-hour 1-hour L_{eq} criteria for residential, educational, and healthcare facilities are 67 dB outdoors and 52 dB indoors. The worst-hour 1-hour L_{eq} criterion for commercial and industrial areas is 72 dB (outdoors).

The U.S. Department of Housing and Urban Development has established guidelines for evaluating noise impacts on residential projects seeking financial support under various grant programs (44 FR 135:40860-40866, January 23, 1979). Sites are generally considered acceptable for residential use if they are exposed to outdoor L_{dn} values of 65 dB or less. Sites are considered “normally unacceptable” if they are exposed to outdoor L_{dn} values of 65–75 dB. Sites are considered unacceptable if they are exposed to outdoor L_{dn} values above 75 dB.

State Agency Guidelines

In 1987, the California Department of Health Services published guidelines for the noise elements of local general plans. These guidelines include a sound level/land use compatibility chart that categorizes various outdoor L_{dn} ranges into up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable) by land use. For many land uses, the chart shows overlapping L_{dn} ranges for two or more compatibility categories.

The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dB and the conditionally acceptable range as 55–70 dB. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dB, and the conditionally acceptable range is identified as 60–70 dB. For educational and medical facilities, L_{dn} values below 70 dB are considered normally acceptable and L_{dn} values of 60–70 dB are considered conditionally acceptable. For office and commercial land uses, L_{dn} values below 70 dB are considered normally acceptable and L_{dn} values of 67.5–77.5 are categorized as conditionally acceptable.

These overlapping L_{dn} ranges are intended to indicate that local conditions (existing sound levels and community attitudes toward dominant sound sources) should be considered in evaluating land use compatibility at specific locations.

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 CCR T25-28). These standards require that “interior CNELs with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room.”

The California Department of Transportation uses the FHWA criteria as the basis for evaluating noise impacts from highway projects.

Reference

Hoover, R. M., and R. H. Keith. 1996. Noise control for buildings and manufacturing plants. Hoover and Keith, Inc. Houston, TX.

Appendix C

Water Supply Assessment

Dixon-Solano Municipal Water Service

Water Supply Assessment for the Brookfield Homes Annexation, Dixon, California

January 20, 2005

Prepared for DSMWS by:
Solano Irrigation District
Engineering Department

Dixon Solano Municipal Water Service

Water Supply Assessment for the Brookfield Homes Annexation, Dixon, California

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Water Supply Assessment for the Brookfield Homes Annexation

Introduction

The Brookfield Homes Annexation is a project proposed to develop a portion of the City of Dixon. Please refer to **Figure A** following page 16 of this report. The Brookfield Homes Annexation, if successful, will be included within the Dixon-Solano Municipal Water Service (DSMWS) Service Area. DSMWS received a request from the City of Dixon to provide a Water Supply Assessment pursuant to Water Code §§ 10910-10915 (see Attachment 3). An Environmental Impact Report is being prepared for the Brookfield Homes Annexation and this assessment will provide information to be used in the EIR for evaluating that project's effects on water supply.

Because DSMWS is not yet serving the amount of water or the number of connections to qualify it as a "public water system" per Water Code § 10617, an Urban Water Management Plan has not yet been prepared for DSMWS. Therefore this Water Supply Assessment must contain more information to substantiate its conclusions than it would if an UWMP were available for reference. Substantial evidence supporting the conclusions in this Water Supply Assessment will be taken from information contained in several reports applicable to DSMWS and its water supplies. References to these documents are noted in the "References" section on page 16.

Project Description

The Brookfield Homes Annexation covers about 94 acres located southeast of central Dixon. This land is not currently within the Dixon city limits, but is mostly agricultural land and a portion of it receives irrigation service from the Solano Irrigation District. The Brookfield Homes Annexation development proposes to receive domestic water service from DSMWS.

Planning for the Brookfield Homes Annexation area and land uses will be consistent with the City of Dixon General Plan. The project is proposed to include single family and multifamily residential and institutional use.

As required by DSMWS, project developers will fund construction of new water supply facilities adequate to meet the planned water demand in the Brookfield Homes Annexation. Water supply facility requirements for the development are currently under consideration. Water distribution pipelines and individual services will be constructed per improvement plans conforming to DSMWS standards and approved by DSMWS.

Requirement for Water Supply Assessment

Because the Brookfield Homes Annexation is a project subject to CEQA, a Water Supply Assessment (WSA) is required per Water Code § 10910(c)(1). The Brookfield Homes project is a "project" per Water Code § 10912(a) because it is a residential development of more than 500 dwelling units. This WSA addresses the supply for the Brookfield Homes Annexation.

Summary of Water Supply and Water Rights

DSMWS is a joint exercise of powers by the City of Dixon and the Solano Irrigation District to jointly provide water for municipal and industrial uses within the common boundaries of the two entities. It was formed under an agreement signed in 1984 which subjected its exercise of powers to restrictions upon the manner of exercising such powers pertaining to the District. DSMWS currently supplies and delivers only groundwater within its service area. Per Water Code § 10910(d)(1) the existing water supply entitlements, water supply rights or water service contracts relevant to the DSMWS water supply for the development of the Brookfield Homes Annexation must be identified. A description of the quantities of water received in prior years by DSMWS under the existing water supply entitlements, water supply rights or water service contracts must be included as well.

DSMWS may extract ground water for distribution and sale within its service area under Water Code §§ 22075, 22076 and 22078. Therefore it is not relying on the landowner's rights to extract additional groundwater needed to supply the proposed development. For a description of the quantities of groundwater extracted in prior years by DSMWS, refer to the following section titled "Historical DSMWS Groundwater Production" on page 8.

Groundwater Basin Description

As required by Water Code §10910(f)(2), the following narrative describes the groundwater basin from which the development in the Brookfield Homes Annexation will be supplied. The following information is condensed from the 1988 and 1995 Groundwater Resources Reports (references 1 and 4 listed on page 16). Please refer to **Figure A**, which is Plate 1 from the 1995 Groundwater Resources Report.

The Brookfield Homes Annexation is located northeast of a channel ridge of Putah Creek known as the Dixon Ridge. This puts the Brookfield Homes Annexation in the hydrogeologic area known as the Putah Creek Fan. The water-bearing strata in the Putah Creek Fan underlying Dixon begin at the surface with a geologic layer of older alluvium that is 60 to 130 feet thick. These are the most permeable and productive aquifers in Solano County. Below the older alluvium lie the aquifers in the upper portion of the Tehama formation, which is up to 3,000 feet thick at Dixon. These aquifers are less permeable than the shallower ones, but are thicker and therefore also quite productive. These aquifers are interconnected as evidenced by wells drawing water from different levels having similar water levels in the spring before pumping starts. Recharge to the aquifers in the Putah Creek Fan comes from deep percolation of precipitation and excess applied surface water on the valley floor, seepage losses from Putah Creek, and from subsurface groundwater flow from Yolo County. The Putah Creek Fan is part of the Solano Subbasin of the Sacramento Valley Groundwater Basin as described in DWR Bulletin 118, "California's Groundwater." This groundwater subbasin has not been identified as being overdrafted or projected to be overdrafted, nor has it been adjudicated.

Groundwater Supply Availability

The safe annual groundwater yield for the Putah Creek Fan was estimated in USGS Water Supply Paper 1464 to be approximately 40,000 acre-feet per year before surface irrigation from the Solano Project began in 1959. This surface irrigation increased the recharge and decreased the pumping. It is reasonable to assume an additional net recharge of approximately 10,000 acre-feet per year has occurred.

Solano Irrigation District currently pumps about 6,000 acre-feet of groundwater annually, and historically has pumped as much as 14,000 acre-feet. Please see **Table 2** and Appendix A of the 1995 Groundwater Resources Report. As recommended in the 1988 Groundwater Resources Report, from 25,000 to 30,000 acre-feet should be pumped annually to augment supplies and avoid water logging of soils in the Putah Fan Area. Therefore it can be assumed that the District could extract an additional average of almost 20,000 acre-feet per year in the Putah Creek Fan.

Groundwater Monitoring

To protect the groundwater resource in northern Solano County, Solano Irrigation District adopted an A.B. 3030 Groundwater Management Plan in February 1995 (reference 3 listed on page 16). In addition, the City of Dixon and the Solano Irrigation District, among others, participated in the preparation of the 1995 Groundwater Resources Report. The participants in the Report have agreed that groundwater levels will be monitored, and groundwater pumping modified as required to ensure preservation of the groundwater resource. (See the Recommendations beginning on page 26 in the 1995 Groundwater Resources Report.)

Drought Impacts

Groundwater level measurements have remained reasonably constant in the Putah Creek Fan since the Solano Project was constructed and surface water supplies delivered to the agricultural lands. There is a tremendous amount of useable water stored in the existing groundwater supply which provides the City of Dixon with a safety factor for needed water supplies during periods of drought. The average specific yield (the volume of water which will drain freely from an aquifer) is estimated at 6% for the Putah Creek Fan. The Putah Creek Fan north and west of Dixon includes an area of approximately 45 square miles. In this area each 10-foot thickness below the groundwater table represents a volume of water of approximately 17,000 acre feet. This groundwater supply is available during drought periods to meet the City of Dixon water supply needs. Groundwater levels will reduce during droughts, but following recent droughts water levels have recovered without any long term impacts.

Historical DSMWS Groundwater Production

Water Code § 10910(f)(3) requires a detailed description and analysis of the amount and location of groundwater pumped by DSMWS for the past five years from the groundwater basin from which the development in the Brookfield Homes Annexation will be supplied. This is to be based on information that is reasonably available including, but not limited to, historic use records.

Table 1 presents the actual annual water usage by the DSMWS system since 1986. The annual water production data is taken from the DSMWS Reports to the Public Water Supply Branch of the California Department of Health Services. Domestic supply by the two partners in DSMWS (Dixon and SID) began in 1979 but no records exist of how much water was delivered from 1979 to 1986. The DSMWS water supply is entirely from groundwater deepwells, and no surface water supply is currently used. There are four wells currently in service, all of which are located within the DSMWS Service Area. Please refer to **Figure B**, which is Plate 4.3 of the DSMWS 2000 Water Master Plan, to see the locations of Well No. 1 (at the Industrial Park Facility), Well No. 2 (at the Watson Ranch Facility), Well No. 3 (at the School Well Facility) and Well No. 4 (at the Southpark Facility). Note that **Figure B** shows Well No. 4 as proposed; in fact this well was placed into service in December, 2003.

Documentation of Water Supply

Water Code § 10910(d)(2) requires demonstration that DSMWS has the right to pump groundwater for the development in the Brookfield Homes Annexation by providing information related to several issues, as follows:

A. Written Proof of Entitlement: As described in the section "Summary of Water Supply and Water Rights" above, DSMWS through its partners (SID and Dixon) has the right to extract and purvey ground water under provisions of the Water Code.

B. Capital Outlay Program: To finance the delivery of the groundwater supply, DSMWS requires that development projects must include the facilities to supply and distribute water to the new development. This may occur by building facilities or by paying connection fees calculated to pay the cost of the facilities. The terms and conditions are set forth in development agreements between the developers and the City of Dixon on behalf of DSMWS.

C. Permits for Construction: Water production facilities are exempt from local building and zoning ordinances per Government Code § 53091(c) and (d). (Nonetheless DSMWS obtains permits for them from the City of Dixon and Solano County at no charge for record purposes.)

D. Required Regulatory Approvals for Conveyance: Since DSMWS is supplying water in accordance with the Water Code, no further regulatory approvals are required for service within its Service Area.

Demand Analysis

Statutory Requirements

Water Code § 10910(c)(3) requires an analysis of the projected water demand of the Brookfield Homes Annexation. Since an Urban Water Management Plan has not been prepared for DSMWS, the following discussion has been included in this Water Supply Assessment. The discussion must address several issues:

A. This discussion must not only address the demand from the Brookfield Homes Annexation, but demands of the existing DSMWS customers, planned future uses, and agricultural and manufacturing uses as well.

B. This demand analysis must consider the projected 20-year water demand in 5-year increments in order to verify that a sufficient water supply is available for the planned development throughout the whole DSMWS Service Area.

C. Water use must be segregated into the water use sectors required by the Urban Water Management Planning Act, Water Code § 10631(e)(1).

In the interest of brevity, some information that might be included in an Urban Water Management Plan is not included here. This includes climatological data, population projections and numbers of connections.

Prior Analysis

The DSMWS 2000 Water Master Plan water demand analysis is based on land uses defined in the City of Dixon 1993 General Plan. Specifically the number of units or acres and historic water usage for each land use is collected and analyzed to determine rates of water usage and development. The General Plan land uses correspond well to the "water use sectors" required by Water Code § 10910(e)(1). Therefore the following data is presented in the same format used in the DSMWS 2000 Water Master Plan.

An annual projection of development and water use was included in the 1995 DSMWS Water Master Plan (reference 5 listed on page 16). While the projection was updated for the 2000 Water Master Plan, it was not included since the updated Plan was to address Buildout conditions only. For this demand analysis, elements of the annual development and water use projections have been updated and condensed to meet the requirements of the Water Code.

Development Rates

To determine the rates at which the General Plan land uses develop, a detailed inventory of existing parcels in the Service Area was prepared. A summary of the information gathered through 1998 is presented as Section 7, "Service Area Inventory," in the 2000 DSMWS Water Master Plan. For this Water Supply Assessment, a summary of the annual increase in development, sorted by land use, and updated to include every parcel in the DSMWS Service Area as of December, 2002, is presented in **Table 3**, "Development Rate Analysis, 1994-2002." The dates on DSMWS meter installation work orders were used to establish when parcels changed from "undeveloped" to "developed." Further analysis has been done as follows.

Residential Development Rates

Measure "B," passed by voters on April 8, 1986, limits the number of new dwelling units to 3% or less of the number of existing units in the entire city at the end of the previous calendar year. Appendix D of the 1993 General Plan is a projection of the number of housing units in Dixon until 2030, based upon this 3% growth rate. **Attachment 1** to this report is a copy of Appendix D of the 1993 General Plan. The "New Units" column is used verbatim in the "Residential Allocation" row (row 8) of **Table 6** to model the increase in residential units.

The numbers of residential units added each year to the three housing densities (LD, MDL and MDH) are assumed to be in the same proportion as the number of units of each type in 1998. Therefore, of the 147 new units to be added in 1999, 109 are assumed to be Low Density units, 24 are assumed to be Medium Density - Low units, and 15 are assumed to be Medium Density - High units. (See Note 2 on **Table 6** for a small table demonstrating this calculation.)

Commercial and Industrial Development Rates

Table 3, "Development Rate Analysis, 1994-2002," shows the average development rates for the General Plan land uses over the last nine years. These rates are compared with several others in **Table 4**, "Non-Residential Development Rate Comparison, 1994-2002." These other rates include:

- Rates used for the Facility Development Analysis in the DSMWS 1995 Water Master Plan;
- Projections in the City of Dixon 1995 Wastewater Treatment and Disposal Facilities Plan, the 1996 Development Fee Plan and the 1998 Traffic Model; and
- Projections by the City of Dixon Community Development Department.

Table 4 also lists the non-residential development rates used in **Table 6** of this report. A combination of the growth rates for various commercial and industrial land uses has been used. These rates are six (6) commercial acres per year, fifteen (15) industrial acres per year, and five (5) "other" acres per year. These rates were established in the DSMWS 1995 Water Master Plan (Reference 6) as a reasonable maximum rate, and is close to the high rates from the several City plans and models shown in **Table 4.**

Development beyond General Plan Buildout

The annual demand projections include all areas within the 1993 General Plan, including the Brookfield Homes Annexation. At the development rates used, several of the General Plan's land uses will be fully developed ("built out") within the General Plan area within the 20-year period of this analysis. For example, the planned residential units will all be built out by approximately 2013 if the maximum number of units allowed by Measure "B" is constructed each year. It is assumed that new areas will be added to the General Plan and annexed to the City of Dixon, and that development of both residential and non-residential uses will continue in the DSMWS Service Area at the same rates projected for development in the General Plan area. This appears to be a reasonable assumption.

The reader should understand that this implies water demand exceeding the capacity of water supply facilities (wells, tanks and booster pumps) currently planned. When planning for such additional development areas, additional water supply facilities will be required to meet the additional demand. These will be planned in accordance with DSMWS standards and constructed in a timely fashion to meet the increasing water demand. This Water Supply Assessment compares water demand by developed areas with water supply (i.e. groundwater supply), not with the capacity of planned water supply facilities.

Water Demand Rates

Water demand rates in the DSMWS Service Area were established by studying annual water usage records of over 400 water services. This study is presented in Section 3, "Water Demand" and Section 8, "Water Usage Study" in the DSMWS 2000 Water Master Plan. Average usage rates were calculated, and design rates were selected for the several land uses into which the DSMWS Service Area was divided. These rates, called "Average Daily Demand Rates," were summarized in Table 3.2 of the DSMWS 2000 Water Master Plan. Table 3.2 is included in this report as **Attachment 2**. No major changes have occurred in the planned land uses within the DSMWS Service Area that would affect these water demand rates prepared in 1995 and updated in 2000.

Projected Water Demand

Normal Water Demand

The water demand projection for the current planned development is based on the analysis of water demand for the General Plan area at buildout that is presented in Table 3.4 of the DSMWS 2000 Water Master Plan. Table 3.4 has been updated in preparation for several demand analyses in connection with planning for service to new developments in Dixon, including the Brookfield Homes Annexation. A summary of this updated information is presented in **Table 5**, "Projected Water Demand for the DSMWS Service Area at Buildout." However, as noted above in the section titled "Development beyond General Plan Buildout," this Assessment assumes development will continue beyond, and after the buildout of, the General Plan area. Therefore water demands in excess of that of the current General Plan area have been estimated as presented in **Table 6**, "Annual Demand

Projections," to comply with the Water Code requirement to analyze for a projected 20-year period.

Table 6 shows this projected analysis in greater detail, and combines the development and water demand rates to estimate the amount of water needed to serve actual, projected and assumed future development within the DSMWS Service Area through 2025. Lines 4 through 18 in **Table 6** tabulate the annual increase in the number of units demanding water. From the Pre-1994 columns through 2004, actual numbers are used. From 2005 through 2025 the increase in the number of units is based on the development rates described previously. The water demand figures are the normal demand averaged over a one year period stated in acre-feet per year for each land use. Peak demands, as addressed in the DSMWS 2000 Water Master Plan, are not pertinent to this Assessment.

Dry Year Water Demand

Demand during "dry" years is conservatively assumed to be the same as during normal years. Review of the DSMWS historical water usage implies that this has happened in the past. Variations in demand due to climate are assumed to be accounted for in the averaging of water usage when calculating the Average Daily Demand Rates shown in **Attachment 2**.

The water demand figures of **Table 6**, in 5-year increments to conform to the Urban Water Management Planning Act format, are presented in **Table 7**, "Summary of Annual Demand Projections."

Comparison of Water Supply and Demand

Projected Deliveries vs. Projected Demand

All present and future deliveries, as presented in **Tables 6** and **7**, may be provided from the groundwater resource. Per **Tables 6** and **7**, by 2025 the water demand is estimated to be approximately 7,800 acre-feet per year. Annual production of groundwater from the basins underlying the planned and future DSMWS Service Area may be increased by approximately 10,000 to 15,000 acre-feet. Assuming that new water supply facilities (wells, etc.) are constructed as development occurs, there is sufficient groundwater available to meet the water demands of new development.

Conclusion: Sufficiency of Water Supply

The groundwater basin used by DSMWS is in no apparent overdraft condition and can provide enough water without exceeding its safe yield to serve the development proposed for the remainder of the DSMWS service area outlined in the DSMWS Water Master Plan. This includes the Brookfield Homes Annexation.

Based on the analysis above, we conclude that there is a sufficient water supply to meet the demands of the Brookfield Homes Annexation as well as the other proposed and assumed future developments and other water users within the DSMWS Service Area for the next 20 years and more.

Qualifications

This Water Supply Assessment is prepared solely for the purpose of complying with Water Code §§ 10910-10915. Pursuant to Water Code § 10914, nothing herein shall be construed to create a right or entitlement to water service or any specific level of water service, nor to impose, expand or limit any duty concerning the obligation of DSMWS to provide certain service to its existing customers or to any future potential customers, or to modify or otherwise change existing law with respect to projects which are not subject to Water Code §§ 10910-10915. Provision of water service by DSMWS will be based on compliance with development requirements, terms and conditions established by DSMWS.

References

1. Summers Engineering, Inc., Groundwater Resources, June, 1988, prepared for the Solano Irrigation District. This report is referred to herein as the 1988 Groundwater Resources Report.

2. Summers Engineering, Inc., An Updated Plan for the Improvement of the Irrigation Distribution Works, February, 1993, prepared for the Solano Irrigation District. This report is referred to herein as the 1993 R&B Plan.

3. Summers Engineering, Inc., A.B. 3030 Groundwater Management Plan, February, 1995, prepared for the Solano Irrigation District.

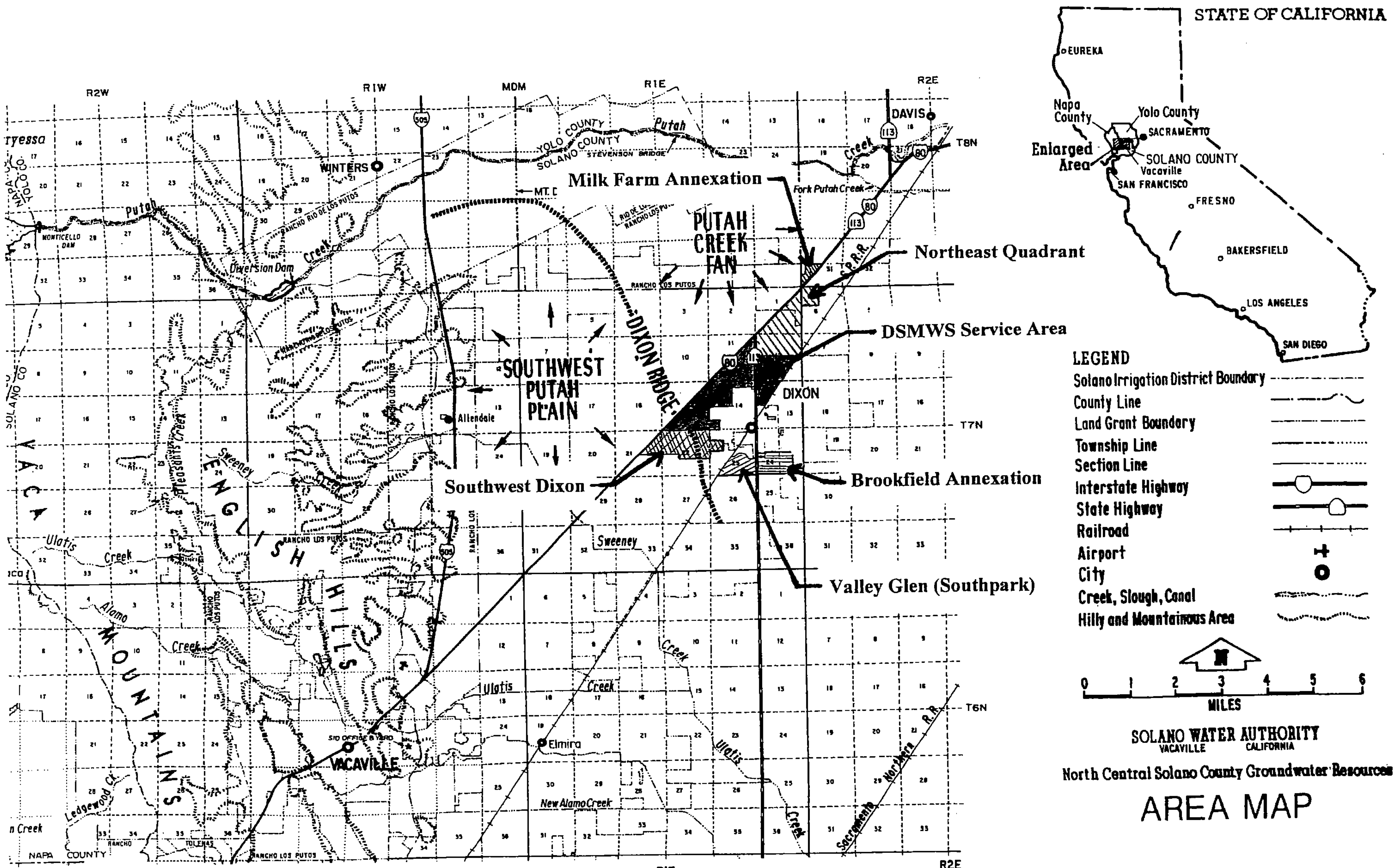
4. Summers Engineering, Inc., North Central Solano County Groundwater Resources Report, dated May 16, 1995; prepared for the Solano Water Authority; known herein as the 1995 Groundwater Resources Report.

5. Dixon-Solano Municipal Water Service, Master Plan for the Water Supply and Delivery System through the Year 2010, October, 1995. This report is referred to herein as the DSMWS 1995 Water Master Plan.

6. Dixon-Solano Municipal Water Service, Master Plan for the Water Supply and Delivery System through Buildout, January, 2000. This report is referred to herein as the DSMWS 2000 Water Master Plan.

7. Summers Engineering, Inc., Technical Memorandum and Analysis for Providing Water Service to the Northeast Quadrant Development, dated May 21, 2004, prepared for DSMWS.

(Figures, Tables and Attachments follow.)



SUMMERS ENGINEERING, INC.
Consulting Engineers
HANFORD CALIFORNIA

FEBRUARY 1995

Figure A

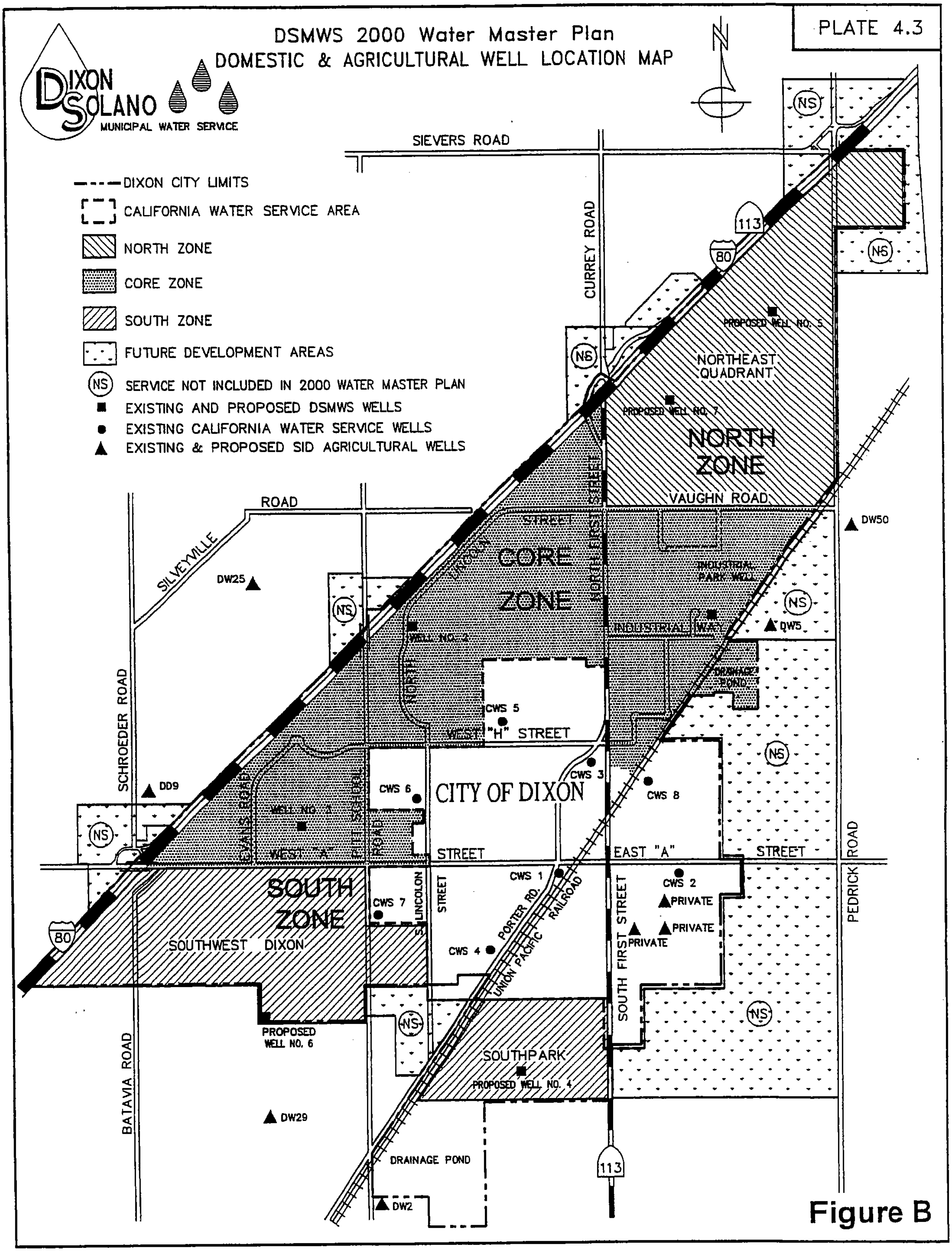

DSMWS 2000 Water Master Plan
DOMESTIC & AGRICULTURAL WELL LOCATION MAP

PLATE 4.3

Figure B

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 1
Historical Annual Groundwater Production by DSMWS

Year	Production	
	Millions of Gallons	Acre-Feet
1979	*	*
1980	*	*
1981	*	*
1982	*	*
1983	*	*
1984	*	*
1985	*	*
1986	*	*
1987	146.03	448
1988	153.03	470
1989	162.92	500
1990	217.26	667
1991	220.31	676
1992	250.00	767
1993	265.10	814
1994	302.29	928
1995	328.82	1,009
1996	376.32	1,155
1997	454.57	1,395
1998	433.09	1,329
1999	541.42	1,662
2000	554.57	1,702
2001	586.82	1,801
2002	600.89	1,844

* Information for these years is unavailable.

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 2

Historical Annual Groundwater Production
by Solano Irrigation District, in acre-feet

Well Number	Irrigation Season			3-Year Averages
	2000	2001	2002	
Wells in the Putah Creek Fan				
DD 1	0	0	0	
DW 2	439	387	780	
DW 5	184	133	0	
DW 6	0	0	0	
DW 8	383	371	183	
DW 9	346	330	319	
DW 10	0	0	0	
DW 11	0	0	0	
DW 12	158	115	671	
DW 15	201	146	192	
DW 20	739	553	509	
DW 21	8	0	0	
DW 22	164	232	451	
DW 26	512	487	416	
DW 45	361	559	364	
DW 49-A	280	198	455	
DW 49-B	283	271	354	
DW 50	0	970	837	
DW 51	0	0	0	
PCF Subtotals	**4,058**	**4,752**	**5,531**	**4,780**
Wells in the Southwest Putah Plain				
DD 2	0	0	0	
DD 3	0	0	0	
DD 4	0	0	0	
DD 5	145	46	15	
DD 6	0	0	0	
DD 7	270	127	148	
DD 8	0	0	0	
DD 9	0	0	0	
DD 10	0	0	0	
DD 11	0	0	0	
DW 1	342	167	568	
DW 27	385	138	200	
DW 29	494	0	392	
DW 35	86	0	13	
DW 36	0	0	0	
DW 39	2	2	2	
SWPP Subtotals	**1,724**	**480**	**1,338**	**1,181**
Totals	**5,782**	**5,232**	**6,869**	**5,961**

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 3

Development Rate Analysis

1994-2002

Data presented below is collected from DSMWS meter installation workorders and Solano County Assessor's Maps.

RESIDENTIAL, in units

Land Use:	LD + VLD		MDH		MDL		Total	
	#units	%incr	#units	%incr	#units	%incr	#units	%incr
Planned		3.00%		3.00%		3.00%		3.00%
Actual								
pre-1994	716		101		172		989	
1994	862	20.39%	101	0.00%	197	14.53%	1,160	17.29%
1995	937	8.70%	101	0.00%	286	45.18%	1,324	14.14%
1996	1,095	16.86%	101	0.00%	397	38.81%	1,593	20.32%
1997	1,159	5.84%	101	0.00%	438	10.33%	1,698	6.59%
1998	1,273	9.84%	101	0.00%	457	4.34%	1,831	7.83%
1999	1,273	0.00%	101	0.00%	457	0.00%	1,831	0.00%
2000	1,273	0.00%	101	0.00%	457	0.00%	1,831	0.00%
2001	1,284	0.86%	101	0.00%	457	0.00%	1,842	0.60%
2002	1,333	3.82%	101	0.00%	457	0.00%	1,891	2.66%

COMMERCIAL, in acres & acres per year

Land Use:	HC		CC, NC, O		SC	
	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr
Planned		2.5		1.5		2
Actual						
pre-1994	31.09		15.60		6.61	
1994	33.37	2.28	15.60	0.00	6.61	0.00
1995	34.28	0.91	15.60	0.00	6.61	0.00
1996	35.22	0.94	15.60	0.00	11.00	4.39
1997	38.57	3.35	15.60	0.00	12.29	1.29
1998	42.27	3.70	15.60	0.00	12.29	0.00
1999	47.56	5.29	15.60	0.00	12.29	0.00
2000	55.94	8.38	17.45	1.85	12.29	0.00
2001	55.94	0.00	17.45	0.00	12.29	0.00
2002	63.87	7.93	17.45	0.00	12.29	0.00
9 years	32.78	**3.64**	1.85	**0.21**	5.68	**0.63**

INDUSTRIAL & OTHER, in acres & acres per year

Land Use:	Industrial		G		P		S		L/S	
	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr
Planned		15		0.5		1.5		2		1
Actual										
pre-1994	92.57		4.66		28.87		4.30		3.53	
1994	92.57	0.00	4.66	0.00	28.87	0.00	4.30	0.00	3.53	0.00
1995	95.01	2.44	4.66	0.00	28.87	0.00	4.30	0.00	3.53	0.00
1996	95.01	0.00	4.66	0.00	28.87	0.00	4.30	0.00	3.53	0.00
1997	120.52	25.51	4.66	0.00	32.47	3.60	4.30	0.00	9.09	5.56
1998	120.52	0.00	4.66	0.00	40.95	8.48	4.30	0.00	9.09	0.00
1999	136.35	15.83	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
2000	158.91	22.56	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
2001	224.65	65.74	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
2002	227.88	3.23	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
9 years	135.31	**15.03**	0.00	**0.00**	12.08	**1.34**	0.00	**0.00**	5.56	**0.62**

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 4
Non-Residential Development Rate Comparison
1994-2002

		Land Use								
		Commercial				Ind.	Other			
Line	**Information Source**	**CH**	**CN, PD, PAO**	**CS**	**Total**	**ML, MH, GI**	**G**	**P**	**L/S**	**S**
1	**DSMWS**									
2	**Assumed development rate**	**2.50**	**1.50**	**2.00**	**6.00**	**15.00**	**0.50**	**1.50**	**1.00**	**2.00**
3	**1995 Water Master Plan**									
4	Low development rate	1.00	0.50	1.50	3.00	2.00	0.20	0.50	0.50	1.00
5	High development rate	2.00	1.50	1.50	5.00	15.00	0.50	1.50	1.00	2.00
6	**1994-2002 Average (see Table 2)**	3.64	0.21	0.63	4.48	15.03	0.00	1.34	0.62	0.00
7	**City of Dixon Data**									
8	**Planning Department**									
9	12-year Historical Growth Rate				4.00	6.00				
10	Average-Growth Estimate				7.00	11.00				
11	Aggressive-Growth Estimate				12.00	15.00				
12	**Wastewater Treatment Facilities Plan (1995)**									
13	Low growth rate				2.00	2.00				
14	Average growth rate				3.50	8.50				
15	High growth rate				5.00	15.00				
16	**Development Fee Plan (1996)**									
17	30% coverage ratio				5.00					
18	40% coverage ratio					17.80				
19	**Traffic Model (1998)**									
20	30% coverage ratio				5.00					
21	40% coverage ratio					17.80				

Notes
(1) Only non-residential rates are compared. Residential development is limited per Measure B.

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 5
Projected Water Demand
for the DSMWS Service Area at Buildout

Service Area Zone	Annual Average Demand	
	gallons per minute	acre-feet
Core Zone	1,886	3,042
South Zone		
Southpark (Valley Glen)	238	384
Additional Area	3	5
Southwest Dixon	648	1,045
Brookfield Homes Annex	391	631
North Zone	1,371	2,211
Total	**4,537**	**7,318**

This table is based on Table 3.4 in the DSMWS 2000 Water Master Plan. It includes updated unit, acreage and water demand data from the developers of Valley Glen, Southwest Dixon, Dixon Downs, Milk Farm, and Brookfield Homes.

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 6
Annual Demand Projections

General Notes

(1) The existing number of Dwelling Units (DU) and acres of each land use designation (LUD) through 1998 are tabulated in Water Master Plan Section 7, Table 7.1. This data has been updated through 2004 in this table. These figures have been updated in 2005 for the Water Supply Assessments for the Milk Farm and Brookfield Homes Annexations.

(2) The number of new Dwelling Units (DU) is given in projections from the City of Dixon Planning Department. They are based on the Measure "B" 3% Annual Growth Limitation. All growth is assumed to occur in the DSMWS Service Area. The allocation of these yearly figures to each of the three residential land uses is proportional to the number of existing units in each LUD in 1998. For example:

	1998 Data		# UNITS	# UNITS
L.U.D.	No. of Units	Proportion	1999	2000
LD + VLD	1223	73.94%	109	112
MDL	267	16.14%	24	24
MDH	164	9.92%	15	15
TOTAL	1,654	100.00%	147	151

The proportion of residential land uses is virtually unchanged from 1994.

(3) Development rates of non-residential areas, in acres/year, are assumed to be as follows. They are from Table 4, Line 2.

Commercial	
CH	2.5
CN, PD, PAO	1.5
CS	2.0
Total Commercial:	**6.0**
INDUSTRIAL	**15.0**
Other	
GOVERNMENTAL/INSTITUTIONAL	0.5
PARKS	1.5
SCHOOLS	2.0
LANDSCAPING	1.0
Total Other:	**5.0**
Grand Total:	**26.0**

(4) Annual Average Demand, AAD, in acre-feet = (Total DU or acres) x (ADD Demand rate in gpd/DU or gpd/acre per 2000 Water Master Plan Table 3.2) x (365 days/year)/ (325,851 gallons per acre/foot).

Table 6
Annual Demand Projections

1	**Calendar Year**		Pre-1994			1994			1995		
2	**Land Use Designation (LUD)**		Exist (1)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)
3		**Unit**									
4	**Residential**										
5	LD + VLD	DU	736	736	495	146	882	593	75	957	643
6	MDL	DU	171	171	92	25	196	105	89	285	153
7	MDH	DU	166	166	74	0	166	74	0	166	74
8	*Residential Allocation*	DU	1,073	1,073		171	1,244		164	1,408	
9	**Non-Residential**										
10	CH	Acres	14.78	14.78	79	2.28	17.01	91	0.91	17.92	96
11	CN, PD, PAO	Acres	13.77	13.77	44	0.00	13.77	44	0.00	13.77	44
12	CS	Acres	5.19	5.19	17	0.00	5.19	17	0.00	5.19	17
13	Industrial (ML, MH, GI)	Acres	87.74	87.74	142	0.00	87.74	142	2.44	90.18	145
14	Governmental/Institutional	Acres	0.62	0.62	2	0.84	1.46	5	0.00	1.46	5
15	Parks	Acres	23.97	23.97	77	0.00	23.97	77	0.00	23.97	77
16	Schools	Acres	9.20	9.20	59	0.00	9.20	59	0.00	9.20	59
17	Landscaping	Acres	3.72	3.72	24	0.00	3.72	24	0.00	3.72	24
18	Total Non-Residential	Acres	158.94	158.94		3.12	162.06		3.35	165.41	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			1,106			1,232			1,339
22	Actual Delivery per DWR Annual Reports							926			1,009
23	Actual as a percentage of Projected							75%			75%

Note: Years 1994 to 2003 are shaded signifying historical data is shown.

Table 6
Annual Demand Projections

1	**Calendar Year**		1996			1997			1998		
2	**Land Use Designation (LUD)**		New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)
3		**Unit**									
4	**Residential**										
5	LD + VLD	DU	133	1,090	733	87	1,177	791	139	1,316	884
6	MDL	DU	108	393	211	41	434	233	19	453	244
7	MDH	DU	0	166	74	0	166	74	0	166	74
8	*Residential Allocation*	DU	241	1649		128	1777		158	1985	
9	**Non-Residential**										
10	CH	Acres	0.94	18.86	101	1.62	20.48	110	2.73	23.21	125
11	CN, PD, PAO	Acres	0.00	13.77	44	0.00	13.77	44	0.00	13.77	44
12	CS	Acres	6.36	11.55	37	1.69	13.24	43	0.00	13.24	43
13	Industrial (ML, MH, GI)	Acres	0.00	90.18	145	23.16	113.34	183	0.00	113.34	183
14	Governmental/Institutional	Acres	0.00	1.46	5	2.90	4.36	14	0.06	4.42	14
15	Parks	Acres	0.00	23.97	77	3.60	27.57	89	8.48	36.05	116
16	Schools	Acres	0.00	9.20	59	0.00	9.20	59	0.00	9.20	59
17	Landscaping	Acres	0.00	3.72	24	5.56	9.28	60	0.00	9.28	60
18	Total Non-Residential	Acres	7.30	172.71		38.53	211.24		11.27	222.51	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			1,512			1,701			1,847
22	Actual Delivery per DWR Annual Reports				1,155			1,395			1,329
23	Actual as a percentage of Projected				76%			82%			72%

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply As

Table 6
Annual Demand Projections

			1999			2000			2001		
1	**Calendar Year**										
2	**Land Use Designation (LUD)**		New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)
3		**Unit**									
4	**Residential**										
5	LD + VLD	DU	80	1,396	938	3	1,399	940	17	1,416	952
6	MDL	DU	1	454	244	0	454	244	0	454	244
7	MDH	DU	0	166	74	0	166	74	0	166	74
8	*Residential Allocation*	DU	81	2016		3	2019		17	2036	
9	**Non-Residential**										
10	CH	Acres	3.26	26.47	142	0.00	26.47	142	0.00	26.47	142
11	CN, PD, PAO	Acres	2.04	15.81	51	2.78	18.59	60	2.20	20.79	67
12	CS	Acres	0.00	13.24	43	8.93	22.17	72	0.00	22.17	72
13	Industrial (ML, MH, GI)	Acres	4.94	118.28	191	29.54	147.82	238	0.00	147.82	238
14	Governmental/Institutional	Acres	0.00	4.42	14	0.00	4.42	14	2.52	6.94	22
15	Parks	Acres	0.00	36.05	116	0.92	36.97	119	0.00	36.97	119
16	Schools	Acres	0.00	9.20	59	0.00	9.20	59	10.28	19.48	126
17	Landscaping	Acres	0.71	9.99	64	0.00	9.99	64	0.00	9.99	64
18	Total Non-Residential	Acres	10.95	233.46		42.17	275.63		15.00	290.63	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			1,938			2,028			2,121
22	Actual Delivery per DWR Annual Reports				1,662			1,702			1,801
23	Actual as a percentage of Projected				86%			84%			85%

Table 6
Annual Demand Projections

1	**Calendar Year**		2002			2003			2004		
2	**Land Use Designation (LUD)**		New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)
3		**Unit**									
4	**Residential**										
5	LD + VLD	DU	53	1,469	987	245	1,714	1,152	72	1,786	1,200
6	MDL	DU	0	454	244	0	454	244	84	538	289
7	MDH	DU	0	166	74	0	166	74	102	268	120
8	*Residential Allocation*	DU	53	2089		245	2334		258	2592	
9	**Non-Residential**										
10	CH	Acres	0.00	26.47	142	1.00	27.47	148	1.27	28.74	155
11	CN, PD, PAO	Acres	0.00	20.79	67	27.93	48.72	157	2.82	51.54	166
12	CS	Acres	0.00	22.17	72	0.00	22.17	72	0.00	22.17	72
13	Industrial (ML, MH, GI)	Acres	16.66	164.48	265	27.93	192.41	310	0.00	192.41	310
14	Governmental/Institutional	Acres	0.00	6.94	22	0.00	6.94	22	0.00	6.94	22
15	Parks	Acres	0.00	36.97	119	0.00	36.97	119	5.11	42.08	136
16	Schools	Acres	0.00	19.48	126	0.00	19.48	126	0.00	19.48	126
17	Landscaping	Acres	0.00	9.95	64	1.00	10.99	71	1.00	11.99	77
18	Total Non-Residential	Acres	16.66	307.29		57.86	365.15		10.20	375.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			2,184			2,495			2,674
22	Actual Delivery per DWR Annual Reports				1,844						
23	Actual as a percentage of Projected				84%						

Table 6
Annual Demand Projections

1	Calendar Year		2005			2006			2007		
2	Land Use Designation (LUD)		New	Total	AAD	New	Total	AAD	New	Total	AAD
3		Unit	(2,3)		(4)	(2,3)		(4)	(2,3)		(4)
4	**Residential**										
5	LD + VLD	DU	129	1,915	1,287	134	2,049	1,377	138	2,277	1,530
6	MDL	DU	28	566	304	29	595	320	30	625	336
7	MDH	DU	17	285	128	18	303	136	18	322	144
8	*Residential Allocation*	DU	*175*	2767		*181*	2948		*186*	3,224	
9	**Non-Residential**										
10	CH	Acres	2.50	31.24	168	2.50	33.74	181	2.50	36.24	195
11	CN, PD, PAO	Acres	1.50	53.04	171	1.50	54.54	176	1.50	56.04	181
12	CS	Acres	2.00	24.17	78	2.00	26.17	84	2.00	28.17	91
13	Industrial (ML, MH, GI)	Acres	15.00	207.41	335	15.00	222.41	359	15.00	237.41	383
14	Governmental/Institutional	Acres	0.50	7.44	24	0.50	7.94	26	0.50	8.44	27
15	Parks	Acres	1.50	43.58	141	1.50	45.08	145	1.50	46.58	150
16	Schools	Acres	2.00	21.48	139	2.00	23.48	151	2.00	25.48	164
17	Landscaping	Acres	1.00	12.99	84	1.00	13.99	90	1.00	14.99	97
18	Total Non-Residential	Acres	26.00	401.35		26.00	427.35		26.00	453.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			2,858			3,047			3,299
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Table 6
Annual Demand Projections

1	**Calendar Year**		**2008**			**2009**			**2010**		
2	**Land Use Designation (LUD)**		**New**	**Total**	**AAD**	**New**	**Total**	**AAD**	**New**	**Total**	**AAD**
3		**Unit**	**(2,3)**		**(4)**	**(2,3)**		**(4)**	**(2,3)**		**(4)**
4	**Residential**										
5	LD + VLD	DU	142	2,419	1,626	146	2,565	1,724	150	2,715	1,825
6	MDL	DU	31	656	353	32	688	370	33	721	388
7	MDH	DU	19	349	156	20	369	165	20	389	174
8	*Residential Allocation*	DU	*192*	3,424		*197*	3,621		*203*	3,824	
9	**Non-Residential**										
10	CH	Acres	2.50	38.74	208	2.50	41.24	222	2.50	43.74	235
11	CN, PD, PAO	Acres	1.50	57.54	186	1.50	59.04	190	1.50	60.54	195
12	CS	Acres	2.00	30.17	97	2.00	32.17	104	2.00	34.17	110
13	Industrial (ML, MH, GI)	Acres	15.00	252.41	407	15.00	267.41	431	15.00	282.41	456
14	Governmental/Institutional	Acres	0.50	8.94	29	0.50	9.44	30	0.50	9.94	32
15	Parks	Acres	1.50	48.08	155	1.50	49.58	160	1.50	51.08	165
16	Schools	Acres	2.00	27.48	177	2.00	29.48	190	2.00	31.48	203
17	Landscaping	Acres	1.00	15.99	103	1.00	16.99	110	1.00	17.99	116
18	Total Non-Residential	Acres	26.00	479.35		26.00	505.35		26.00	531.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			3,498			3,696			3,899
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Table 6
Annual Demand Projections

1	Calendar Year		2011			2012			2013		
2 3	Land Use Designation (LUD)	Unit	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)
4	**Residential**										
5	LD + VLD	DU	155	2,869	1,928	160	3,029	2,036	164	3,193	2,146
6	MDL	DU	34	1,425	766	35	1,460	785	36	1,496	804
7	MDH	DU	21	409	183	21	431	193	22	453	203
8	*Residential Allocation*	DU	*209*	4,704		*216*	4,920		*222*	5,142	
9	**Non-Residential**										
10	CH	Acres	2.50	46.24	249	2.50	48.74	262	2.50	51.24	276
11	CN, PD, PAO	Acres	1.50	62.04	200	1.50	63.54	205	1.50	65.04	210
12	CS	Acres	2.00	36.17	117	2.00	38.17	123	2.00	40.17	130
13	Industrial (ML, MH, GI)	Acres	15.00	297.41	480	15.00	312.41	504	15.00	327.41	528
14	Governmental/Institutional	Acres	0.50	10.44	34	0.50	10.94	35	0.50	11.44	37
15	Parks	Acres	1.50	52.58	170	1.50	54.08	174	1.50	55.58	179
16	Schools	Acres	2.00	33.48	216	2.00	35.48	229	2.00	37.48	242
17	Landscaping	Acres	1.00	18.99	123	1.00	19.99	129	1.00	20.99	135
18	Total Non-Residential	Acres	26.00	557.35		26.00	583.35		26.00	609.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4) af/yr				4,465			4,675			4,890
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Table 6
Annual Demand Projections

1	Calendar Year		2014			2015			2016		
2	Land Use Designation (LUD)		New	Total	AAD	New	Total	AAD	New	Total	AAD
3		Unit	(2,3)		(4)	(2,3)		(4)	(2,3)		(4)
4	**Residential**										
5	LD + VLD	DU	169	3,362	2,260	175	3,537	2,377	180	3,717	2,498
6	MDL	DU	37	1,533	824	38	1,571	845	39	1,610	866
7	MDH	DU	23	476	213	23	499	224	24	523	234
8	*Residential Allocation*	DU	*229*	5,371		*236*	5,607		*243*	5,850	
9	**Non-Residential**										
10	CH	Acres	2.50	53.74	289	2.50	56.24	302	2.50	58.74	316
11	CN, PD, PAO	Acres	1.50	66.54	215	1.50	68.04	219	1.50	69.54	224
12	CS	Acres	2.00	42.17	136	2.00	44.17	142	2.00	46.17	149
13	Industrial (ML, MH, GI)	Acres	15.00	342.41	552	15.00	357.41	577	15.00	372.41	601
14	Governmental/Institutional	Acres	0.50	11.94	39	0.50	12.44	40	0.50	12.94	42
15	Parks	Acres	1.50	57.08	184	1.50	58.58	189	1.50	60.08	194
16	Schools	Acres	2.00	39.48	255	2.00	41.48	268	2.00	43.48	281
17	Landscaping	Acres	1.00	21.99	142	1.00	22.99	148	1.00	23.99	155
18	Total Non-Residential	Acres	26.00	635.35		26.00	661.35		26.00	687.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			5,108			5,331			5,559
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Table 6
Annual Demand Projections

1	Calendar Year		2017			2018			2019		
2	Land Use Designation (LUD)		New	Total	AAD	New	Total	AAD	New	Total	AAD
3		Unit	(2,3)		(4)	(2,3)		(4)	(2,3)		(4)
4	**Residential**										
5	LD + VLD	DU	185	3,902	2,622	190	4,092	2,750	196	4,287	2,882
6	MDL	DU	40	1,650	887	41	1,692	910	43	1,735	933
7	MDH	DU	25	548	245	25	573	257	26	600	269
8	*Residential Allocation*	DU	*250*	6,100		*257*	6,357		*265*	6,622	
9	**Non-Residential**										
10	CH	Acres	2.50	61.24	329	2.50	63.74	343	2.50	66.24	356
11	CN, PD, PAO	Acres	1.50	71.04	229	1.50	72.54	234	1.50	74.04	239
12	CS	Acres	2.00	48.17	155	2.00	50.17	162	2.00	52.17	168
13	Industrial (ML, MH, GI)	Acres	15.00	387.41	625	15.00	402.41	649	15.00	417.41	673
14	Governmental/Institutional	Acres	0.50	13.44	43	0.50	13.94	45	0.50	14.44	47
15	Parks	Acres	1.50	61.58	199	1.50	63.08	203	1.50	64.58	208
16	Schools	Acres	2.00	45.48	293	2.00	47.48	306	2.00	49.48	319
17	Landscaping	Acres	1.00	24.99	161	1.00	25.99	168	1.00	26.99	174
18	Total Non-Residential	Acres	26.00	713.35		26.00	739.35		26.00	765.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			5,790			6,027			6,268
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Table 6
Annual Demand Projections

1	**Calendar Year**		**2020**			**2021**			**2022**		
2	**Land Use Designation (LUD)**		**New**	**Total**	**AAD**	**New**	**Total**	**AAD**	**New**	**Total**	**AAD**
3		**Unit**	**(2,3)**		**(4)**	**(2,3)**		**(4)**	**(2,3)**		**(4)**
4	**Residential**										
5	LD + VLD	DU	202	4,489	3,017	208	4,697	3,157	214	4,912	3,301
6	MDL	DU	44	1,779	956	45	1,824	981	47	1,871	1,006
7	MDH	DU	27	627	281	28	654	293	29	683	306
8	*Residential Allocation*	DU	*273*	6,895		*281*	7,176		*290*	7,466	
9	**Non-Residential**										
10	CH	Acres	2.50	68.74	370	2.50	71.24	383	2.50	73.74	396
11	CN, PD, PAO	Acres	1.50	75.54	244	1.50	77.04	249	1.50	78.54	253
12	CS	Acres	2.00	54.17	175	2.00	56.17	181	2.00	58.17	188
13	Industrial (ML, MH, GI)	Acres	15.00	432.41	697	15.00	447.41	722	15.00	462.41	746
14	Governmental/Institutional	Acres	0.50	14.94	48	0.50	15.44	50	0.50	15.94	51
15	Parks	Acres	1.50	66.08	213	1.50	67.58	218	1.50	69.08	223
16	Schools	Acres	2.00	51.48	332	2.00	53.48	345	2.00	55.48	358
17	Landscaping	Acres	1.00	27.99	181	1.00	28.99	187	1.00	29.99	193
18	Total Non-Residential	Acres	26.00	791.35		26.00	817.35		26.00	843.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4)	af/yr			6,514			6,765			7,022
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Table 6
Annual Demand Projections

1	Calendar Year		2023			2024			2025		
2	**Land Use Designation (LUD)**		**New**	**Total**	**AAD**	**New**	**Total**	**AAD**	**New**	**Total**	**AAD**
3		**Unit**	**(2,3)**		**(4)**	**(2,3)**		**(4)**	**(2,3)**		**(4)**
4	**Residential**										
5	LD + VLD	DU	220	5,132	3,449	227	5,359	3,602	234	5,593	3,759
6	MDL	DU	48	1,919	1,032	50	1,969	1,058	51	2,020	1,086
7	MDH	DU	30	713	319	30	743	333	31	775	347
8	*Residential Allocation*	DU	*298*	7,764		*307*	8,071		*317*	8,388	
9	**Non-Residential**										
10	CH	Acres	2.50	76.24	410	2.50	78.74	423	2.50	81.24	437
11	CN, PD, PAO	Acres	1.50	80.04	258	1.50	81.54	263	1.50	83.04	268
12	CS	Acres	2.00	60.17	194	2.00	62.17	201	2.00	64.17	207
13	Industrial (ML, MH, GI)	Acres	15.00	477.41	770	15.00	492.41	794	15.00	507.41	818
14	Governmental/Institutional	Acres	0.50	16.44	53	0.50	16.94	55	0.50	17.44	56
15	Parks	Acres	1.50	70.58	228	1.50	72.08	233	1.50	73.58	237
16	Schools	Acres	2.00	57.48	371	2.00	59.48	384	2.00	61.48	397
17	Landscaping	Acres	1.00	30.99	200	1.00	31.99	206	1.00	32.99	213
18	Total Non-Residential	Acres	26.00	869.35		26.00	895.35		26.00	921.35	
20	**Water Demand**										
21	Annual Average Demand (AAD) (4) af/yr				7,284			7,552			7,826
22	Actual Delivery per DWR Annual Reports										
23	Actual as a percentage of Projected										

Dixon-Solano Municipal Water Service
Brookfield Homes Annexation Water Supply Assessment

Table 7
Summary of Annual Demand Projections
Acre-Feet per Year

Line	Calendar Year	1995	2000	2005	2010	2015	2020	2025
No.	Land Use Designation	historical	historical					
1	***Residential***							
2	LD + VLD	643	940	1,287	1,825	2,377	3,017	3,759
3	MDL	153	244	304	388	845	956	1,086
4	MDH	74	74	128	174	224	281	347
5	***Non-Residential***							
6	CH	96	142	168	235	302	370	437
7	CN, PD, PAO	44	60	171	195	219	244	268
8	CS	17	72	78	110	142	175	207
9	Industrial (ML, MH, GI)	145	238	335	456	577	697	818
10	Governmental/Institutional	5	14	24	32	40	48	56
11	Parks	77	119	141	165	189	213	237
12	Schools	59	59	139	203	268	332	397
13	Landscaping	24	64	84	116	148	181	213
14	Annual Water Demand, acre-feet	1,339	2,028	**2,858**	**3,899**	**5,331**	**6,514**	**7,826**

These figures are extracted from Table 6, where some rounding of these figures has occurred automatically.

Attachment 1

Appendix D to the
1993 General Plan of the
City of Dixon

APPENDIX D

PROJECTED NUMBER OF HOUSING UNITS IN DIXON BASED ON A 3 PERCENT GROWTH RATE, 1996-2030

YEAR	BASE UNITS	NEW UNITS	CUMULATIVE FROM 1995
1996	4479	134	134
1997	4613	138	272
1998	4752	143	415
1999	4894	147	562
2000	5041	151	713
BY 2000			713
2001	5192	156	869
2002	5348	160	1029
2003	5509	165	1194
2004	5674	170	1365
2005	5844	175	1540
BY 2005			1540
2006	6019	181	1721
2007	6200	186	1907
2008	6386	192	2098
2009	6578	197	2296
2010	6775	203	2499
BY 2010			2499
2011	6978	209	2708
2012	7187	216	2924
2013	7403	222	3146
2014	7625	229	3375
2015	7854	236	3610
BY 2015			3610
2016	8090	243	3853
2017	8332	250	4103
2018	8582	257	4360
2019	8840	265	4626
2020	9105	273	4899
BY 2020			4899
2021	9378	281	5180
2022	9659	290	5470
2023	9949	298	5768
2024	10248	307	6076
2025	10555	317	6392
BY 2025			6392
2026	10872	326	6718
2027	11198	336	7054
2028	11534	346	7400
2029	11880	356	7757
2030	12236	367	8124
BY 2030			8124

Attachment 2

Dixon-Solano Municipal Water Service
2000 Water Master Plan

Table 3.2

Average Daily Demand Rates

RESIDENTIAL AREAS	GPD/DU	DUE/DU	GPM/DU	PERSONS/DU	GPCD
VERY LOW DENSITY (VLD)	600	1.00	0.417	3.1	194
LOW DENSITY (LD)	600	1.00	0.417	3.1	194
MEDIUM DENSITY - LOW (MDL)	480	0.80	0.333	3.1	155
MEDIUM DENSITY - HIGH (MDH)	400	0.67	0.278	3.1	129
COMMERCIAL AREAS	**GPD/ACRE**	**DUE/ACRE**	**GPM/ACRE**		
HIGHWAY COMMERCIAL (HC)					
Developed	4,800	8.00	3.33		
Undeveloped	4,500	7.50	3.13		
SERVICE COMMERCIAL (SC)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
NEIGHBORHOOD COMMERCIAL (NC)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
COMMUNITY COMMERCIAL (CC)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
OFFICE (O)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
INDUSTRIAL AREAS					
Developed	1,440	2.40	1.00		
Undeveloped	1,350	2.25	0.94		
OTHER AREAS					
GOVERNMENT/INSTITUTIONAL (G)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
PARKS (P)	2,880	4.80	2.00		
LANDSCAPING (L/S)	5,760	9.60	4.00		
SCHOOLS (S)	5,760	9.60	4.00		

Refer to the Water Usage Study in Section 8 and the discussion in Section 3 for development of these figures.

LEGEND

DU	Dwelling unit, being one house or one unit of a duplex or triplex, or one apartment in a complex.
DUE	Dwelling Unit Equivalent = one low density residential unit which over a year will use an average of 600 gallons of water per day.
DUE/ACRE	Number of dwelling unit equivalents that use the same amount of water as one acre of the stated non-residential area.
DUE/DU	Number of dwelling unit equivalents that use the same amount of water as one dwelling unit of the stated residential density.
GPCD	Gallons per capita (person) per day, or the average amount of water used by one person
GPD	Gallons per day, a measure of water use.
GPD/ACRE	Gallons per day per acre = GPM/ACRE / 60 minutes / 24 hours, rounded to nearest whole number.
GPD/DU	Gallons per day per dwelling unit = GPM/DU / 60 minutes / 24 hours, rounded to nearest whole number.
GPM	Gallons per minute, a measure of water use.
GPM/ACRE	Gallons per minute per acre.
GPM/DU	Gallons per minute for one dwelling unit.
PERSONS/DU	Persons per dwelling unit, as shown in Table 3.1.

Appendix D

Transportation Study

TRAFFIC IMPACT ANALYSIS

FOR

BROOKFIELD SUBDIVISION EIR
Dixon, CA

Prepared For:

Jones & Stokes Associates
2600 V Street
Sacramento, CA 95818

Prepared By:

kdANDERSON Transportation Engineers
3853 Taylor Road, Suite G
Loomis, California 95650
(916) 660-1555

March 31, 2005

4170-08

Brookfield Subdivision EIR.rpt

KD Anderson
Transportation Engineers

TRAFFIC IMPACT ANALYSIS FOR BROOKFIELD SUBDIVISION EIR

Dixon, CA

TABLE OF CONTENTS

March 31, 2005

KDA

BROOKFIELD SUBDIVISION EIR
TRAFFIC IMPACT ANALYSIS

INTRODUCTION

Study Purpose And Objectives

Project Description. The proposed project includes development of a new residential community on a 134-acre site south of downtown Dixon. The project is located along the east side of South 1st Street (State Route 113) as shown in Figure 1. Primary access will be via an extension to the east of Parkway Blvd. Secondary access will be provided at the existing S. 1st Street / Valley Glen Drive intersection. The project will consist of 401 single family residential units and a 120-unit assisted living / care senior center that will consist of 120 units. The total projected population is expected to be 150 people. The project is divided into seven "villages", with Village 1, Village 2 and Village 7 located along the west side of the site. Village 1 consists of 101 single family cottage units; Village 2 consists of 19 single family detached units and Village 7, the senior assisted living center consisting of 120 units.

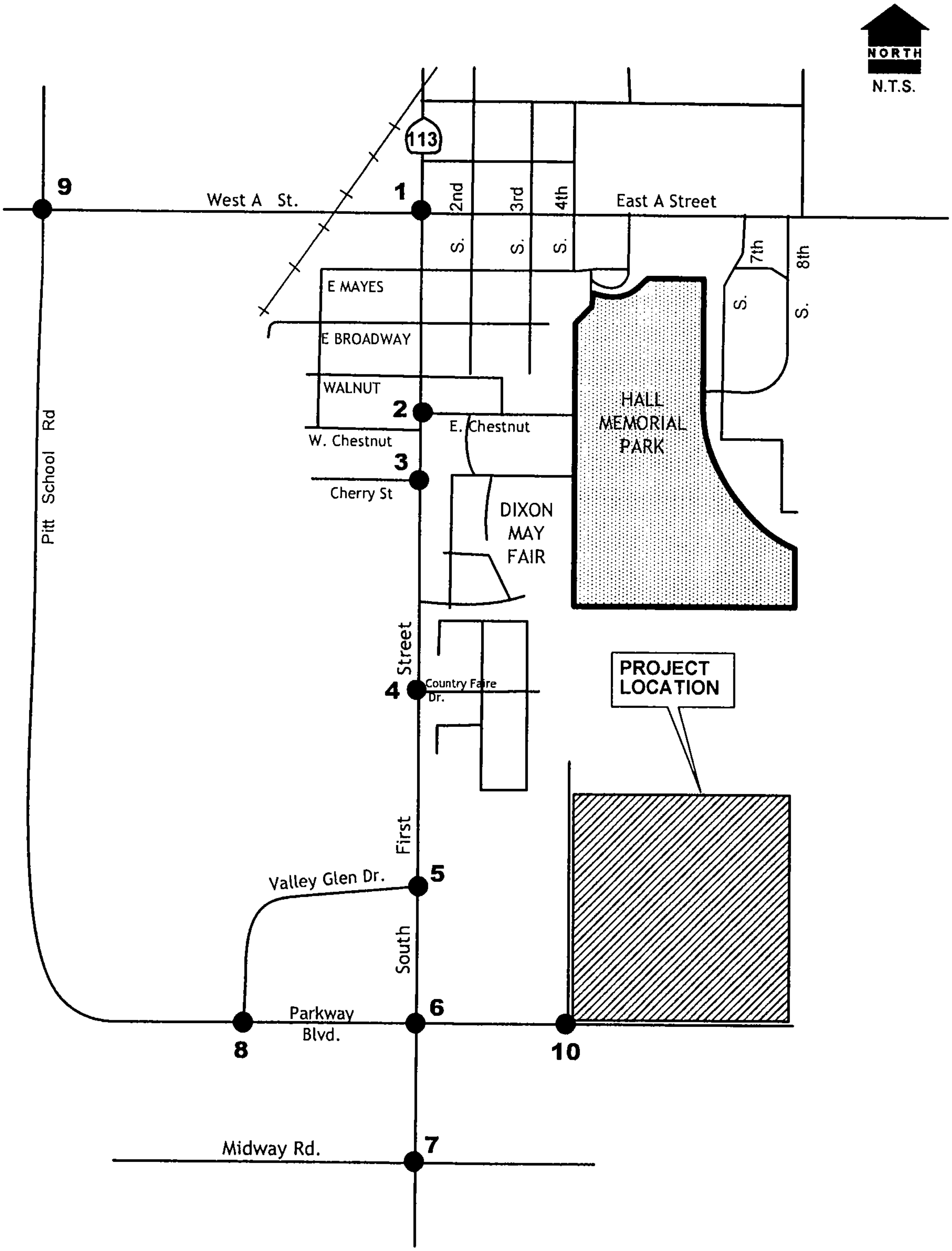
The project is located directly south of the new Dixon High School. The high school is planned to be open in 2007. Primary access to the school is via the westerly north-south roadway in the project site. This collector roadway splits the project with Villages 1,2 and 7 located on the west side of the roadway. The remaining villages are located on the east side of the school collector roadway.

Figure 2 provides the concept plan for the project site.

Study Parameters. This study addresses the following scenarios:

1. Existing Traffic Conditions
2. Base Condition (2007)
3. Base Plus Project
4. Existing Plus Project
5. Future (2025)
6. Future Plus Project

The objective of this study is to identify those street intersections that may be impacted by development of this project and to suggest strategies for mitigating the impacts of this project. In addition, on-site circulation and access to the site have been analyzed.

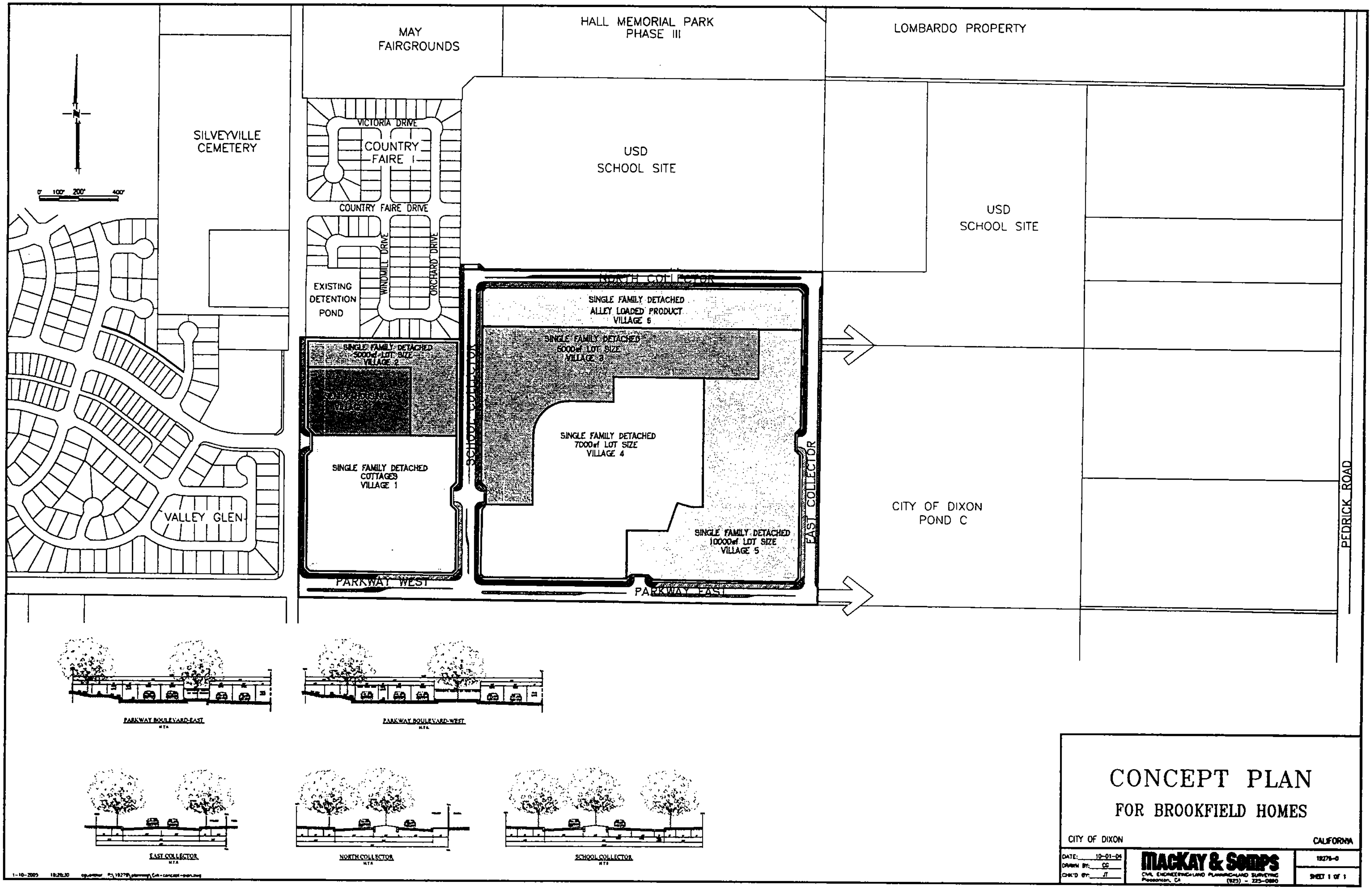


KD Anderson
Transportation Engineers

VICINITY MAP

4170-08tb 3/21/2005

figure 1



CONCEPT PLAN

FOR BROOKFIELD HOMES

CITY OF DIXON CALIFORNIA

DATE: 10-01-04
DRAWN BY: CG
CHK'D BY: JT

MACKAY & SOMPS
CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING
Pleasanton, CA (925) - 225-0690

19279-0

SHEET 1 OF 1

EXISTING SETTING

This study addresses traffic conditions occurring on the streets today that will provide access to the project site. Nine existing intersections were identified for analysis. The text that follows describes the facilities included in this analysis.

Study Area Intersections

The **South 1st Street (State Route 113) / A Street intersection** is a traffic signal controlled intersection at the "city center". All approaches consist of a left turn lane, and a through-right lane, and parking is permitted along this street. Traffic to and from the existing high school typically passes through this intersection to the east. When the new high school is completed traffic is expected to shift with high school traffic heading south of S. 1st Street and junior high school traffic heading east.

The **South 1st Street (State Route 113) / Chestnut Street intersection** is an offset intersection controlled by stop signs on the Chestnut Street approaches. The centerlines of Chestnut Street are offset by about 30 feet, with the east leg located north of the west leg. The east leg of the intersection provides access to Hall Park. All approaches to the intersection consist of single lanes, and parking is allowed along the street on all approaches.

The **South 1st Street (State Route 113) / Cherry Street intersection** is a tee intersection with stop control along Cherry Street. A retractable gate is opposite Cherry Street leading to the Dixon May Fair site. Significant morning traffic enters and exits Dixon May Fair while minimal traffic uses this driveway in the p.m. All approaches to the intersection consist of single lanes.

The **South 1st Street (State Route 113) / Country Faire Drive intersection** is a four way intersection controlled by stop signs on the east and west legs. The west leg of the intersection is a private driveway that provides access to Silveyville Cemetery while the east leg provides access to the Country Faire subdivision. In this area southbound South 1st Street consists of a left turn lane and a through-right lane while the northbound approach consists of a left turn lane, a through lane and a right turn lane. A drainage ditch lies immediately adjacent to the west side of South 1st Street. Country Faire Drive has a 50' face of curb to face of curb width, and the street is striped with a left-through lane and a right-only lane at the approach to the intersection.

The **South 1st Street (State Route 113) / Valley Glen Drive intersection** is a tee intersection with stop control along Valley Glen Drive. The southbound S. 1st Street approach includes a through lane and a combination through-right lane. The through-right lane becomes a right-only lane at the Parkway Blvd intersection to the south. The northbound approach consists of a left turn lane and a through lane. A raised median is present along S. 1st Street in the Valley Glen Drive intersection area. The eastbound Valley Glen Drive approach consists of dedicated right and left turn lanes.

The **South 1st Street (State Route 113) / Parkway Blvd intersection** is a tee intersection with stop control along Parkway Blvd. The southbound S. 1st Street approach includes a right turn lane and a through lane while the northbound approach consists of a left-through lane. The raised median present at the Valley Glen Drive intersection ends prior to reaching Parkway Blvd. The eastbound Parkway Blvd approach consists of a single left-right lane.

The **South 1st Street (State Route 113) / Midway Road intersection** is a four way intersection controlled by stop signs on the Midway Road approaches. The Midway Road approaches include a single lane while the S. 1st Street approaches consist of dedicated left turn lanes and combination through-right turn lanes.

The **Parkway Blvd / Valley Glen Drive intersection** is a tee intersection with stop control along the Valley Glen Drive approach. The Valley Glen Drive approach consists of a right turn lane and a left turn lane. The westbound Parkway Blvd approach consists of a single through-right lane. Currently, Parkway Blvd ends just west of the Valley Glen intersection. The extension of Parkway Blvd west to Pitt School Road is projected to be open in 2007. Once the extension is completed, the eastbound approach to the Valley Glen Drive intersection is assumed to include a through lane and a left turn lane.

The **Pitt School Road / West A Street intersection** is a four-way stop controlled intersection. The eastbound West A Street approach consists of a left turn lane and a through-right lane. The westbound West A Street approach consists of left, through and right lanes. Southbound Pitt School Road consists of left, through and right turn lanes while northbound Pitt School Road is currently a single left-through-right turn lane. At the opening of the Parkway Blvd extension the northbound approach to the intersection is assumed to include a left turn lane and a through-right lane.

Level of Service Analysis

Intersection Methodology and Significance Criteria. *Level of Service Analysis* has been employed to provide a basis for describing existing traffic conditions and for evaluating the significance of project traffic impacts. Level of Service measures the *quality* of traffic flow and is represented by letter designations from "A" to "F", with a designation of "A" referring to the best conditions, and "F" representing the worst conditions.

Local agencies adopt minimum Level of Service standards for their facilities. The City of Dixon identifies LOS "C" as the acceptable Level of Service on existing roadways except within the one block area of the First Street / A Street intersection in downtown Dixon. At this location LOS "E" is considered acceptable. The City has also established a threshold for significance at locations where minimum standards are already exceeded. Where LOS E or F already exists or is expected in the future, an increase in overall intersection delay of 5.0 seconds is judged to be significant. Caltrans identifies LOS 'D' as the acceptable Level of Service along state routes.

Because traffic associated with schools can often be concentrated into short time periods immediately before and after the school day, poor traffic conditions and congestion can occur for short periods of time at locations near schools where the overall peak hour Level of Service

KDA

remains acceptable. For this reason, this analysis also investigated conditions along the project's westerly north-south collector that provides main access to the new high school. This included the Parkway Blvd / West Collector Street intersection during the peak 15 minutes before school. The analysis assumed that a **noticeable but not significant impact** would occur if traffic flows during that period exceeded the capacity of the intersections (i.e., > LOS E).

The methodologies contained in the *2000 Highway Capacity Manual* were used to provide a basis for describing existing traffic conditions and for evaluating the significance of project traffic impacts. The method employed for unsignalized intersections calculates the average total delay for each controlled movement. A weighted average is then calculated based on the delays for each approach. This delay corresponds to a level of service for the intersection as a whole. This methodology considers gap acceptance for left turning vehicles along the major street and average delay of motorists on minor streets. These delays are used to establish the levels of service for each intersection. The levels of service at each intersection are presented in this analysis are based on the weighted average total delay per vehicle for all vehicles yielding right of way at the intersection. The level of service is based on the delay thresholds shown in Table 1.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestion of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Sources: 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

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Signal Warrants. Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrant is met, signalization may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously uncontrolled major street, and may increase the occurrence of particular types of accidents.

For this section of the EIR, available data comes in the form of a.m. and p.m. peak hour volumes; thus unsignalized intersections with unacceptable levels of service (LOS E or LOS F) were evaluated using the Peak Hour Warrant (Warrant No. 3) from the Manual of Uniform Traffic Control Devices (MUTCD). The Peak Hour Warrant was applied where the minor street experiences long delays in entering or crossing the major street for at least one hour of the day, or the plotted point representing major street traffic (both directions) and the corresponding minor street traffic (one direction only) falls above the applicable traffic curves.

Even if the Peak Hour Warrant is met, a more detailed signal warrant study is recommended before a signal is installed. The more detailed study should consider other warrants, including volumes during the eight highest hours of the day, pedestrian traffic, and accident histories.

Public Transit

The City of Dixon provides the "Readi-Ride" Transit service, a public dial-a-ride service within the city limits. Service is scheduled on a reservation, space available basis. The system operates Monday through Friday from 7 a.m. to 6 p.m.

Additional bus service is provided by Fairfield-Suisun Transit. The #30 route provides access to UC Davis in the east and Vacaville and Fairfield in the west. The non-commute route provides stops at the South Jefferson Street Multi-Modal Center, within walking distance of the proposed high school site.

Bicycles and Pedestrians

Pedestrian facilities are present throughout Dixon, with sidewalk present along most City streets. However, in some areas along First Street (SR 113) and in the 'rural' areas to the south of the city the roadways are generally narrower than within the City proper and do not include sidewalk. Sidewalk is planned along South 1st Street as development occurs in the future and exists along the valley Glen subdivision frontage.

Marked bicycle facilities are prevalent throughout the City, and the City encourages bicycle ridership. New developments are generally constructed to include bicycle lanes. In addition, the City has been installing bicycle lanes along existing roadways through a combination of lane narrowing and parking removal. Bike lanes do not exist along South 1st Street, however, they are planned for future installation south of Cherry Street.

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Existing Traffic Conditions

Intersection Levels of Service. The Level of Service for both signalized and unsignalized intersections is measured in terms of average delay (seconds per vehicle). Figure 3 presents the existing lane configurations and traffic volumes at intersections along the study roadways. Traffic counts were conducted at the intersections in July 2003 and January 2005. Existing a.m. counts (July 2003) for four intersections were taken from the Dixon High School EIR with new a.m. and p.m. counts supplementing the data.

Table 2 summarizes current Levels of Service at the nine study area intersections during the a.m. peak hour (7:00 a.m. to 9:00 a.m.) and the p.m. peak hour (4:00 to 6:00 p.m.). These hours were selected for analysis since they represent periods of "worst case" traffic impact for the project. The 1st Street / A Street intersection operates at LOS C. The remaining intersections, all unsignalized, operate at LOS B or better. None of the intersections currently meet the Peak Hour Signal Warrant, Warrant 3.

TABLE 2
EXISTING PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

Location	Control	AM Peak Hour		PM Peak Hour		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	
1. 1st Street / A Street	Signal	C	**30.6**	C	**31.5**	N/A
2. 1st Street / Chestnut Street						
Overall Avg	EB/WB Stop	B	**11.9**	B	**11.4**	No
NB Lt			7.6		7.8	
SB Lt			7.9		7.9	
EB			13.4		12.8	
WB			10.1		11.2	
3. 1st Street / Cherry Street						
Overall Avg	EB/WB Stop	B	**10.0**	B	**10.2**	No
NB Lt			7.6		7.7	
SB Lt			7.9		---	
EB			13.1		11.4	
WB			11.4		11.3	
4. 1st Street / Country Faire Drive						
Overall Avg	EB / WB Stop	A	**9.4**	A	**9.2**	No
NB Lt			---		7.6	
SB Lt			7.6		7.9	
EB			---		14.0	
WB			9.7		10.3	
5. 1st Street / Valley Glen Drive						
Overall Avg	EB Stop	B	**10.2**	A	**9.8**	No
NB Lt			7.6		7.7	
EB			10.5		10.8	

N/A – not applicable

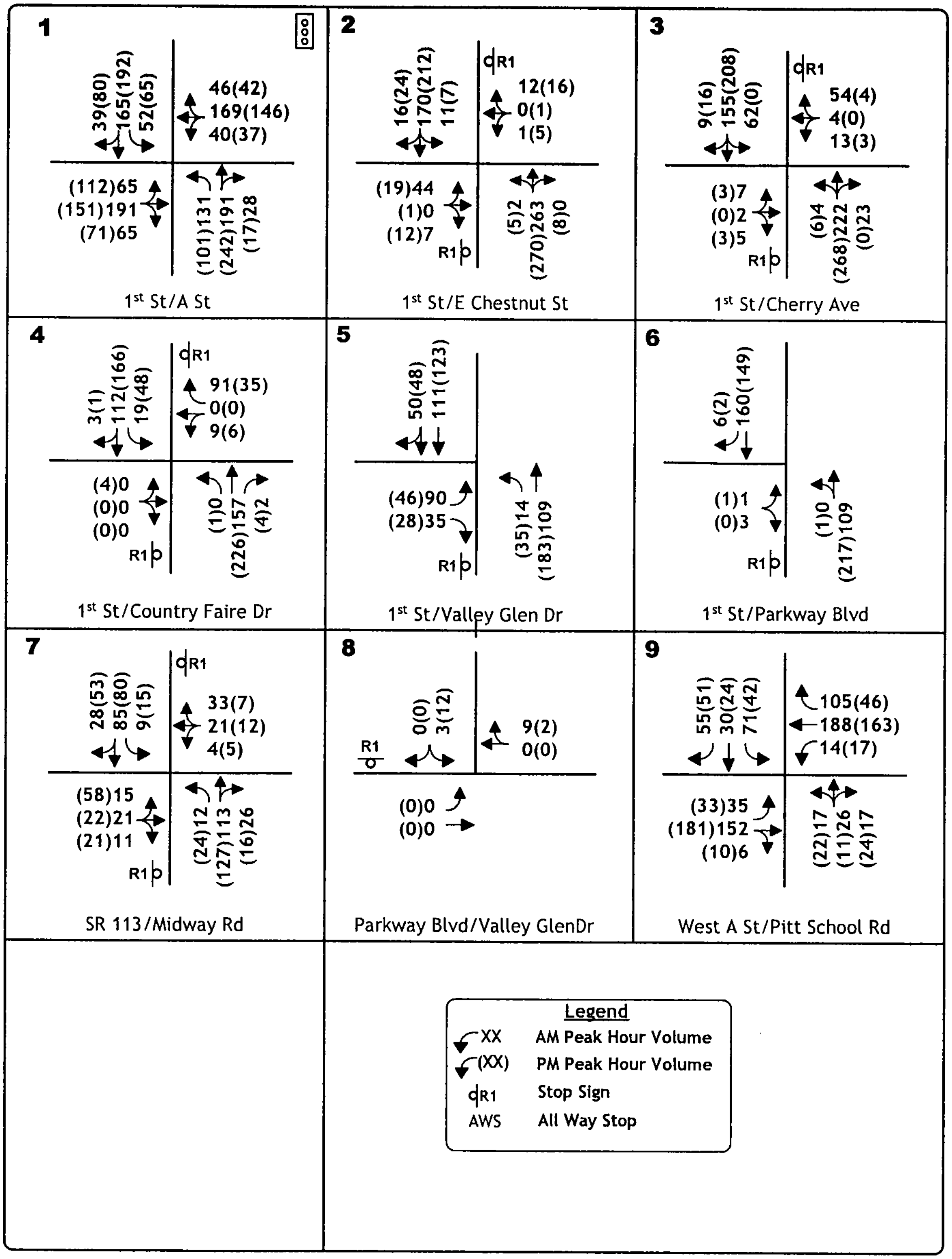
AWS – all way stop

TABLE 2 (cont'd)
EXISTING PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

Location	Control	AM Peak Hour		PM Peak Hour		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	
6. 1st Street / Parkway Blvd						
Overall Avg	EB / WB Stop	**A**	**9.4**	**A**	**9.3**	No
NB Lt			---		7.6	
EB			9.4		11.0	
7. 1st Street / Midway Road						
Overall Avg	EB/WB Stop	**B**	**10.1**	**B**	**11.0**	No
NB Lt			7.5		7.6	
SB Lt			7.5		7.6	
EB			11.1		12.2	
WB			10.3		11.2	
8. Parkway Blvd / Valley Glen Dr						
Overall Avg	SB Stop	**A**	**9.0**	**A**	**9.1**	No
SB			9.0		9.1	
EB Lt			---		---	
9. West A Street / Pitt School Road						
Overall Avg	AWS	**B**	**10.0**	**A**	**9.8**	No
NB Lt			9.8		9.4	
SB Lt			9.4		8.9	
EB			10.1		10.2	
WB			10.4		10.0	

N/A – not applicable

AWS – all way stop



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EXISTING TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

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figure 3

BASE CONDITION (2007) IMPACTS

The analysis of the Base condition is intended to consider the impact of this project within the context of near term future conditions in the City of Dixon. The base condition includes completion of the Parkway Blvd extension, from Valley Glen Drive to Pitt School Road, and the completion and opening of the new Dixon High School.

Base Condition Traffic Volume Projections

Traffic along the study roadways were developed based on the most recent traffic model. In addition to the completion of both projects and the associated traffic volumes along the roadway segments the model also included additional growth projected throughout the City. Turning movements were developed based on the historical growth between the 2001 calibrated model year and the 2007 projected volumes derived from the City model. Figure 4 displays the a.m. and p.m. peak hour volumes and projected lane configurations in 2007. The S. 1st Street / Parkway Blvd intersection was assumed signalized due to the new high school.

Base Condition Intersection Levels of Service

Table 3 displays the a.m. and p.m. peak hour Levels of Service at the study intersections in the Base "no project" conditions. One additional intersection was analyzed, the westerly north-south roadway, the School Collector Roadway, into the project site. This roadway provides the main access into the high school. The level of service analysis showed that three intersections would decline to levels of service below the City thresholds. These intersections include S. 1st Street / Chestnut Street, S. 1st Street / Cherry Street and West A Street / Pitt School Road. The 1st Street / A Street intersection will decline to LOS D in both peak periods; however, LOS E is acceptable at this intersection in downtown Dixon. The three identified intersections will all operate at LOS F in the a.m. peak period; the West A Street / Pitt School Road intersection will also operate at LOS F in the p.m. peak hour. The LOS F condition along S. 1st Street is due to the heavy volume placed on the roadway network from the 1,600 student high school.

The S. 1st Street / Chestnut Street intersection and the Pitt School Road / West A Street intersections will also meet the peak hour signal warrant, Warrant #3.

Traffic Signal Warrants

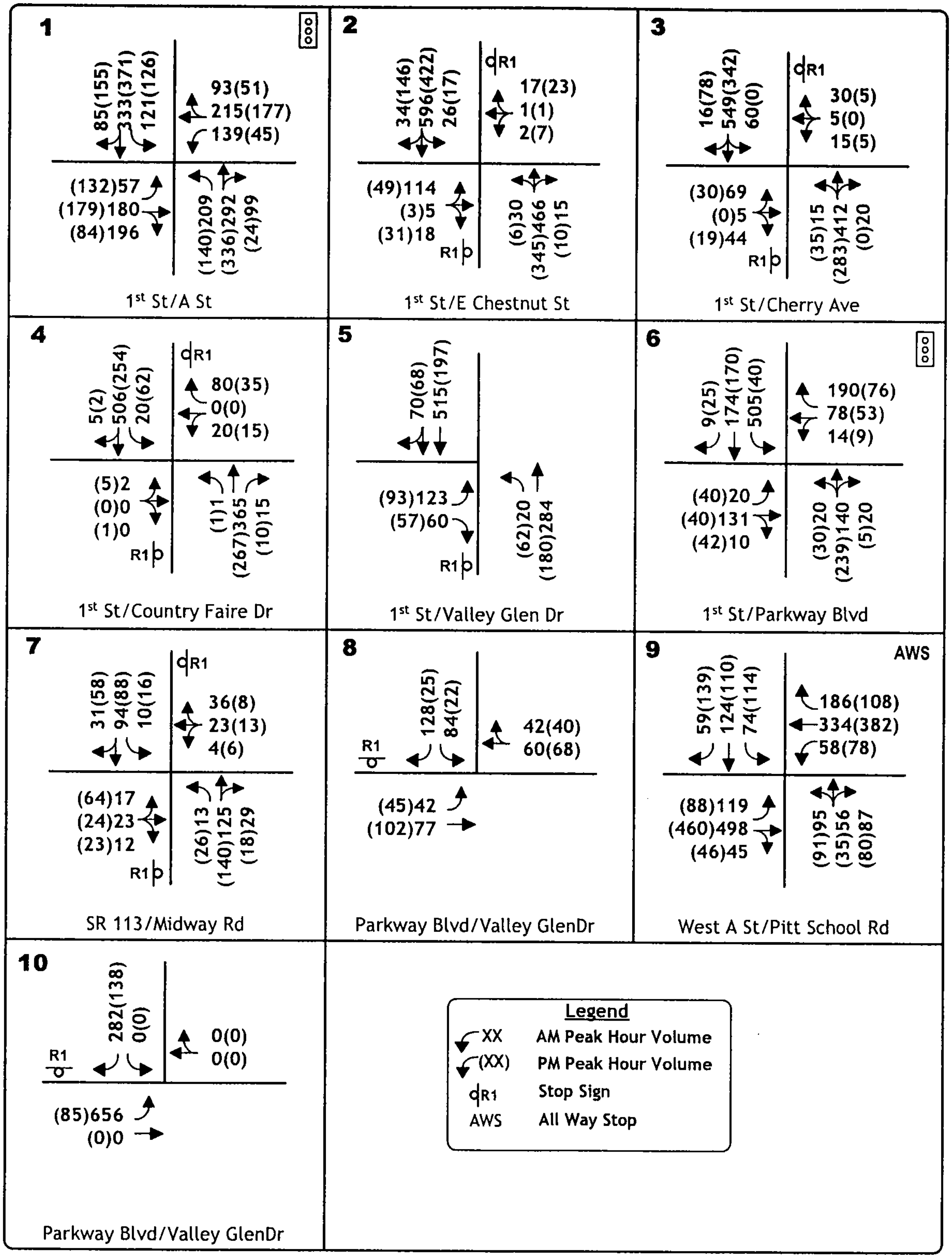
Considering Warrant #3, the peak hour warrant, two intersections meet this warrant for signalization. Both intersections meet the warrant in the a.m. peak hour with the West A Street / Pitt School Road intersection also meeting the warrant in the p.m. peak hour.

TABLE 3
PEAK HOUR INTERSECTION LEVELS OF SERVICE - BASE CONDITION (2007)

Location	Control	AM Peak Hour		PM Peak Hour		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	
1. 1st Street / A Street	Signal	**D**	**45.8**	**D**	**37.2**	N/A
2. 1st Street / Chestnut Street						
Overall Avg	EB/WB Stop	**F**	**124.4**	**C**	**19.7**	Yes
NB Lt			9.2		8.8	
SB Lt			8.6		8.1	
EB			187.5		24.8	
WB			15.6		14.4	
3. 1st Street / Cherry Street						
Overall Avg	EB/WB Stop	**F**	**63.6**	**B**	**13.3**	No
NB Lt			8.8		8.4	
SB Lt			8.5		---	
EB			69.0		16.6	
WB			24.5		14.2	
4. 1st Street / Country Faire Drive						
Overall Avg	EB / WB Stop	**B**	**13.1**	**B**	**10.1**	No
NB Lt			8.6		7.8	
SB Lt			8.2		8.0	
EB			26.4		15.9	
WB			13.9		12.0	
5. 1st Street / Valley Glen Drive						
Overall Avg	EB Stop	**C**	**22.1**	**B**	**11.5**	No
NB Lt			8.9		8.0	
EB			23.5		13.0	
6. 1st Street / Parkway Blvd	Signal	**C**	**32.5**	**C**	**25.1**	N/A
7. 1st Street / Midway Road						
Overall Avg	EB/WB Stop	**B**	**10.4**	**B**	**11.4**	No
NB Lt			7.5		7.6	
SB Lt			7.6		7.6	
EB			11.4		12.8	
WB			10.5		11.5	
8. Parkway Blvd / Valley Glen Dr						
Overall Avg	SB Stop	**A**	**9.5**	**A**	**8.6**	No
SB			9.9		9.7	
EB Lt			7.5		7.5	
9. West A Street / Pitt School Road						
Overall Avg	AWS	**F**	**70.0**	**F**	**69.8**	Yes
NB Lt			15.4		15.1	
SB Lt			15.9		16.7	
EB			142.2		132.0	
WB			33.8		58.4	
10. Parkway Blvd / School Collector						
Overall Avg	SB Stop	**C**	**19.8**	**A**	**9.7**	No
SB			11.1		9.8	
EB Lt			23.6		9.5	

N/A – not applicable

AWS – all way stop



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YEAR 2007 TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

4170-08 3/21/2005

figure 4

BASE CONDITION PLUS PROJECT IMPACTS

Trip Generation. The impacts of new development are identified by estimating the number of vehicle "trip ends" that are likely to be generated by the use, determining the directional distribution of these trips and assigning project trips to the study area street system. Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends.

Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends. The trip generation of the project was computed using trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, 7th Edition, 2003) based on the projected use. The site is identified as a 401 unit subdivision with a 120 unit senior care facility with an estimated population of 150 persons. Table 4 displays the daily, a.m. peak hour, and p.m. peak hour trip generation for the proposed project. The proposed project is expected to generate 4,237 daily trips, 322 a.m. peak hour trips and 438 p.m. peak hour trips.

TABLE 4
PROJECT TRIP GENERATION

		Trip Rate			Trips		
Land Use	**Amount**	**Daily**	**AM Peak Hour**	**PM Peak Hour**	**Daily**	**AM Peak Hour**	**PM Peak Hour**
Single Family	401 units	9.57	0.75	1.01	3,838	301	405
Senior Assisted Living	150 beds	2.66	0.14	0.22	399	21	33
Net New Trips					**4,237**	**322**	**438**

Trip Distribution. The distribution of project traffic was determined based on the location of the project relative to current and projected traffic patterns once the Parkway Blvd extension is completed. Table 5 presents the distribution pattern used for the residential subdivision and the senior assisted living facility for the near term (2007) and long range (Future) conditions.

TABLE 5
TRIP DISTRIBUTION

Direction	Percentage of Total Trips	
	Residential	Senior Assisted Living
North via S. 1st Street	30%	40%
West via Parkway Blvd		
West on West A Street	11%	7%
North on Pitt School Road	13%	18%
East on West A Street	2%	0%
South via 1st Street	10%	5%
West via West A Street (via S. 1st St)	3%	18%
East via East A Street	20%	10%
West via Midway Road	7%	2%
West to Valley Glen Subdivision	4%	0%
Total	**100%**	**100%**

Trips generated by the proposed project were assigned to the local street system and superimposed onto the existing traffic volumes. These volumes were used to calculate Levels of Service during the a.m. and p.m. peak hours.

Trip Assignment

The impacts of developing the project have been identified by superimposing project traffic onto the background conditions. Traffic generated by the project is shown in Figure 5. This traffic was then added to the 2007 Base Condition peak hour volumes. Figure 6 displays the 2007 Base Condition plus Project generated traffic anticipated for the study intersection in both a.m. and p.m. peak hours. A traffic operations analysis was then conducted to provide a basis for evaluating the impacts of the project.

Intersection Levels of Service

Table 6 displays the a.m. and afternoon peak hour Levels of Service at each study intersections with and without the project.

The 1st Street / A Street intersection will continue to operate at LOS D, which is within the City's LOS standard for this intersection. Four intersections will operate at unacceptable levels of service. They include the S. 1st Street / Chestnut Street, S. 1st Street / Cherry Street and West A Street / Pitt School Road intersections. These intersections all operated at unacceptable levels of service without the project. The fourth intersection, S. 1st Street at Valley Glen Drive will

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degrade to a LOS F condition in the a.m. peak hour with the project. As noted previously, the traffic from the high school is a major factor in each of the S. 1st Street signals meeting the peak hour warrant.

Traffic Signal Warrants

Considering Warrant #3, the peak hour warrant, three intersections meet this warrant for signalization. All intersections meet the warrant in the a.m. peak hour. The S. 1st Street / Chestnut Street intersection and the S. 1st Street / Cherry Street intersection meet the warrant primarily due to the high school traffic. The Pitt School Road / West A Street intersection also meets the warrant in the p.m. peak hour.

The two intersections along S. 1st Street are spaced about 400' apart. City policy is to install traffic signals along corridors over a maximum spacing between major intersections. In considering traffic flow along S. 1st Street the installation of signals at both intersections could hinder traffic operations. The installation of a traffic signal at one of the intersections would likely reroute traffic from the unsignalized intersection to the signalized intersection primarily for left turning traffic. A field review indicated that Chestnut Street provides a wider street cross section leading to S. 1st Street. Jefferson Street, connecting the two streets, also appears to be adequate to accommodate a change in traffic. Given the existing and projected traffic volumes along both streets, the condition and width of the roadways and the accessibility to each street the Chestnut Street intersection should be considered for signalization. The Cherry Street intersection should continue to allow full access movements as outside of the a.m. peak hour full access should be available without significant side street delays.

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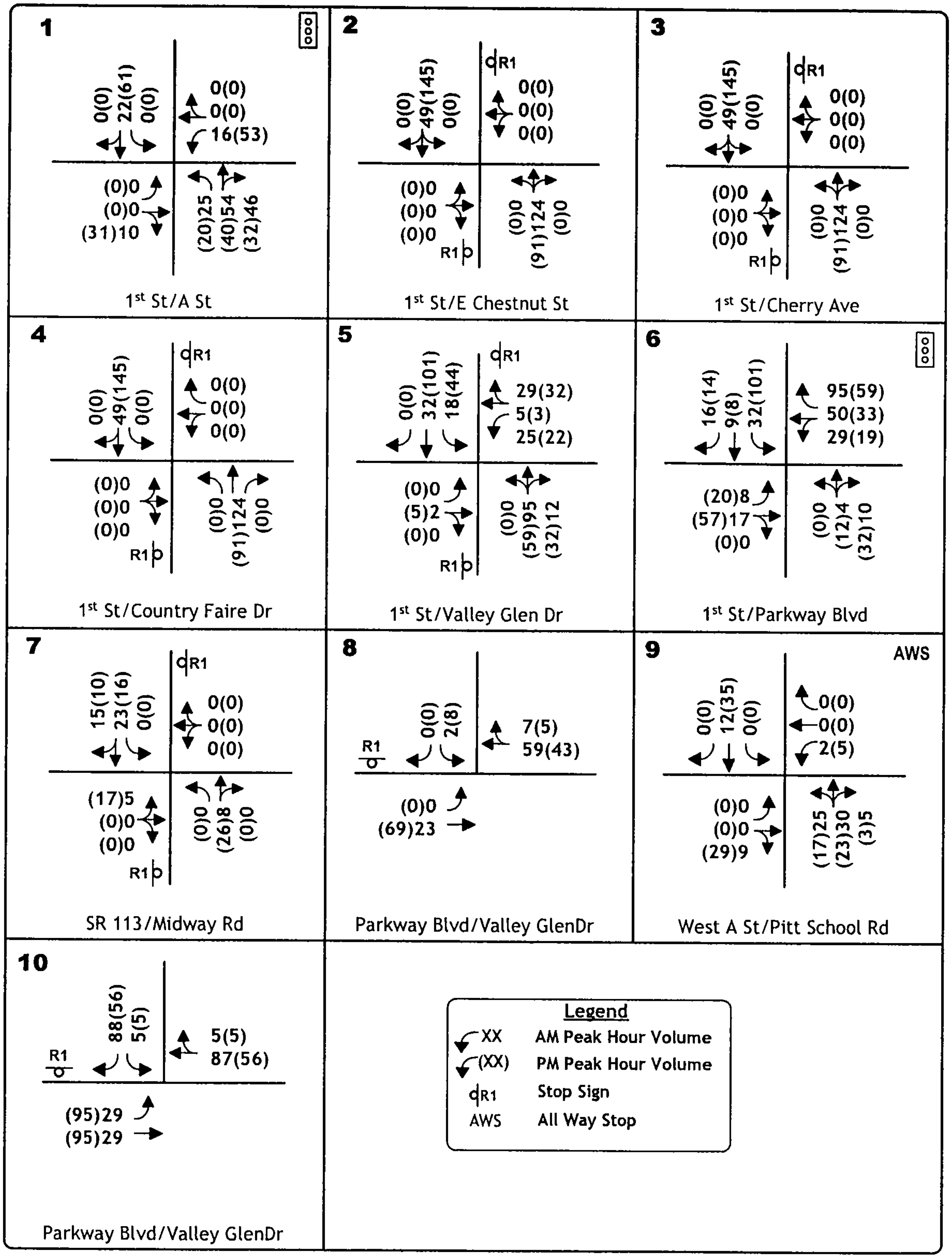

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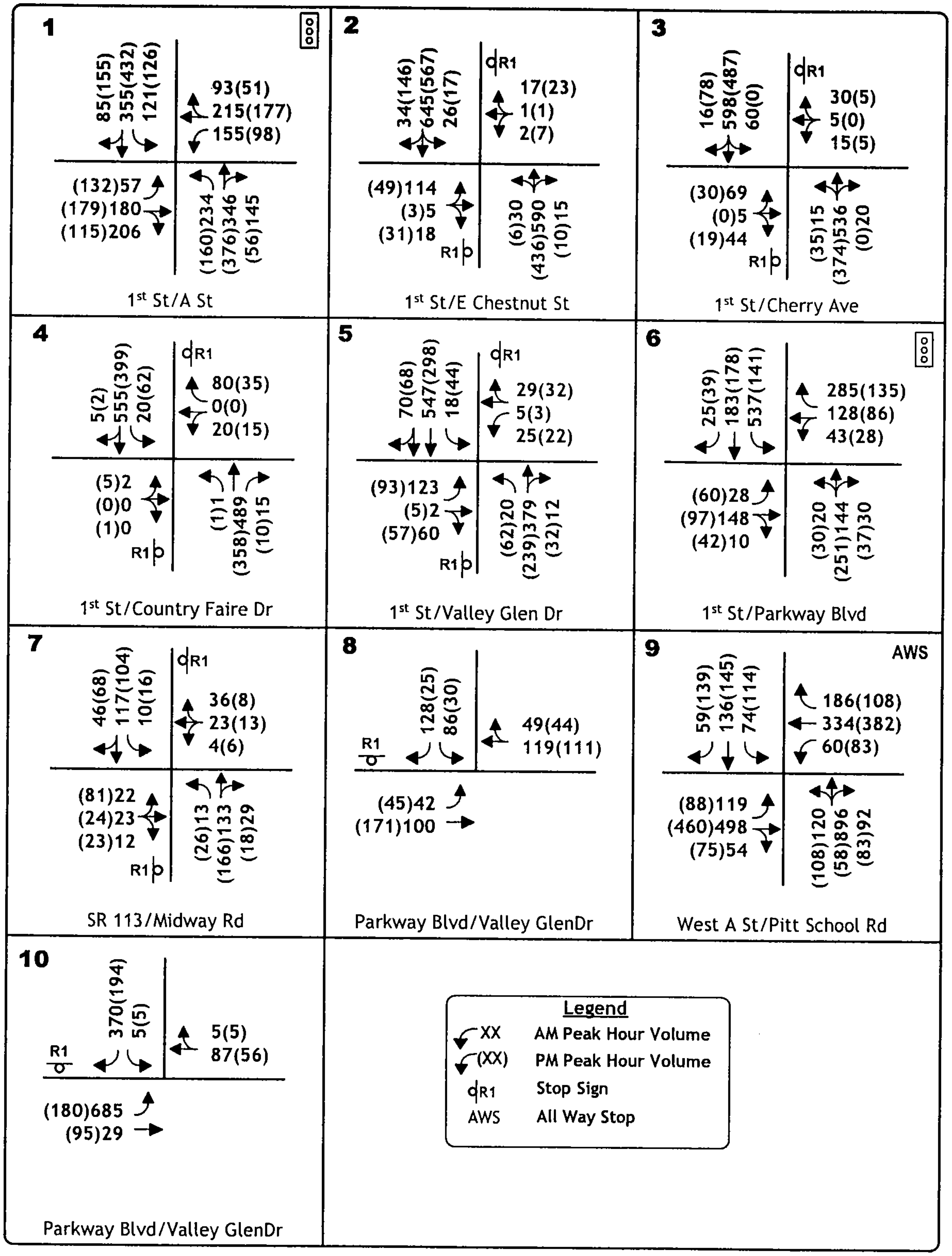
PROJECT TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

4170-08 3/21/2005

figure 5



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2007 PLUS PROJECT TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

figure 6

TABLE 6
PEAK HOUR INTERSECTION LEVELS OF SERVICE
BASE (2007) PLUS PROJECT

Location	Control	A.M. Base Conditions		A.M. Base plus Project Conditions		P.M. Base Conditions		P.M. Base plus Project Conditions		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
1. 1st Street / A Street	Signal	**D**	**45.8**	**D**	**53.9**	**D**	**37.2**	**D**	**44.4**	N/A
2. 1st Street / Chestnut Street										
Overall Avg	EB/WB Stop	**F**	**124.4**	**F**	**244.1**	**C**	**19.7**	**D**	**30.9**	Yes
NB Lt			9.2		9.4		8.8		9.4	
SB Lt			8.6		9.0		8.1		8.4	
EB			187.5		373.0		24.8		41.9	
WB			15.6		18.7		14.4		18.1	
3. 1st Street / Cherry Street										
Overall Avg	EB/WB Stop	**F**	**63.6**	**F**	**80.5**	**B**	**13.3**	**C**	**17.4**	Yes
NB Lt			8.8		9.0		8.4		8.9	
SB Lt			8.5		9.0		---		---	
EB			69.0		145.8		16.6		23.3	
WB			24.5		33.8		14.2		18.3	
4. 1st Street / Country Faire Drive										
Overall Avg	EB / WB Stop	**B**	**13.1**	**C**	**15.5**	**B**	**10.1**	**B**	**11.5**	No
NB Lt			8.6		8.8		7.8		8.2	
SB Lt			8.2		8.6		8.0		8.3	
EB			26.4		35.1		15.9		21.6	
WB			13.9		16.6		12.0		14.4	
5. 1st Street / Valley Glen Drive										
Overall Avg	EB / WB Stop	**C**	**22.1**	**F**	**53.6**	**B**	**11.5**	**C**	**17.1**	No
NB Lt			8.9		9.1		8.0		8.3	
SB Lt			---		8.3		---		8.0	
EB			23.5		74.7		13.0		24.5	
WB			---		16.5		---		13.6	

* Meets Peak Hour Signal Warrant

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TABLE 6 (cont'd)
PEAK HOUR INTERSECTION LEVELS OF SERVICE
BASE (2007) PLUS PROJECT

Location	Control	A.M. Base Conditions		A.M. Base plus Project Conditions		P.M. Base Conditions		P.M. Base plus Project Conditions		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
6. 1st Street / Parkway Blvd	Signal	C	**32.5**	D	**38.9**	C	**25.1**	C	**30.2**	N/A
7. 1st Street / Midway Road										
Overall Avg	EB/WB Stop	B	**10.4**	B	**10.8**	B	**11.4**	B	**12.5**	No
NB Lt			7.5		7.6		7.6		7.7	
SB Lt			7.6		7.6		7.6		7.7	
EB			11.4		12.0		12.8		14.2	
WB			10.5		10.8		11.5		12.0	
8. Parkway Blvd / Valley Glen Dr										
Overall Avg	SB Stop	A	**9.5**	B	**10.1**	A	**8.6**	A	**9.3**	No
SB			9.9		10.6		9.7		10.6	
EB Lt			7.5		7.7		7.5		7.6	
9. West A Street / Pitt School Rd										
Overall Avg	AWS	F	**70.0**	F	**80.6**	F	**69.8**	F	**86.2**	Yes
NB Lt			15.4		17.6		15.1		16.7	
SB Lt			15.9		17.0		16.7		18.1	
EB			142.2		170.4		132.0		175.0	
WB			33.8		38.5		58.4		67.6	
10. Parkway Blvd / School Collector										
Overall Avg	SB Stop	C	**19.8**	B	**10.4**	A	**9.7**	A	**8.7**	No
SB			11.1		11.5		9.8		9.6	
EB Lt			23.6		9.8		9.5		7.7	

N/A – not applicable

AWS – all way stop

KDA

Bicycle and Pedestrian Impacts

Implementation of the Proposed Project may increase the number of pedestrians and cyclists on south Dixon streets. The City of Dixon encourages walking and bicycling within the community, especially in and near the downtown area. Given the topography of the area and the size of the City, it would be reasonable to expect some students to consider walking and/or bicycling as alternative transportation modes. High school students living in the project site could be expected to walk or ride bicycles to the school.

Facilities for cyclists and pedestrians are currently lacking in the vicinity of the project. South 1st Street does not currently have continuous bicycle lane facilities or sidewalk south of the Country Faire subdivision. Sidewalks are available along Country Faire Drive, and along the west side of S. 1st Street along the Valley Glen frontage.

While pedestrian and bicycle facilities are lacking along South 1st Street, especially in the project vicinity, bicycle and pedestrian access will be available through the high school and Hall Park to the north. This connection will provide an alternative bicycle and pedestrian access. Bicycle and pedestrian access to the west, along either Parkway Blvd or Valley Glen Drive should be developed so that students walking or riding to the high school from the west have dedicated bicycle and pedestrian facilities. Development of Parkway Blvd east of S. 1st Street, and the major interior roadways leading directly to the high school, should include both sidewalks for pedestrians and bike lanes and/or bike paths for bicycle riders.

FUTURE IMPACTS

The analysis of future traffic impacts is intended to consider the impact of this project within the context of future conditions in the City of Dixon.

Future Traffic Volume Projections

Year 2025 traffic volumes were developed using the City's 2025 travel demand forecasting model. The model includes development of the proposed school site and the proposed Brookfield – Bertolero property. For this analysis, future traffic volume forecasts were developed using growth rate data derived from the City's traffic model. These growth rates were then applied to the existing turning movements to develop the future volumes.

Assumptions regarding the future roadway network in the area of the school were based on information in the traffic model. The future roadway network maintains much of the existing roadway system intact. This includes the two-lane roadway along South First Street between A Street and Cherry Street. The right-of-way from A Street to Cherry Street is generally 60'. This provides for 5 feet of curb, gutter and sidewalk and 5 feet of a landscape strip on each side of the street, two 12' lanes and two 8' parking lanes. South of Cherry Street 1st Street will include left, through and right turn lanes at the major intersections, curb, gutter and sidewalk and bike lanes. The major intersections include Country Faire Drive, Valley Glen Drive and Parkway Blvd.

Parkway Blvd is identified as a four-lane roadway in the future between South 1st Street and Pitt School Road. The easterly extension of Parkway Blvd to the project site will be a two-lane roadway with additional turn lanes at the S. 1st St intersection.

Figure 7 presents the projected future traffic volumes at the study intersections along South First Street and on Parkway Blvd.

The impacts of developing the Brookfield project have been identified by superimposing project traffic onto background Year 2025 conditions. Figure 8 presents the projected future plus project traffic volumes.

Future Traffic Conditions Year 2025

Intersection Levels of Service. Table 7 displays the a.m. and p.m. peak hour Levels of Service at each study intersection under the Future condition. As shown, future traffic throughout the area will cause a significant deterioration in traffic operations at eight of the study intersections. This will be due primarily to the increase in traffic related to the high school. The eight intersections will operate at LOS D or worse in both a.m. and p.m. peak hours. One intersection, the S. 1st Street / Parkway Blvd intersection will operate at LOS D while the remaining seven will operate at LOS E or F. The two intersections that will operate above the City LOS threshold include Parkway Blvd at Valley Glen Drive and Parkway Blvd at the School Collector.

Future plus Project Traffic Conditions Year 2025

Intersection Levels of Service. Table 7 also displays the a.m. and p.m. peak hour Levels of Service at each study intersection assuming development of the Brookfield project. Similar to without the project eight intersections will continue to operate below the City's LOS C threshold. The project traffic will incrementally increase the delays to each of the intersections. Only two intersections, Parkway Blvd at Valley Glen Drive and Parkway Blvd at the School Collector will continue to operate at LOS C or better.

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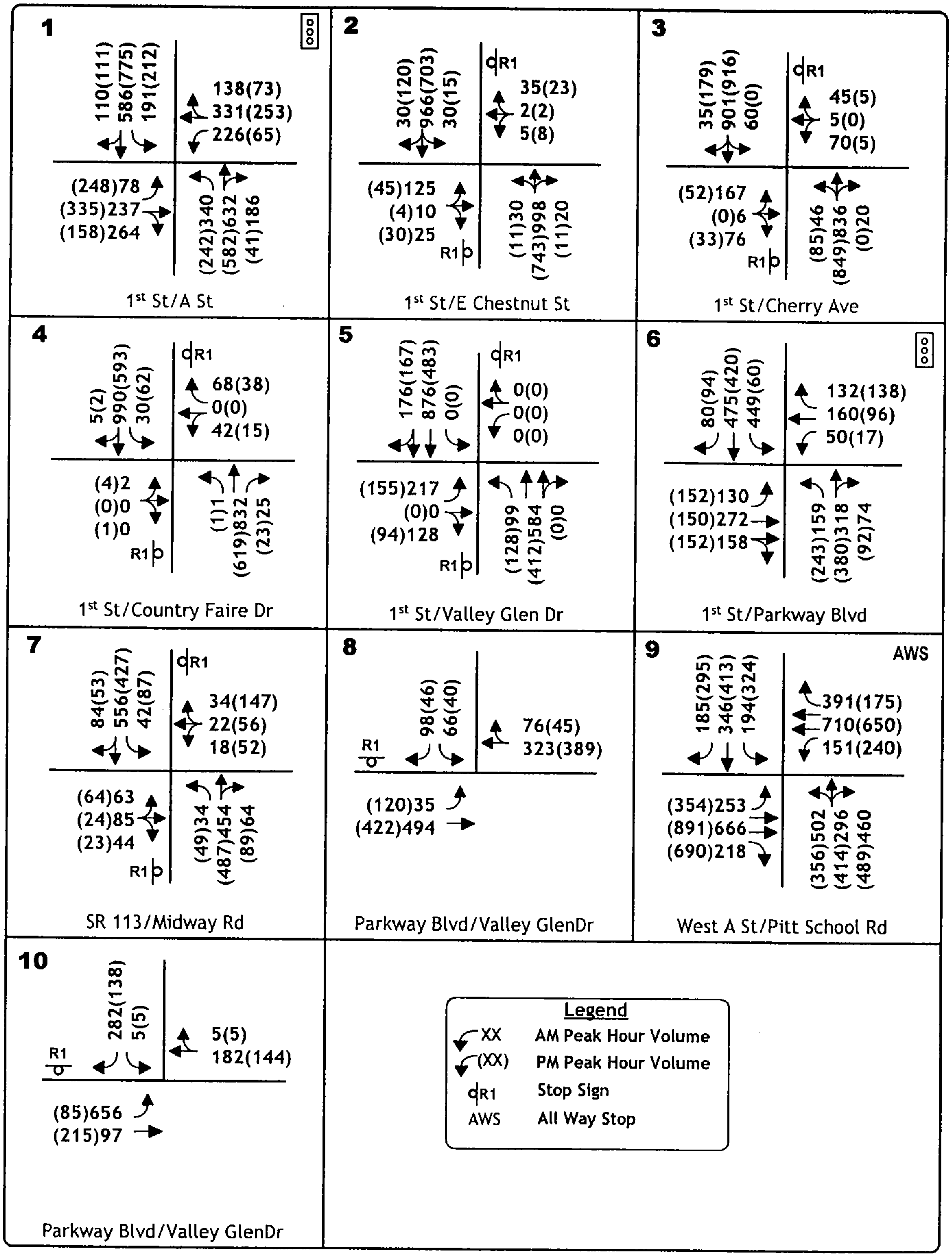

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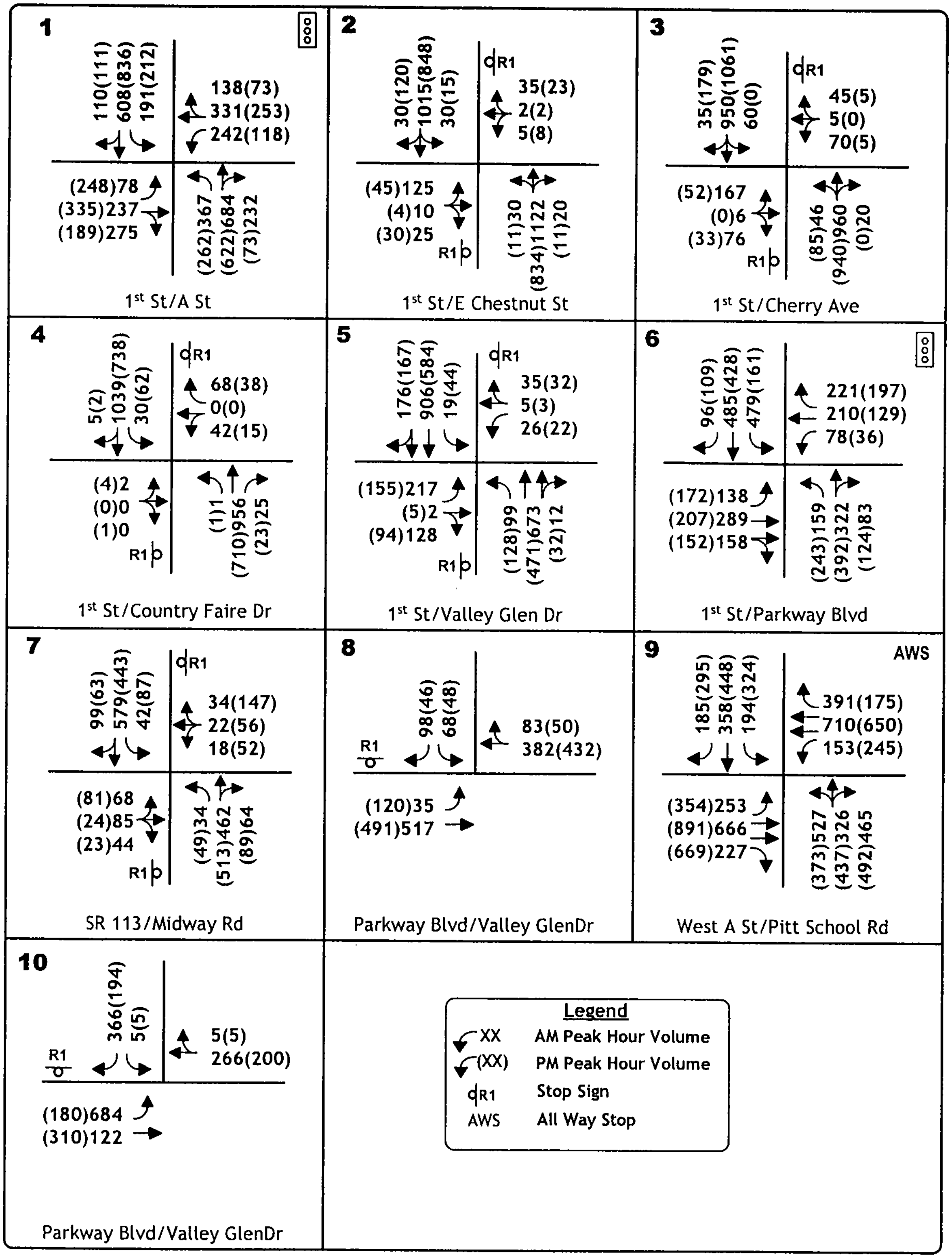
FUTURE TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

4170-08 3/21/2005

figure 7



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Transportation Engineers

FUTURE PLUS PROJECT TRAFFIC VOLUMES
AND LANE CONFIGURATIONS

4170-08 3/21/2005

figure 8

TABLE 7
PEAK HOUR INTERSECTION LEVELS OF SERVICE
FUTURE PLUS PROJECT

Location	Control	A.M. Future Conditions		A.M. Future plus Project Conditions		P.M. Future Conditions		P.M. Future plus Project Conditions		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
1. 1st Street / A Street	Signal	F	**132.0**	F	**157.2**	F	**238.2**	F	**272.5**	N/A
2. 1st Street / Chestnut Street										
Overall Avg	EB/WB Stop	F	>999	F	>999	F	**865.9**	F	>999	Yes
NB Lt			11.0		11.3		11.5		12.5	
SB Lt			11.2		12.0		11.0		11.5	
EB			>999		>999		>999		>999	
WB			102.1		206.6		188.4		453.9	
3. 1st Street / Cherry Street										
Overall Avg	EB/WB Stop	F	>999	F	>999	F	**421.4**	F	**763.2**	Yes
NB Lt			10.8		11.1		12.5		13.9	
SB Lt			10.5		11.3		---		---	
EB			>999		>999		865.1		>999	
WB			>999		>999		124.8		234.8	
4. 1st Street / Country Faire Dr										
Overall Avg	EB / WB Stop	F	**130.9**	F	**211.8**	E	**36.2**	F	**60.8**	No
NB Lt			10.7		11.0		9.7		10.4	
SB Lt			10.2		10.9		10.7		11.3	
EB			154.0		232.3		117.3		203.8	
WB			164.5		268.0		59.4		107.2	
5. 1st Street / Valley Glen Drive										
Overall Avg	EB / WB Stop	F	**482.7**	F	>999	F	**344.8**	F	**943.2**	Yes
NB Lt			8.9		12.7		11.9		12.9	
SB Lt			---		9.4		---		9.3	
EB			23.5		>999		515.2		>999	
WB			---		85.5		---		105.9	

* Meets Peak Hour Signal Warrant

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TABLE 7 (Cont'd)
PEAK HOUR INTERSECTION LEVELS OF SERVICE
FUTURE PLUS PROJECT

Location	Control	A.M. Future Conditions		A.M. Future plus Project Conditions		P.M. Future Conditions		P.M. Future plus Project Conditions		Meets Peak Hour Traffic Signal Warrants?
		LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
6. 1st Street / Parkway Blvd	Signal	**D**	**38.0**	**D**	**39.5**	**D**	**42.6**	**D**	**51.0**	N/A
7. 1st Street / Midway Road										
Overall Avg	EB/WB Stop	**F**	**247.6**	**F**	**310.7**	**F**	>999	**F**	>999	Yes
NB Lt			9.2		9.4		9.4		9.5	
SB Lt			8.8		8.8		10.5		10.6	
EB			390.1		478.4		>999		>999	
WB			123.0		174.1		>999		>999	
8. Parkway Blvd / Valley Glen Dr										
Overall Avg	SB Stop	**B**	**12.7**	**B**	**13.7**	**C**	17.7	**C**	23.0	Yes
SB			13.6		14.8		28.8		40.1	
EB Lt			8.4		8.6		9.7		10.0	
9. West A Street / Pitt School Rd	Signal	**E**	**55.5**	**E**	**57.8**	**F**	**93.9**	**F**	**104.9**	N/A
10. Parkway Blvd / School Collector										
Overall Avg	SB Stop	**B**	**11.9**	**C**	**16.0**	**A**	**9.2**	**A**	**9.9**	Yes
SB			15.1		23.7		10.1		11.5	
EB Lt			10.5		11.9		7.7		8.1	

N/A – not applicable

AWS – all way stop

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Site Layout

The proposed project is located south of the proposed high school, east of S. 1st Street and north of Parkway Blvd. Primary access into the site will be via Parkway Blvd with two north-south collector roadways identified in the concept plan. The westerly north-south collector will provide the main access into the high school. The easterly north-south collector will provide access around the project site. Major access intersections into the villages are identified along the School Collector, Parkway Blvd and the East Collector. Additional access is provided along S. 1st Street into Villages 1 and 7.

Parkway Blvd

The primary access to the project will be via Parkway Blvd. In the a.m. peak hour, a heavy inbound traffic flow will be generated by the high school north of the project site. The primary access to the school is via the west School Collector roadway.

A queuing analysis was completed for this intersection to determine the number of vehicles that could be queued at this intersection. Standard queuing theory was used to calculate the number of vehicles that would be queued. A 95% confidence level was assumed, meaning that the forecast queue length should be exceeded only 5% of the time. Table 8 provides the projected queues for both Existing and Future conditions with the project. The queuing analysis shows that in the future up to six vehicles may be queued in the southbound direction and up to 4 vehicles may be queued in the eastbound left turn lane. This is based on a peak hour assessment where traffic in this intersection occurs over a one-hour period.

Because the traffic associated with schools can often be concentrated into short time periods immediately before and after the school day, poor traffic conditions and congestion can occur for short periods of time at locations near schools. For this reason, this analysis also investigated conditions occurring at this intersection during the peak 15 minutes before. For analysis purposes, it is simple to express this traffic flow in terms of an *Equivalent Vehicles Per Hour.* Based on the Dixon High School EIR traffic into and out of the high school campus in the peak 15 minute period is projected to flow at rates of about 1,680 inbound / 672 outbound vehicles per hour during the morning. The queuing analysis in the peak 15 minutes shows that short term congestion will occur at the intersection.

Development of the school and the resulting traffic on Parkway Blvd and the School Collector Road will result in peak traffic in the a.m. peak hour. Short-term congestion and delays can be expected to inconvenience motorists along both roadways. The queuing analysis during this peak indicates that the intersection will experience overcapacity conditions in the eastbound left lane in the 2007 plus Project scenario. In the Future plus Project condition, the southbound approach and the eastbound left turn lane will express overcapacity conditions. The queuing analysis assumes that the City street system has the capacity to deliver students and parents to the school in the manner that typically occurs under "unconstrained" conditions. It is likely that some motorists may seek alternate routes to leave the Brookfield subdivision. The alternate routes would likely include using the proposed access at Valley Glen Drive and using the east North-

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South Collector to Parkway Blvd instead of the School Collector; using the east collector would then give outbound motorists the right-of-way as they passed through the School Collector intersection. As noted in the discussion of "standards", conditions in excess of LOS E would be noticeable to the public, but because of their short duration are considered to be less-than-significant based on adopted City of Dixon standards.

TABLE 8
PROJECTED QUEUES FOR PARKWAY BLVD / SCHOOL COLLECTOR INTERSECTION

	Base (2007) + Project	**Future + Project**
	AM	**AM**
Parkway Blvd / School Collector		
Peak Hour		
SB	3	6
EB Left	3	4
Parkway Blvd / School Collector		
Peak 15 Minutes		
SB	13	overcapacity
EB Left	overcapacity	overcapacity

School Collector

The westerly collector access into the Brookfield development is the School Collector roadway. This also provides access to the new high school. As noted above, during the a.m. peak hour short-term overcapacity conditions are likely leading to the school. The concept plan shows a single intersection at the Village 3 / Village 4 boundary. The concept plan shows a four-way intersection with access to Village 1 at this intersection. In addition, the north collector, extending from the School Collector to the East Collector is identified along the north side of the site, separating the school and the development.

During the a.m. peak hour access from both side streets to the School Collector will not be likely due to the heavy traffic volume along the School Collector. At each of the intersections adequate left turn storage should be provided along the School Collector to keep turning traffic from impeding through traffic. It is expected that the School Collector, as well as the other collector roads (North Collector and East Collector) will likely experience high-speed traffic. Implementation of methods to slow traffic along these roadways should be instituted.

Traffic Impacts / Mitigation Measures

Improvements Needed Under Existing Conditions

All intersections currently operate above the City level of service threshold. No recommendations are needed to reach acceptable levels of service:

Improvements Needed Under Base (2007) Conditions

The Pitt School Road / West A Street intersection will operate at LOS F after completion of the Parkway Blvd extension. After completion of the Parkway Blvd extension the Pitt School Rd / West A Street intersection will decline to LOS F in both a.m. (70.0 seconds) and p.m. (69.8 seconds) peak periods.

Recommendation: Signalize Pitt School Road / West A Street Intersection. Signalization of this intersection will result in a LOS C conditions in both a.m. (25.4seconds) and p.m. (26.6 seconds) peak hours.

The S. 1st Street / Chestnut Street intersection will operate at LOS F with the opening of the new Dixon High School. The S. 1st Street / Chestnut Street intersection will decline to LOS F (124.4 seconds) and meet Warrant #3, the peak hour warrant in the a.m. peak hour.

Recommendation: Signalize S. 1st Street / Chestnut Street Intersection. Signalization of this intersection will result in a LOS B condition (15.3 seconds) in the a.m. peak hour. This intersection was chosen to be signalized over Cherry Street as the intersection meets the peak hour warrant in the Base (2007) condition while Cherry Street operates at LOS F condition in the a.m. peak hour but does not meet the peak hour warrant. Chestnut Street was also selected based on the existing roadway width and the ability for the roadway to accommodate an increase in traffic. In addition, East Chestnut Street provides direct access to Hall Park. Under this scenario and assuming left turning eastbound Cherry Street traffic moves to the signal at Chestnut Street, the Cherry Street intersection is projected to improve to LOS B (12.5 seconds) in the a.m. peak hour.

Improvements Needed Under Base (2007) plus Project Conditions

Impact 1 Implementation of project will add traffic to the Pitt School Road / West A Street intersection. This intersection will operate within City level of service thresholds once signalized, as identified in the Base Condition.

Mitigation: Pay Fair Share of Signalization. Signalization of this intersection under the Base plus Project condition will improve the level of service to LOS C in both a.m. (26.9 seconds) and p.m. (28.0 seconds) peak periods. The project should pay its fair share of the project. Caltrans methodology was used in determining fair share costs. This is the project traffic divided by the difference between the future traffic and the base (2007) condition. The project fair share for this intersection is 3.1%.

Impact 2 Implementation of project will add traffic to the S. 1st Street / Chestnut Street intersection. This intersection will operate within City level of service thresholds once signalized, as identified in the Base Condition.

Mitigation: Pay Fair Share of Signalization. Signalization of this intersection under the Base plus Project condition will improve the level of service to LOS B in the a.m. (15.7 seconds)

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peak period. The project should pay its fair share of the project. The project fair share for this intersection is 20.9%. The S. 1st Street / Cherry Street intersection will operate at LOS B (14.0 seconds) in this scenario.

Impact 3 Implementation of project will add traffic to the S. 1st Street / Valley Glen Drive intersection. This intersection will operate at LOS F (53.6 seconds) with the project constructed.

Mitigation: Pay Fair Share of Signalization. The project will meet Warrant #3, the peak hour warrant in the future (no project) condition. Therefore, the project should pay its fair share amount to signalize the intersection. This intersection should be signalized during development of the project. The City and the project applicant should arrange a method to be reimbursed as future development outside of this project occurs. Signalization of this intersection under the Base (2007) plus Project condition will improve the level of service to LOS B in the a.m. (16.1 seconds) peak period. The project should pay its fair share of the project. The project fair share for this intersection is 22.7%.

Impact 4 Development of the project could result in safety conflicts for pedestrians, cyclists and motorists. The School Collector roadway providing access to the high school, as well as the other main roadways proposed for the development, may allow high speeds along each of the roadways due to the geometry (i.e. straight roads). It is expected that students living in the Brookfield area and those living in the Valley Glen area will generate significant pedestrian and bicycle activity along these collector roads. In addition, motorists entering these collector roads from the side streets may have to contend with high speed through traffic. This impact is considered a potentially significant but mitigable impact.

Mitigation: Implement traffic calming measures to reduce traffic speeds along the collector roadways. The project should implement traffic calming measures along the collector roadways to minimize speeding along the surface streets. Such measures could include roadway narrowings, the use of traffic circles and/or roundabouts at intersections to reduce speeds or the use of other effective traffic calming measures approved by the City. A traffic calming report should be prepared during the design phase of the project to develop a traffic calming plan for the project site.

Mitigation: Construct pedestrian and bicycle facilities to reduce safety conflicts. Sidewalk, bike lanes and/or bike paths should be constructed throughout the site to provide access for pedestrians and bicyclists. These facilities should be constructed along all major roadways (i.e. S. 1st Street, Parkway Blvd and the three collector roadways) consistent with City standards and long range plans.

Impact 5 Development of the project will add traffic to Parkway Blvd / School Collector intersection. The Base (2007) condition will include two legs leading to the high school. Development of the project will add traffic to this tee intersection from three directions. This will create queues for southbound traffic and eastbound left turning traffic.

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Mitigation: Construct turn pockets to provide vehicle storage. An eastbound left turn lane should be constructed to provide a location for turning vehicles to queue while waiting to turn onto the northbound School Collector roadway. Based on the queue analysis the eastbound queue is projected to be four vehicles, or 100'; however, the peaking element should be considered to maximize the number of vehicles outside the through travel way. A left turn lane 300' long should be provided.

The School Collector roadway should also have turn lane provided to separate left and right turning traffic. Most traffic is expected to turn right onto westbound Parkway Blvd, therefore, a short left turn pocket of about 100' should be provided. This will reduce the right turn queue to four vehicles while creating a left turn queue of one vehicle.

Impact 6 Implementation of project will add traffic to the S. 1st Street / Parkway Blvd intersection. This intersection will operate at LOS D (38.9 seconds) with the project constructed.

Mitigation: Add signal phase overlap for the westbound right turn lane. Addition of a signal phase overlap will improve the level of service at the intersection to LOS C (27.6 seconds).

Improvements Needed Under Future Conditions

The levels of service and resulting recommendations below assume that mitigations required in the Base (2007) plus Project scenario are not completed.

Future growth in the City will cause the 1st Street / A Street intersection to operate at LOS F. Future growth throughout the City will reduce the level of service at the intersection to LOS F in both a.m. (132.0 seconds) and p.m. (238.2 seconds).

Recommendations: No improvements are identified at this intersection.

Future growth in the City will cause the 1st Street / Chestnut Street intersection to operate at LOS F. Future growth throughout the City will reduce the level of service at the intersection to LOS F in both a.m. and p.m. peak hours assuming the intersection remains unsignalized (>999 seconds).

Recommendations: Installation of a traffic signal will improve the level of service at the intersection to LOS B in both a.m. (15.7 seconds) and p.m. (18.6 seconds) peak hours. This signal is identified in the Mitigations section of the Base (2007) plus Project.

Future growth in the City will cause the 1st Street / Cherry Street intersection to operate at LOS F. Future growth throughout the City will reduce the level of service at the intersection to LOS F in both a.m. and p.m. peak hours (>999 seconds).

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Recommendations: Installation of right-only access at the intersection will improve the level of service to LOS D (25.9 seconds) in the a.m. peak hour and LOS C (20.5 seconds) in the p.m. peak hour. To improve the level of service at this intersection to LOS C or better in the a.m. peak period the westbound movement from the Dixon May Fair would have to be eliminated. This would result in a level of service C (23.0 seconds) condition, provided a new access to the May Fair could be provided.

Future growth in the City will cause the 1st Street / Country Faire Drive intersection to operate below City thresholds. Future growth throughout the City will reduce the level of service at the intersection to LOS F in the a.m. peak hour (130.0 seconds) and LOS E (36.2 seconds) in the p.m. peak hour.

Recommendations: Installation of a traffic signal will improve the level of service at the intersection to LOS A in the a.m. peak hour (8.9 seconds) and LOS A (8.7 seconds) in the p.m. peak hour.

Future growth in the City will cause the 1st Street / Valley Glen Drive intersection to operate at LOS F. Future growth throughout the City will reduce the level of service at the intersection to LOS F in the a.m. (482.7 seconds) and p.m. (344.8 seconds) peak hours assuming the intersection remains unsignalized.

Recommendations: Installation of a traffic signal will improve the level of service at the intersection to LOS B in both a.m. (17.0 seconds) and p.m. (19.5 seconds) peak hours. This signal is identified in the Mitigations section of the Base (2007) plus Project.

Future growth in the City and south of Dixon will cause the 1st Street / Parkway Blvd intersection to operate at LOS D. Future growth throughout the City and south of the City will reduce the level of service at the intersection to LOS D in the a.m. peak hour (38.0 seconds) and LOS D (39.5 seconds) in the p.m. peak hour.

Recommendations: A northbound right turn lane with overlap phases for the northbound, southbound and westbound approaches will improve the level of service at the intersection to LOS C in the a.m. peak hour (28.2 seconds) and LOS C (30.2 seconds) in the p.m. peak hour.

Future growth south of Dixon will cause the 1st Street / Midway Road intersection to operate at LOS F. Future growth south of the City will reduce the level of service at the intersection to LOS F in the a.m. peak hour (247.6 seconds) and LOS F (>999 seconds) in the p.m. peak hour.

Recommendations: Installation of a traffic signal will improve the level of service at the intersection to LOS B in the a.m. peak hour (17.4 seconds) and LOS C (32.7 seconds) in the p.m. peak hour.

Future growth in the City will cause the West A Street / Pitt School Road intersection to operate at LOS E and F. Future growth in the City will reduce the level of service at the

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intersection to LOS E in the a.m. peak hour (55.5 seconds) and LOS F (93.9 seconds) in the p.m. peak hour.

Recommendations: Installation of a traffic signal was identified in the Base (2007) condition. Additional improvements will be required to raise the levels of service above the threshold limit. The improvements include installation of a second northbound left turn lane, addition of right turn lanes for the northbound and southbound approaches, phase overlaps for the southbound, eastbound and westbound approaches, and a free right turn for northbound traffic. This will improve the level of service at the intersection to LOS C (31.7 seconds) in the a.m. peak hour and LOS C (31.5 seconds) in the p.m. peak hour.

Improvements Needed Under Future plus Project Conditions

Impact 6 The 1st Street / A Street intersection will continue to operate at LOS F. The level of service at this intersection will continue to be LOS F in both a.m. (157.2 seconds) and p.m. (272.5 seconds).

Mitigation: The incremental difference in delay at the 1st Street / A Street intersection resulting from development of the project is more than the City's threshold of significance (i.e., 5 second increase). Therefore, the intersection will operate with a significant and unavoidable impact.

Impact 7 Future growth in the City will cause the 1st Street / Chestnut Street intersection to operate at LOS F. Future growth throughout the City will reduce the level of service at the intersection to LOS F in both a.m. and p.m. peak hours assuming the intersection is unsignalized (>999 seconds).

Mitigation: Installation of a traffic signal (identified in the Base (2007) plus Project scenario will improve the level of service in the Future plus Project to LOS C in both a.m. (20.4 seconds) and p.m. (30.5 seconds) peak hours.

Impact 8 Project traffic will decrease the level of service at the 1st Street / Cherry Street intersection to LOS D (29.9 seconds) in the a.m. peak hour.

Mitigation: The project will add traffic to the intersection causing the intersection to decline to LOS D (31.9 seconds) conditions in the a.m. peak hour. The recommendation in the Future condition is to create right-only access at this intersection. This condition exceeds the City's standard and the incremental difference in delay at the intersection resulting from development of the project is greater than the City's threshold of significance (i.e., 5 second increase). To reduce the level of service at this intersection the westbound movement from the Dixon May Fair would have to be eliminated. This would result in a level of service C (25.0 seconds) condition, provided a new access could be provided; otherwise, the intersection will operate with a significant and unavoidable impact.

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Impact 9 Pay Fair Share of Signalization at the 1st Street / Country Faire Drive intersection.

Mitigation: Installation of a traffic signal will improve the level of service in the Future plus Project to LOS A in both a.m. (9.7 seconds) and p.m. (9.3 seconds) peak hours. The project should pay its fair share to signalize the intersection. The project fair share for this intersection is 20.0%.

Impact 10 Pay Fair Share of Intersection Improvements at the 1st Street / Parkway Blvd intersection.

Mitigation: Installation of the intersection improvements will improve the level of service in the Future plus Project to LOS C in both a.m. (30.1 seconds) and p.m. (33.8 seconds) peak hours. The project should pay its fair share to add a northbound right turn lane and add signal phase overlaps. The project fair share for this intersection is 20.5%.

Impact 11 Pay Fair Share of Signalization at the 1st Street / Midway Road intersection.

Mitigation: Installation of a traffic signal will improve the level of service in the Future plus Project to LOS B (17.6 seconds) in the a.m. peak hour and LOS C (34.8 seconds) in the p.m. peak hour. The project should pay its fair share to signalize the intersection. The project fair share for this intersection is 5.3%.

Impact 12 Pay Fair Share of Intersection Improvements at the West A Street / Pitt School Road intersection.

Mitigation: Installation of the intersection improvements will improve the level of service in the Future plus Project to LOS C in both a.m. (32.1 seconds) and p.m. (33.9 seconds) peak hours. The project should pay its fair share to add a second northbound left turn lane, a northbound free right turn lane, a southbound right turn lane and signal phase overlaps. The project fair share for this intersection is 3.1%.

APPENDIX

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                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #1 1st / A
***************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        0.539
Loss Time (sec):       9 (Y+R =  4 sec) Average Delay (sec/veh):        30.6
Optimal Cycle:        37               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        Protected        Protected
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     131  191   28    52  165   39    65  191   65    40  169   46
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:  131  191   28    52  165   39    65  191   65    40  169   46
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   146  212   31    58  183   43    72  212   72    44  188   51
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  146  212   31    58  183   43    72  212   72    44  188   51
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.:   146  212   31    58  183   43    72  212   72    44  188   51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.84 0.74 0.74  0.84 0.73 0.73  0.84 0.72 0.72  0.84 0.73 0.73
Lanes:       1.00 0.87 0.13  1.00 0.81 0.19  1.00 0.75 0.25  1.00 0.79 0.21
Final Sat.:  1592 1219  179  1592 1119  264  1592 1022  348  1592 1084  295
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.17 0.17  0.04 0.16 0.16  0.05 0.21 0.21  0.03 0.17 0.17
Crit Moves:  ****                 ****              ****        ****
Green/Cycle: 0.17 0.39 0.39  0.08 0.30 0.30  0.09 0.38 0.38  0.05 0.35 0.35
Volume/Cap:  0.54 0.44 0.44  0.44 0.54 0.54  0.50 0.54 0.54  0.54 0.50 0.50
Uniform Del: 38.0 22.4 22.4  43.8 29.0 29.0  43.3 23.9 23.9  46.2 25.9 25.9
IncremntDel:  2.2  0.6  0.6   2.4  1.4  1.4   2.7  1.1  1.1   7.0  0.8  0.8
InitQueuDel:  0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0
Delay 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
Delay/Veh:   40.1 23.0 23.0  46.2 30.4 30.4  46.0 25.0 25.0  53.2 26.7 26.7
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:  40.1 23.0 23.0  46.2 30.4 30.4  46.0 25.0 25.0  53.2 26.7 26.7
HCM2kAvg:       5    6    6     2    6    6     3    7    7     2    6    6
***************************************************************************
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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #2 1st / Chestnut
********************************************************************************
Average Delay (sec/veh):       11.9          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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        2  263    0    11  170   16    44    0    7     1    0   12
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:     2  263    0    11  170   16    44    0    7     1    0   12
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      2  292    0    12  189   18    49    0    8     1    0   13
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      2  292    0    12  189   18    49    0    8     1    0   13
------------|---------------||---------------||---------------||---------------|
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:  207 xxxx xxxxx   292 xxxx xxxxx   526 xxxx   198   523 xxxx   292
Potent Cap.: 1365 xxxx xxxxx  1269 xxxx xxxxx   466 xxxx   848   468 xxxx   752
Move Cap.:   1365 xxxx xxxxx  1269 xxxx xxxxx   454 xxxx   848   460 xxxx   752
Volume/Cap:  0.00 xxxx  xxxx  0.01 xxxx  xxxx  0.11 xxxx  0.01  0.00 xxxx  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.6 xxxx xxxxx   7.9 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  485 xxxxx  xxxx  717 xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:  7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.4 xxxxx xxxxx 10.1 xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:      xxxxxx           xxxxxx            13.4             10.1
ApproachLOS:        *                *                B                B
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 S. 1st St / W. Cherry St
*******************************************************************************
Average Delay (sec/veh):       10.0          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:        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:          4  222    23    62  155     9     7    2     5    13    4    54
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:       4  222    23    62  155     9     7    2     5    13    4    54
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:        0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:        4  247    26    69  172    10     8    2     6    14    4    60
Reduct Vol:        0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:        4  247    26    69  172    10     8    2     6    14    4    60
------------|----------------||----------------||----------------||----------------|
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:     182 xxxx xxxxx   272 xxxx xxxxx   616  596   177   587  588   259
Potent Cap.:    1393 xxxx xxxxx  1291 xxxx xxxxx   406  419   871   424  424   784
Move Cap.:      1393 xxxx xxxxx  1291 xxxx xxxxx   356  396   871   401  400   784
Volume/Cap:     0.00 xxxx  xxxx  0.05 xxxx  xxxx  0.02 0.01  0.01  0.04 0.01  0.08
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:           0.0 xxxx xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:     7.6 xxxx xxxxx   7.9 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  459 xxxxx  xxxx  638 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx  0.4 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.1 xxxxx xxxxx 11.4 xxxxx
Shared LOS:        *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:        xxxxxx           xxxxxx            13.1             11.4
ApproachLOS:           *                *                B                B
```

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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #5 1st / Country Faire
********************************************************************************
Average Delay (sec/veh):        9.4          Level Of Service:        A
********************************************************************************
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  0  1   1  0  0  1  0   0  0  1! 0  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  157     2   19  112     3    0    0     0    9    0    91
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  157     2   19  112     3    0    0     0    9    0    91
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:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:     0  174     2   21  124     3    0    0     0   10    0   101
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:     0  174     2   21  124     3    0    0     0   10    0   101
------------|---------------||---------------||---------------||---------------|
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   177 xxxx xxxxx  xxxx xxxx xxxxx   343 xxxx   174
Potent Cap.: xxxx xxxx xxxxx  1399 xxxx xxxxx  xxxx xxxx xxxxx   658 xxxx   874
Move Cap.:   xxxx xxxx xxxxx  1399 xxxx xxxxx  xxxx xxxx xxxxx   650 xxxx   874
Volume/Cap:  xxxx xxxx  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.02 xxxx  0.12
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.4
Stopped Del:xxxxx xxxx xxxxx   7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.7
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   650 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.6 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     B    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx            9.7
ApproachLOS:        *                *                *               A
```

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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #6 1st / Parkway
********************************************************************************
Average Delay (sec/veh):       9.4             Level Of Service:       A
********************************************************************************
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:       0  0  1  0  0    0  0  1  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  109     0     0  160     6     1    0     3     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  109     0     0  160     6     1    0     3     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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0  121     0     0  178     7     1    0     3     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  121     0     0  178     7     1    0     3     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx   299 xxxx   178  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   697 xxxx   870  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   697 xxxx   870  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 xxxx  0.00  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  819 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  9.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    A     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx              9.4            xxxxxx
ApproachLOS:        *                *                 A                *
```

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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 SR 113 / Midway
*******************************************************************************
Average Delay (sec/veh):       10.1           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:      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:      12  113    26     9   85    28    15   21    11     4   21    33
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  113    26     9   85    28    15   21    11     4   21    33
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    13  126    29    10   94    31    17   23    12     4   23    37
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    13  126    29    10   94    31    17   23    12     4   23    37
------------|---------------||---------------||---------------||---------------|
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:  126 xxxx xxxxx   154 xxxx xxxxx   327  311   110   314  312   140
Potent Cap.: 1461 xxxx xxxxx  1426 xxxx xxxxx   630  607   949   642  606   913
Move Cap.:   1461 xxxx xxxxx  1426 xxxx xxxxx   580  597   949   607  596   913
Volume/Cap:  0.01 xxxx  xxxx  0.01 xxxx  xxxx  0.03 0.04  0.01  0.01 0.04  0.04
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.5 xxxx xxxxx   7.5 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  647 xxxxx  xxxx  744 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.3 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.1 xxxxx xxxxx 10.3 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx            11.1             10.3
ApproachLOS:          *                *               B                B
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #10 Parkway / Valley Glen
*******************************************************************************
Average Delay (sec/veh):       9.0             Level Of Service:        A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    1  0  0  0  1    0  1  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0    0     3    0    0     0    0    0     0    0    9
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    0    0     3    0    0     0    0    0     0    0    9
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      0    0    0     3    0    0     0    0    0     0    0   10
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      0    0    0     3    0    0     0    0    0     0    0   10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx   9.0 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 xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     A    *    *     *    *    *
ApproachDel:      xxxxxx             9.0            xxxxxx           xxxxxx
ApproachLOS:        *                 A               *                *
```

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                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #18 1st / Valley Glen
******************************************************************************
Average Delay (sec/veh):       10.2          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:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  1  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      14   109     0     0   111    50    90     0    35     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:   14   109     0     0   111    50    90     0    35     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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:    16   121     0     0   123    56   100     0    39     0     0     0
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:    16   121     0     0   123    56   100     0    39     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:  179 xxxx xxxxx  xxxx xxxx xxxxx   303 xxxx    89  xxxx xxxx xxxxx
Potent Cap.: 1397 xxxx xxxxx  xxxx xxxx xxxxx   693 xxxx   974  xxxx xxxx xxxxx
Move Cap.:   1397 xxxx xxxxx  xxxx xxxx xxxxx   687 xxxx   974  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.15 xxxx  0.04  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx   0.5 xxxx   0.1 xxxxx xxxx xxxxx
Stopped Del:  7.6 xxxx xxxxx xxxxx xxxx xxxxx  11.1 xxxx   8.8 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     B    *     A     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             10.5            xxxxxx
ApproachLOS:        *                *                  B                *
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #29 West A St / Pitt School Rd
******************************************************************************
Cycle (sec):         100             Critical Vol./Cap. (X):        0.345
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):     10.0
Optimal Cycle:         0             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:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  1! 0  0    1  0  1  0  1    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17    26    17    71    30    55    35   152     6    14   188   105
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:   17    26    17    71    30    55    35   152     6    14   188   105
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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:    19    29    19    79    33    61    39   169     7    16   209   117
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   19    29    19    79    33    61    39   169     7    16   209   117
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.:    19    29    19    79    33    61    39   169     7    16   209   117
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Lanes:       0.28  0.44  0.28  1.00  1.00  1.00  1.00  0.96  0.04  1.00  1.00  1.00
Final Sat.:   158   241   158   525   566   636   567   597    24   556   606   685
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12  0.12  0.12  0.15  0.06  0.10  0.07  0.28  0.28  0.03  0.34  0.17
Crit Moves:        ****        ****                          ****        ****
Delay/Veh:    9.8   9.8   9.8  10.2   9.0   8.5   9.2  10.3  10.3   9.1  11.3   8.8
Delay 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
AdjDel/Veh:   9.8   9.8   9.8  10.2   9.0   8.5   9.2  10.3  10.3   9.1  11.3   8.8
LOS by Move:    A     A     A     B     A     A     A     B     B     A     B     A
ApproachDel:        9.8               9.4              10.1              10.4
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:         9.8               9.4              10.1              10.4
LOS by Appr:          A                 A                 B                 B
******************************************************************************
```

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-------------------------------------------------------------------------------
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                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 1st / A
*******************************************************************************
Cycle (sec):        100               Critical Vol./Cap. (X):        0.574
Loss Time (sec):      9 (Y+R =  4 sec) Average Delay (sec/veh):        31.5
Optimal Cycle:       39               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        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      101  242    17    65  192    80   112  151    71    37  146    42
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:   101  242    17    65  192    80   112  151    71    37  146    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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    112  269    19    72  213    89   124  168    79    41  162    47
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   112  269    19    72  213    89   124  168    79    41  162    47
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.:    112  269    19    72  213    89   124  168    79    41  162    47
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.84 0.74  0.74  0.84 0.72  0.72  0.84 0.71  0.71  0.84 0.72  0.72
Lanes:        1.00 0.93  0.07  1.00 0.71  0.29  1.00 0.68  0.32  1.00 0.78  0.22
Final Sat.:   1592 1318    93  1592  961   401  1592  922   434  1592 1070   308
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.07 0.20  0.20  0.05 0.22  0.22  0.08 0.18  0.18  0.03 0.15  0.15
Crit Moves:   ****                   ****       ****                   ****
Green/Cycle:  0.12 0.42  0.42  0.09 0.39  0.39  0.14 0.35  0.35  0.05 0.26  0.26
Volume/Cap:   0.57 0.49  0.49  0.49 0.57  0.57  0.57 0.52  0.52  0.52 0.57  0.57
Uniform Del:  41.4 21.4  21.4  43.1 24.2  24.2  40.5 25.8  25.8  46.3 31.9  31.9
IncremntDel:   4.1  0.6   0.6   2.5  1.5   1.5   3.7  1.0   1.0   6.0  2.2   2.2
InitQueuDel:   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay 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
Delay/Veh:    45.5 22.0  22.0  45.7 25.7  25.7  44.2 26.8  26.8  52.3 34.1  34.1
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:   45.5 22.0  22.0  45.7 25.7  25.7  44.2 26.8  26.8  52.3 34.1  34.1
HCM2kAvg:        4    7     7     3    8     8     5    6     6     2    6     6
*******************************************************************************
```

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                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
***********************************************************************************
Intersection #2 1st / Chestnut
***********************************************************************************
Average Delay (sec/veh):       11.4           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:       Uncontrolled     Uncontrolled      Stop Sign         Stop Sign
Rights:           Include          Include          Include           Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        5  270     8     7  212    24    19     1    12     5     1    16
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:     5  270     8     7  212    24    19     1    12     5     1    16
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      6  300     9     8  236    27    21     1    13     6     1    18
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:      6  300     9     8  236    27    21     1    13     6     1    18
------------|---------------||---------------||---------------||---------------|
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:   262 xxxx xxxxx   309 xxxx xxxxx   589  584   249   587  593   304
Potent Cap.:  1302 xxxx xxxxx  1252 xxxx xxxxx   423  426   795   424  421   740
Move Cap.:    1302 xxxx xxxxx  1252 xxxx xxxxx   408  421   795   413  417   740
Volume/Cap:   0.00 xxxx  xxxx  0.01 xxxx  xxxx  0.05 0.00  0.02  0.01 0.00  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:   7.8 xxxx xxxxx   7.9 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  500 xxxxx  xxxx  609 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.8 xxxxx xxxxx 11.2 xxxxx
Shared LOS:      *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:       xxxxxx           xxxxxx            12.8              11.2
ApproachLOS:          *                *                B                 B
```

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                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
*********************************************************************************
Intersection #3 S. 1st St / W. Cherry St
*********************************************************************************
Average Delay (sec/veh):       10.2           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:      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:        6  268     0     0  208    16     3    0     3     3    0     4
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:     6  268     0     0  208    16     3    0     3     3    0     4
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      7  298     0     0  231    18     3    0     3     3    0     4
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      7  298     0     0  231    18     3    0     3     3    0     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1 xxxx   6.2   7.1 xxxx   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  249 xxxx xxxxx  xxxx xxxx xxxxx   553 xxxx   240   553 xxxx   298
Potent Cap.: 1317 xxxx xxxxx  xxxx xxxx xxxxx   447 xxxx   804   447 xxxx   746
Move Cap.:   1317 xxxx xxxxx  xxxx xxxx xxxxx   442 xxxx   804   443 xxxx   746
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.01 xxxx  0.00  0.01 xxxx  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped 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  571 xxxxx  xxxx  577 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.0 xxxxx xxxxx  0.0 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.4 xxxxx xxxxx 11.3 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:      xxxxxx           xxxxxx            11.4             11.3
ApproachLOS:         *                *                B                B
```

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                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #5 1st / Country Faire
********************************************************************************
Average Delay (sec/veh):       9.2           Level Of Service:         A
********************************************************************************
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  0  1   1  0  0  1  0   1  0  0  0  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        1  226    4    48  166    1     4    0    0     6    0   35
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:     1  226    4    48  166    1     4    0    0     6    0   35
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:      0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:      1  251    4    53  184    1     4    0    0     7    0   39
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      1  251    4    53  184    1     4    0    0     7    0   39
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1 xxxx xxxxx   7.1 xxxx   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx xxxxx   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  186 xxxx xxxxx   256 xxxx xxxxx   567 xxxx xxxxx   545 xxxx   251
Potent Cap.: 1389 xxxx xxxxx  1309 xxxx xxxxx   438 xxxx xxxxx   452 xxxx   792
Move Cap.:   1389 xxxx xxxxx  1309 xxxx xxxxx   403 xxxx xxxxx   438 xxxx   792
Volume/Cap:  0.00 xxxx  xxxx  0.04 xxxx  xxxx  0.01 xxxx  xxxx  0.02 xxxx  0.05
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx   0.2
Stopped Del:  7.6 xxxx xxxxx   7.9 xxxx xxxxx  14.0 xxxx xxxxx 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  xxxx xxxx xxxxx   438 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  13.3 xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     B    *    *
ApproachDel:     xxxxxx           xxxxxx            14.0             10.3
ApproachLOS:        *                *                B                B
```

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---------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
*********************************************************************************
Intersection #6 1st / Parkway
*********************************************************************************
Average Delay (sec/veh):       9.3                  Level Of Service:         A
*********************************************************************************
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:         0  1  0  0  0    0  0  1  0  1    1  0  0  0  0    0  0  0  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:        1  217     0     0  149     2     1    0     0     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:     1  217     0     0  149     2     1    0     0     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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      1  241     0     0  166     2     1    0     0     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      1  241     0     0  166     2     1    0     0     0    0     0
------------|----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol:   168 xxxx xxxxx  xxxx xxxx xxxxx   409 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  1410 xxxx xxxxx  xxxx xxxx xxxxx   603 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    1410 xxxx xxxxx  xxxx xxxx xxxxx   602 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:   0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.00 xxxx  xxxx  xxxx xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:         0.0 xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:   7.6 xxxx xxxxx xxxxx xxxx xxxxx  11.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     A    *     *     *    *     *     B    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:   7.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      A    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx              11.0           xxxxxx
ApproachLOS:         *                *                  B               *
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 SR 113 / Midway
*******************************************************************************
Average Delay (sec/veh):       11.0          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:      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:      24  127    16    15   80    53    58   22    21     5   12     7
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:   24  127    16    15   80    53    58   22    21     5   12     7
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    27  141    18    17   89    59    64   24    23     6   13     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    27  141    18    17   89    59    64   24    23     6   13     8
------------|---------------||---------------||---------------||---------------|
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:  148 xxxx xxxxx   159 xxxx xxxxx   366  364   118   379  384   150
Potent Cap.: 1434 xxxx xxxxx  1421 xxxx xxxxx   594  567   939   582  552   902
Move Cap.:   1434 xxxx xxxxx  1421 xxxx xxxxx   565  550   939   536  536   902
Volume/Cap:  0.02 xxxx  xxxx  0.01 xxxx  xxxx  0.11 0.04  0.02  0.01 0.02  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.6 xxxx xxxxx   7.6 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  612 xxxxx  xxxx  608 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.7 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.2 xxxxx xxxxx 11.2 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx            12.2             11.2
ApproachLOS:        *                *                B                B
```

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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #10 Parkway / Valley Glen
********************************************************************************
Average Delay (sec/veh):       9.1            Level Of Service:        A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   1  0  0  0  1   0  1  0  0  0   0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0   12    0     0    0    0     0    0    0     2
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    0     0   12    0     0    0    0     0    0    0     2
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:      0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:      0    0     0   13    0     0    0    0     0    0    0     2
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:      0    0     0   13    0     0    0    0     0    0    0     2
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx   9.1 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 xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     A    *     *     *    *     *
ApproachDel:     xxxxxx             9.1            xxxxxx           xxxxxx
ApproachLOS:        *                A                *                *
```

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                       Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #18 1st / Valley Glen
********************************************************************************
Average Delay (sec/veh):     9.8           Level Of Service:        A
********************************************************************************
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  0  0    0  0  1  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      35  183    0     0  123   48    46    0   28     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:   35  183    0     0  123   48    46    0   28     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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    39  203    0     0  137   53    51    0   31     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    39  203    0     0  137   53    51    0   31     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:  190 xxxx xxxxx  xxxx xxxx xxxxx   444 xxxx   95  xxxx xxxx xxxxx
Potent Cap.: 1384 xxxx xxxxx  xxxx xxxx xxxxx   575 xxxx  967  xxxx xxxx xxxxx
Move Cap.:   1384 xxxx xxxxx  xxxx xxxx xxxxx   563 xxxx  967  xxxx xxxx xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.09 xxxx 0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx   0.3 xxxx  0.1 xxxxx xxxx xxxxx
Stopped Del:  7.7 xxxx xxxxx xxxxx xxxx xxxxx  12.0 xxxx  8.8 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     B    *    A     *    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *    *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            10.8            xxxxxx
ApproachLOS:        *                *                B                *
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
               2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #29 West A St / Pitt School Rd
*******************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):        0.322
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):       9.8
Optimal Cycle:          0              Level Of Service:                 A
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:         0  0  1! 0  0   1  0  1  0  1   1  0  0  1  0   1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22   11   24    42   24   51    33  181   10    17  163   46
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:   22   11   24    42   24   51    33  181   10    17  163   46
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    24   12   27    47   27   57    37  201   11    19  181   51
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   24   12   27    47   27   57    37  201   11    19  181   51
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.:    24   12   27    47   27   57    37  201   11    19  181   51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       0.39 0.19 0.42  1.00 1.00 1.00  1.00 0.95 0.05  1.00 1.00 1.00
Final Sat.:   225  112  245   536  578  653   598  624   34   566  618  699
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11 0.11  0.09 0.05 0.09  0.06 0.32 0.32  0.03 0.29 0.07
Crit Moves:            ****  ****                  ****              ****
Delay/Veh:    9.4  9.4  9.4   9.6  8.8  8.3   8.9 10.4 10.4   9.1 10.6  8.0
Delay 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
AdjDel/Veh:   9.4  9.4  9.4   9.6  8.8  8.3   8.9 10.4 10.4   9.1 10.6  8.0
LOS by Move:    A    A    A     A    A    A     A    B    B     A    B    A
ApproachDel:       9.4              8.9             10.2             10.0
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.4              8.9             10.2             10.0
LOS by Appr:         A                A                B                A
*******************************************************************************
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2007

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-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 1st / A
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):          0.870
Loss Time (sec):       9 (Y+R =  4 sec) Average Delay (sec/veh):        45.8
Optimal Cycle:        89              Level Of Service:                    D
*******************************************************************************
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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     209  292    99   121  333    85    57  180   196   139  215    93
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:  209  292    99   121  333    85    57  180   196   139  215    93
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   232  324   110   134  370    94    63  200   218   154  239   103
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  232  324   110   134  370    94    63  200   218   154  239   103
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.:   232  324   110   134  370    94    63  200   218   154  239   103
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.84 0.85  0.85  0.84 0.86  0.86  0.86 0.83  0.83  0.86 0.86  0.86
Lanes:       1.00 0.75  0.25  1.00 0.80  0.20  1.00 0.48  0.52  1.00 0.70  0.30
Final Sat.:  1592 1204   408  1592 1295   331  1625  755   822  1625 1140   493
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.27  0.27  0.08 0.29  0.29  0.04 0.26  0.26  0.10 0.21  0.21
Crit Moves:  ****                   ****              ****        ****
Green/Cycle: 0.17 0.38  0.38  0.12 0.33  0.33  0.06 0.30  0.30  0.11 0.35  0.35
Volume/Cap:  0.87 0.71  0.71  0.71 0.87  0.87  0.60 0.87  0.87  0.87 0.60  0.60
Uniform Del: 40.6 26.5  26.5  42.4 31.6  31.6  45.5 32.9  32.9  43.8 26.8  26.8
IncremntDel: 25.0  4.0   4.0  12.1 14.3  14.3   9.3 15.7  15.7  34.0  1.8   1.8
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay 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
Delay/Veh:   65.6 30.5  30.5  54.6 45.9  45.9  54.8 48.6  48.6  77.8 28.6  28.6
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:  65.6 30.5  30.5  54.6 45.9  45.9  54.8 48.6  48.6  77.8 28.6  28.6
HCM2kAvg:      10   13    13     6   17    17     3   15    15     8    9     9
*******************************************************************************
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-------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 1st / Chestnut
*******************************************************************************
Average Delay (sec/veh):     124.4          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:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30  466    15    26  596    34   114    5    18     2    1    17
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:   30  466    15    26  596    34   114    5    18     2    1    17
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    33  518    17    29  662    38   127    6    20     2    1    19
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    33  518    17    29  662    38   127    6    20     2    1    19
------------|---------------||---------------||---------------||---------------|
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:  700 xxxx xxxxx   534 xxxx xxxxx  1342 1340   681  1344 1351   526
Potent Cap.:  897 xxxx xxxxx  1033 xxxx xxxxx   131  154   454   130  152   556
Move Cap.:    897 xxxx xxxxx  1033 xxxx xxxxx   119  144   454   115  142   556
Volume/Cap:  0.04 xxxx  xxxx  0.03 xxxx  xxxx  1.06 0.04  0.04  0.02 0.01  0.03
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  9.2 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  133 xxxxx  xxxx  363 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.9 xxxxx xxxxx  0.2 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  188 xxxxx xxxxx 15.6 xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     *    C     *
ApproachDel:      xxxxxx           xxxxxx            187.5             15.6
ApproachLOS:         *                *                F                C
```

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---------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #3 S. 1st St / W. Cherry St
***************************************************************************
Average Delay (sec/veh):       63.6          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:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:         0  0  1!  0  0   0  0  1!  0  0   0  0  1!  0  0   0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       15   412    20    60   549    16    69     5    44    15     5    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:    15   412    20    60   549    16    69     5    44    15     5    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:      0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:     17   458    22    67   610    18    77     6    49    17     6    33
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:     17   458    22    67   610    18    77     6    49    17     6    33
------------|---------------||---------------||---------------||---------------|
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:   628  xxxx xxxxx   480  xxxx xxxxx  1274  1266   619  1282  1263   469
Potent Cap.:   954  xxxx xxxxx  1082  xxxx xxxxx   145   171   492   144   171   599
Move Cap.:     954  xxxx xxxxx  1082  xxxx xxxxx   125   157   492   118   157   599
Volume/Cap:   0.02  xxxx  xxxx  0.06  xxxx  xxxx  0.61  0.04  0.10  0.14  0.04  0.06
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.1  xxxx xxxxx   0.2  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Stopped Del:   8.8  xxxx xxxxx   8.5  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   176 xxxxx  xxxx   239 xxxxx
SharedQueue:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx   4.8 xxxxx xxxxx   0.9 xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  69.0 xxxxx xxxxx  24.5 xxxxx
Shared LOS:      *     *     *     *     *     *     *     F     *     *     C     *
ApproachDel:      xxxxxx            xxxxxx              69.0              24.5
ApproachLOS:         *                 *                  F                 C
```

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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #5 1st / Country Faire
********************************************************************************
Average Delay (sec/veh):       13.1           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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  1    1  0  0  1  0    1  0  0  0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        1  365   15     20  506    5      2    0    0     20    0   80
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:     1  365   15     20  506    5      2    0    0     20    0   80
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:      0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90
PHF Volume:      1  406   17     22  562    6      2    0    0     22    0   89
Reduct Vol:      0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:      1  406   17     22  562    6      2    0    0     22    0   89
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1 xxxx xxxxx   7.1 xxxx   6.2
FollowUpTim:   2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx xxxxx   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   568 xxxx xxxxx   422 xxxx xxxxx  1070 xxxx xxxxx  1017 xxxx   406
Potent Cap.:  1004 xxxx xxxxx  1137 xxxx xxxxx   201 xxxx xxxxx   218 xxxx   650
Move Cap.:    1004 xxxx xxxxx  1137 xxxx xxxxx   170 xxxx xxxxx   214 xxxx   650
Volume/Cap:   0.00 xxxx  xxxx  0.02 xxxx  xxxx  0.01 xxxx  xxxx  0.10 xxxx  0.14
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.0 xxxx xxxxx   0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx   0.5
Stopped Del:   8.6 xxxx xxxxx   8.2 xxxx xxxxx  26.4 xxxx xxxxx xxxxx xxxx  11.4
LOS by Move:     A    *     *     A    *     *     D    *     *     *    *     B
Movement:       LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   214 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.3 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  23.7 xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     C    *     *
ApproachDel:        xxxxxx           xxxxxx             26.4             13.9
ApproachLOS:          *                *                  D                B
```

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                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 1st / Parkway
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        0.691
Loss Time (sec):       9 (Y+R =  4 sec) Average Delay (sec/veh):      32.5
Optimal Cycle:        50              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:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  0  1  0   1  0  1  0  1   1  0  0  1  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  140   20   505  174    9    20  131   10    14   78  190
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:   20  140   20   505  174    9    20  131   10    14   78  190
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    22  156   22   561  193   10    22  146   11    16   87  211
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   22  156   22   561  193   10    22  146   11    16   87  211
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.:    22  156   22   561  193   10    22  146   11    16   87  211
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.93 0.96 0.96  0.93 0.98 0.83  0.95 0.99 0.99  0.99 0.99 0.85
Lanes:       1.00 0.88 0.12  1.00 1.00 1.00  1.00 0.93 0.07  0.15 0.85 1.00
Final Sat.:  1769 1598  228  1769 1862 1583  1805 1746  133   287 1598 1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.10 0.10  0.32 0.10 0.01  0.01 0.08 0.08  0.05 0.05 0.13
Crit Moves:       ****       ****                  ****                  ****
Green/Cycle: 0.06 0.14 0.14  0.46 0.54 0.54  0.12 0.12 0.12  0.19 0.19 0.19
Volume/Cap:  0.19 0.69 0.69  0.69 0.19 0.01  0.10 0.69 0.69  0.29 0.29 0.69
Uniform Del: 44.3 40.9 40.9  21.4 12.0 10.9  39.1 42.2 42.2  34.8 34.8 37.8
IncremntDel:  0.8  7.8  7.8   2.6  0.1  0.0   0.2  8.8  8.8   0.4  0.4  6.6
InitQueuDel:  0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0
Delay 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
Delay/Veh:   45.1 48.7 48.7  24.0 12.1 10.9  39.3 50.9 50.9  35.2 35.2 44.4
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:  45.1 48.7 48.7  24.0 12.1 10.9  39.3 50.9 50.9  35.2 35.2 44.4
HCM2kAvg:       1    7    7    15    3    0     1    6    6     3    3    7
******************************************************************************
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                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #7 SR 113 / Midway
********************************************************************************
Average Delay (sec/veh):       10.4          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:      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:      13  125    29    10   94    31    17   23    12     4   23    36
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:   13  125    29    10   94    31    17   23    12     4   23    36
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    14  139    32    11  104    34    19   26    13     4   26    40
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    14  139    32    11  104    34    19   26    13     4   26    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:  139 xxxx xxxxx   171 xxxx xxxxx   361  344   122   347  345   155
Potent Cap.: 1445 xxxx xxxxx  1406 xxxx xxxxx   599  582   935   611  581   896
Move Cap.:   1445 xxxx xxxxx  1406 xxxx xxxxx   545  572   935   574  571   896
Volume/Cap:  0.01 xxxx  xxxx  0.01 xxxx  xxxx  0.03 0.04  0.01  0.01 0.04  0.04
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.5 xxxx xxxxx   7.6 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  617 xxxxx  xxxx  721 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.3 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.4 xxxxx xxxxx 10.5 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx            11.4             10.5
ApproachLOS:        *                *                B                B
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                    Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #9 Parkway / School Access
********************************************************************************
Average Delay (sec/veh):     19.8         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:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0     0    0   282   656    0     0     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    0     0     0    0   282   656    0     0     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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      0    0     0     0    0   313   729    0     0     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0     0    0   313   729    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx     0     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx   900   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx   900   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  0.35  0.81 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx   1.6   9.0 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx  11.1  23.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx             11.1            xxxxxx            xxxxxx
ApproachLOS:        *                 B                *                 *
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                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Parkway / Valley Glen
******************************************************************************
Average Delay (sec/veh):        9.5          Level Of Service:         A
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0     0     0    84     0   128    42    77     0     0    60    42
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     0     0    84     0   128    42    77     0     0    60    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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:     0     0     0    93     0   142    47    86     0     0    67    47
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:     0     0     0    93     0   142    47    86     0     0    67    47
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  xxxx xxxxx   6.4  xxxx   6.2   4.1  xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx  xxxx xxxxx   3.5  xxxx   3.3   2.2  xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  xxxx xxxxx   269  xxxx    90   113  xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx  xxxx xxxxx   725  xxxx   973  1489  xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx  xxxx xxxxx   707  xxxx   973  1489  xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx  xxxx  xxxx  0.13  xxxx  0.15  0.03  xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx  xxxx xxxxx   0.5  xxxx   0.5   0.1  xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx  xxxx xxxxx  10.9  xxxx   9.3   7.5  xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *     *     *     B     *     A     A     *     *     *    *     *
Movement:      LT  - LTR  - RT    LT  - LTR - RT    LT  - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *     *     *     *     *     *     *     *     *     *    *     *
ApproachDel:      xxxxxx              9.9             xxxxxx            xxxxxx
ApproachLOS:         *                 A                 *                 *
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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #18 1st / Valley Glen
*******************************************************************************
Average Delay (sec/veh):       22.1         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:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       20  284     0     0  515    70   123    0    60     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:    20  284     0     0  515    70   123    0    60     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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     22  316     0     0  572    78   137    0    67     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     22  316     0     0  572    78   137    0    67     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:   650 xxxx xxxxx  xxxx xxxx xxxxx   971 xxxx   325  xxxx xxxx xxxxx
Potent Cap.:   936 xxxx xxxxx  xxxx xxxx xxxxx   283 xxxx   721  xxxx xxxx xxxxx
Move Cap.:     936 xxxx xxxxx  xxxx xxxx xxxxx   278 xxxx   721  xxxx xxxx xxxxx
Volume/Cap:   0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.49 xxxx  0.09  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.1 xxxx xxxxx xxxxx xxxx xxxxx   2.5 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:   8.9 xxxx xxxxx xxxxx xxxx xxxxx  29.9 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     A    *     *     *    *     *     D    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   721  xxxx xxxx     0
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.3 xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.5 xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     B     *    *     *
ApproachDel:      xxxxxx           xxxxxx             23.5            xxxxxx
ApproachLOS:        *                *                  C                *
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------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #29 West A St / Pitt School Rd
******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        1.293
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):       70.0
Optimal Cycle:          0               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:          Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:             Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  0  1  0   1  0  1  0  1   1  0  0  1  0   1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95   56   87    74  124   59   119  498   45    58  334  186
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:   95   56   87    74  124   59   119  498   45    58  334  186
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   106   62   97    82  138   66   132  553   50    64  371  207
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  106   62   97    82  138   66   132  553   50    64  371  207
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.:   106   62   97    82  138   66   132  553   50    64  371  207
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 0.39 0.61  1.00 1.00 1.00  1.00 0.92 0.08  1.00 1.00 1.00
Final Sat.:   381  166  257   349  369  395   425  428   39   393  423  456
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.38 0.38  0.24 0.37 0.17  0.31 1.29 1.29  0.16 0.88 0.45
Crit Moves:             ****       ****             ****             ****
Delay/Veh:   15.2 15.6 15.6  15.5 17.4 13.1  14.5  170 170.2  13.4 47.0 16.6
Delay 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
AdjDel/Veh:  15.2 15.6 15.6  15.5 17.4 13.1  14.5  170 170.2  13.4 47.0 16.6
LOS by Move:    C    C    C     C    C    B     B    F    F     B    E    C
ApproachDel:      15.4             15.9            142.2             33.8
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       15.4             15.9            142.2             33.8
LOS by Appr:        C                C                F                D
******************************************************************************
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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
               2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #1 1st / A
*****************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):       0.776
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):       37.2
Optimal Cycle:         63                Level Of Service:                D
*****************************************************************************
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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     140  336   24   126  371  155   132  179   84    45  177   51
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:  140  336   24   126  371  155   132  179   84    45  177   51
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   156  373   27   140  412  172   147  199   93    50  197   57
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  156  373   27   140  412  172   147  199   93    50  197   57
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.:   156  373   27   140  412  172   147  199   93    50  197   57
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.84 0.87 0.87  0.84 0.84 0.84  0.86 0.86 0.86  0.86 0.87 0.87
Lanes:       1.00 0.93 0.07  1.00 0.71 0.29  1.00 0.68 0.32  1.00 0.78 0.22
Final Sat.:  1592 1548  111  1592 1130  472  1625 1108  520  1625 1282  369
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.24 0.24  0.09 0.36 0.36  0.09 0.18 0.18  0.03 0.15 0.15
Crit Moves:  ****                 ****        ****                   ****
Green/Cycle: 0.13 0.44 0.44  0.16 0.47 0.47  0.12 0.27 0.27  0.05 0.20 0.20
Volume/Cap:  0.78 0.55 0.55  0.55 0.78 0.78  0.78 0.67 0.67  0.67 0.78 0.78
Uniform Del: 42.3 20.9 20.9  38.7 22.1 22.1  42.9 32.7 32.7  47.0 38.0 38.0
IncremntDel: 17.2  0.9  0.9   2.6  5.1  5.1  18.1  4.0  4.0  21.1 11.1 11.1
InitQueuDel:  0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0
Delay 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
Delay/Veh:   59.5 21.8 21.8  41.4 27.2 27.2  61.0 36.7 36.7  68.0 49.1 49.1
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:  59.5 21.8 21.8  41.4 27.2 27.2  61.0 36.7 36.7  68.0 49.1 49.1
HCM2kAvg:       7    9    9     5   17   17     7    9    9     3    9    9
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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*********************************************************************************
Intersection #2 1st / Chestnut
*********************************************************************************
Average Delay (sec/veh):       19.7         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:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:         0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        6  345    10    17  422   146    49    3    31     7    1    23
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:     6  345    10    17  422   146    49    3    31     7    1    23
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      7  383    11    19  469   162    54    3    34     8    1    26
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      7  383    11    19  469   162    54    3    34     8    1    26
------------|---------------||---------------||---------------||---------------|
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:   631 xxxx xxxxx   394 xxxx xxxxx  1003  996   550  1009 1071   389
Potent Cap.:   951 xxxx xxxxx  1164 xxxx xxxxx   223  247   539   221  223   664
Move Cap.:     951 xxxx xxxxx  1164 xxxx xxxxx   209  241   539   201  217   664
Volume/Cap:   0.01 xxxx  xxxx  0.02 xxxx  xxxx  0.26 0.01  0.06  0.04 0.01  0.04
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:   8.8 xxxx xxxxx   8.1 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  273 xxxxx  xxxx  418 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.4 xxxxx xxxxx  0.3 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 24.8 xxxxx xxxxx 14.4 xxxxx
Shared LOS:      *    *     *     *    *     *     *    C     *     *    B     *
ApproachDel:       xxxxxx           xxxxxx             24.8             14.4
ApproachLOS:          *                *                 C                B
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 S. 1st St / W. Cherry St
*******************************************************************************
Average Delay (sec/veh):        13.3          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:       Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      35  283    0     0  342   78    30    0   19     5    0    5
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:   35  283    0     0  342   78    30    0   19     5    0    5
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    39  314    0     0  380   87    33    0   21     6    0    6
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    39  314    0     0  380   87    33    0   21     6    0    6
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1 xxxx  6.2   7.1 xxxx  6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx  3.3   3.5 xxxx  3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  467 xxxx xxxxx  xxxx xxxx xxxxx   818 xxxx  423   826 xxxx  314
Potent Cap.: 1095 xxxx xxxxx  xxxx xxxx xxxxx   297 xxxx  635   293 xxxx  731
Move Cap.:   1095 xxxx xxxxx  xxxx xxxx xxxxx   287 xxxx  635   276 xxxx  731
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.12 xxxx 0.03  0.02 xxxx 0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped 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  364 xxxxx  xxxx  400 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:  8.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.6 xxxxx xxxxx 14.2 xxxxx
Shared LOS:     A    *     *     *    *     *     *    C     *     *    B     *
ApproachDel:       xxxxxx           xxxxxx             16.6             14.2
ApproachLOS:          *                *                 C                B
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #5 1st / Country Faire
*******************************************************************************
Average Delay (sec/veh):       10.1         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:      Uncontrolled      Uncontrolled      Stop Sign        Stop Sign
Rights:          Include           Include          Include          Include
Lanes:        1  0  1  0  1    1  0  0  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  267    10    62  254     2     5    0     1    15    0    35
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:    1  267    10    62  254     2     5    0     1    15    0    35
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     1  297    11    69  282     2     6    0     1    17    0    39
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     1  297    11    69  282     2     6    0     1    17    0    39
------------|---------------||---------------||---------------||---------------|
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:  284 xxxx xxxxx   308 xxxx xxxxx   745 xxxx   283   721 xxxx   297
Potent Cap.: 1278 xxxx xxxxx  1253 xxxx xxxxx   333 xxxx   760   345 xxxx   747
Move Cap.:   1278 xxxx xxxxx  1253 xxxx xxxxx   302 xxxx   760   330 xxxx   747
Volume/Cap:  0.00 xxxx  xxxx  0.05 xxxx  xxxx  0.02 xxxx  0.00  0.05 xxxx  0.05
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.2
Stopped Del:  7.8 xxxx xxxxx   8.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.1
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     B
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  336 xxxxx   330 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx   0.2 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.9 xxxxx  16.5 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     C    *     *
ApproachDel:      xxxxxx           xxxxxx            15.9             12.0
ApproachLOS:        *                *                 C                B
```

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                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #6 1st / Parkway
*******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):         0.303
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):        25.1
Optimal Cycle:         26               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:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  0  1  0   1  0  1  0  1   1  0  0  1  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   239     5    40   170    25    40    40    42     9    53    76
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:   30   239     5    40   170    25    40    40    42     9    53    76
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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:    33   266     6    44   189    28    44    44    47    10    59    84
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   33   266     6    44   189    28    44    44    47    10    59    84
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.:    33   266     6    44   189    28    44    44    47    10    59    84
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.93  0.98  0.98  0.93  0.98  0.83  0.95  0.92  0.92  0.99  0.99  0.85
Lanes:       1.00  0.98  0.02  1.00  1.00  1.00  1.00  0.49  0.51  0.15  0.85  1.00
Final Sat.:  1769  1818    38  1769  1862  1583  1805   855   898   274  1613  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02  0.15  0.15  0.03  0.10  0.02  0.02  0.05  0.05  0.04  0.04  0.05
Crit Moves:        ****        ****                          ****              ****
Green/Cycle: 0.09  0.48  0.48  0.08  0.48  0.48  0.17  0.17  0.17  0.17  0.17  0.17
Volume/Cap:  0.21  0.30  0.30  0.30  0.21  0.04  0.14  0.30  0.30  0.21  0.21  0.30
Uniform Del: 42.3  15.7  15.7  43.1  15.2  13.9  35.2  36.2  36.2  35.5  35.5  36.1
IncremntDel:  0.7   0.2   0.2   1.2   0.1   0.0   0.2   0.6   0.6   0.3   0.3   0.6
InitQueuDel:  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
Delay 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
Delay/Veh:   43.0  15.9  15.9  44.3  15.3  13.9  35.4  36.8  36.8  35.8  35.8  36.7
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:  43.0  15.9  15.9  44.3  15.3  13.9  35.4  36.8  36.8  35.8  35.8  36.7
HCM2kAvg:       1     5     5     2     3     0     1     3     3     2     2     2
*******************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 SR 113 / Midway
*******************************************************************************
Average Delay (sec/veh):       11.4           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:      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:      26  140    18    16   88    58    64   24    23     6   13     8
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:   26  140    18    16   88    58    64   24    23     6   13     8
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    29  156    20    18   98    64    71   27    26     7   14     9
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    29  156    20    18   98    64    71   27    26     7   14     9
------------|---------------||---------------||---------------||---------------|
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:  162 xxxx xxxxx   176 xxxx xxxxx   401  399   130   415  421   166
Potent Cap.: 1417 xxxx xxxxx  1401 xxxx xxxxx   564  542   925   551  527   884
Move Cap.:   1417 xxxx xxxxx  1401 xxxx xxxxx   532  524   925   503  510   884
Volume/Cap:  0.02 xxxx  xxxx  0.01 xxxx  xxxx  0.13 0.05  0.03  0.01 0.03  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.6 xxxx xxxxx   7.6 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  582 xxxxx  xxxx  581 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.8 xxxxx xxxxx  0.2 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.8 xxxxx xxxxx 11.5 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:      xxxxxx           xxxxxx           12.8             11.5
ApproachLOS:        *                *                B                B
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #9 Parkway / School Access
*******************************************************************************
Average Delay (sec/veh):      9.7           Level Of Service:        A
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   138    85    0     0     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    0     0     0    0   138    85    0     0     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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0     0    0   153    94    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0     0    0   153    94    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx     0     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx   900   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx   900   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  0.17  0.10 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx   0.6   0.4 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx   9.8   9.5 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 xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx              9.8             xxxxxx           xxxxxx
ApproachLOS:        *                 A                *                *
```

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                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #10 Parkway / Valley Glen
********************************************************************************
Average Delay (sec/veh):       8.6            Level Of Service:        A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:        0     0     0   22     0    25   45   102     0     0    68    40
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     0     0   22     0    25   45   102     0     0    68    40
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:      0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:      0     0     0   24     0    28   50   113     0     0    76    44
Reduct Vol:      0     0     0    0     0     0    0     0     0     0     0     0
Final Vol.:      0     0     0   24     0    28   50   113     0     0    76    44
------------|----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:xxxxx  xxxx xxxxx   6.4  xxxx   6.2  4.1  xxxx xxxxx xxxxx  xxxx xxxxx
FollowUpTim:xxxxx  xxxx xxxxx   3.5  xxxx   3.3  2.2  xxxx xxxxx xxxxx  xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol:  xxxx  xxxx xxxxx   311  xxxx    98   120  xxxx xxxxx  xxxx  xxxx xxxxx
Potent Cap.:  xxxx  xxxx xxxxx   686  xxxx   964  1480  xxxx xxxxx  xxxx  xxxx xxxxx
Move Cap.:    xxxx  xxxx xxxxx   668  xxxx   964  1480  xxxx xxxxx  xxxx  xxxx xxxxx
Volume/Cap:   xxxx  xxxx  xxxx  0.04  xxxx  0.03  0.03  xxxx  xxxx  xxxx  xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:      xxxxx  xxxx xxxxx   0.1  xxxx   0.1   0.1  xxxx xxxxx xxxxx  xxxx xxxxx
Stopped Del:xxxxx  xxxx xxxxx  10.6  xxxx   8.8   7.5  xxxx xxxxx xxxxx  xxxx xxxxx
LOS by Move:    *     *     *     B     *     A     A     *     *     *     *     *
Movement:     LT  - LTR  - RT    LT  - LTR  - RT    LT  - LTR  - RT    LT  - LTR  - RT
Shared Cap.:  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
SharedQueue:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:     *     *     *     *     *     *     *     *     *     *     *     *
ApproachDel:     xxxxxx              9.7             xxxxxx            xxxxxx
ApproachLOS:        *                 A                 *                 *
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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #18 1st / Valley Glen
*******************************************************************************
Average Delay (sec/veh):       11.5          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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      62  180    0     0  197   68     93    0   57      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:   62  180    0     0  197   68     93    0   57      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:     0.90 0.90 0.90  0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90
PHF Volume:    69  200    0     0  219   76    103    0   63      0    0    0
Reduct Vol:     0    0    0     0    0    0      0    0    0      0    0    0
Final Vol.:    69  200    0     0  219   76    103    0   63      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:  294 xxxx xxxxx  xxxx xxxx xxxxx   594 xxxx   147  xxxx xxxx xxxxx
Potent Cap.: 1267 xxxx xxxxx  xxxx xxxx xxxxx   471 xxxx   905  xxxx xxxx xxxxx
Move Cap.:   1267 xxxx xxxxx  xxxx xxxx xxxxx   451 xxxx   905  xxxx xxxx xxxxx
Volume/Cap:  0.05 xxxx  xxxx  xxxx xxxx  xxxx  0.23 xxxx  0.07  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.2 xxxx xxxxx xxxxx xxxx xxxxx   0.9 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx xxxxx xxxx xxxxx  15.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     C    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   905  xxxx xxxx     0
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.2 xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   9.3 xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     A     *    *     *
ApproachDel:      xxxxxx            xxxxxx             13.0            xxxxxx
ApproachLOS:         *                 *                 B                *
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #29 West A St / Pitt School Rd
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        1.246
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):      69.8
Optimal Cycle:         0              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:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  0  1  0   1  0  1  0  1   1  0  0  1  0   1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      91   35   80   114  110  139    88  460   46    78  382  108
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:   91   35   80   114  110  139    88  460   46    78  382  108
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   101   39   89   127  122  154    98  511   51    87  424  120
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  101   39   89   127  122  154    98  511   51    87  424  120
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.:   101   39   89   127  122  154    98  511   51    87  424  120
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 0.30 0.70  1.00 1.00 1.00  1.00 0.91 0.09  1.00 1.00 1.00
Final Sat.:   373  127  289   362  381  412   414  410   41   386  414  443
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.31 0.31  0.35 0.32 0.38  0.24 1.25 1.25  0.22 1.02 0.27
Crit Moves:       ****                 ****        ****              ****
Delay/Veh:   15.6 14.8 14.8  17.6 16.3 16.3  13.8  153 152.5  14.5 80.0 13.5
Delay 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
AdjDel/Veh:  15.6 14.8 14.8  17.6 16.3 16.3  13.8  153 152.5  14.5 80.0 13.5
LOS by Move:    C    B    B     C    C    C     B    F    F     B    F    B
ApproachDel:      15.1             16.7            132.0             58.4
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       15.1             16.7            132.0             58.4
LOS by Appr:        C                C                F                F
*******************************************************************************
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2007 Plus Project

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--------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #1 1st / A
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.926
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):        53.9
Optimal Cycle:        118               Level Of Service:                  D
********************************************************************************
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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     209  292    99   121  333    85    57  180   196   139  215    93
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:  209  292    99   121  333    85    57  180   196   139  215    93
Added Vol:     25   54    46     0   22     0     0    0    10    16    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  234  346   145   121  355    85    57  180   206   155  215    93
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   260  384   161   134  394    94    63  200   229   172  239   103
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  260  384   161   134  394    94    63  200   229   172  239   103
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.:   260  384   161   134  394    94    63  200   229   172  239   103
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.84 0.84  0.84  0.84 0.86  0.86  0.86 0.83  0.83  0.86 0.86  0.86
Lanes:       1.00 0.70  0.30  1.00 0.81  0.19  1.00 0.47  0.53  1.00 0.70  0.30
Final Sat.:  1592 1129   473  1592 1313   314  1625  734   840  1625 1140   493
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.34  0.34  0.08 0.30  0.30  0.04 0.27  0.27  0.11 0.21  0.21
Crit Moves:  ****                  ****             ****        ****
Green/Cycle: 0.18 0.40  0.40  0.10 0.32  0.32  0.06 0.29  0.29  0.11 0.34  0.34
Volume/Cap:  0.93 0.85  0.85  0.85 0.93  0.93  0.61 0.93  0.93  0.93 0.61  0.61
Uniform Del: 40.5 27.2  27.2  44.3 32.6  32.6  45.6 34.2  34.2  43.9 27.1  27.1
IncremntDel: 34.6 10.3  10.3  32.6 22.4  22.4   9.9 24.6  24.6  45.2  1.9   1.9
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay 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
Delay/Veh:   75.1 37.5  37.5  76.8 55.0  55.0  55.5 58.8  58.8  89.0 29.1  29.1
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:  75.1 37.5  37.5  76.8 55.0  55.0  55.5 58.8  58.8  89.0 29.1  29.1
HCM2kAvg:      12   18    18     7   19    19     3   17    17     9    9     9
********************************************************************************
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Alt 3 2007 AM plus Project Fri Mar 4, 2005 14:34:35                 Page 3-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 1st / Chestnut
*******************************************************************************
Average Delay (sec/veh):      244.1            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:       Uncontrolled      Uncontrolled       Stop Sign         Stop Sign
Rights:           Include           Include           Include           Include
Lanes:         0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       30   466    15    26   596    34   114     5    18     2     1    17
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:    30   466    15    26   596    34   114     5    18     2     1    17
Added Vol:       0   124     0     0    49     0     0     0     0     0     0     0
PasserByVol:     0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:    30   590    15    26   645    34   114     5    18     2     1    17
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:      0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:     33   656    17    29   717    38   127     6    20     2     1    19
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:     33   656    17    29   717    38   127     6    20     2     1    19
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:   754  xxxx xxxxx   672  xxxx xxxxx  1534  1532   736  1537  1543   664
Potent Cap.:   856  xxxx xxxxx   918  xxxx xxxxx    96   118   423    96   116   464
Move Cap.:     856  xxxx xxxxx   918  xxxx xxxxx    87   110   423    83   108   464
Volume/Cap:   0.04  xxxx  xxxx  0.03  xxxx  xxxx  1.46  0.05  0.05  0.03  0.01  0.04
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.1  xxxx xxxxx   0.1  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Stopped Del:   9.4  xxxx xxxxx   9.0  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    97 xxxxx  xxxx   286 xxxxx
SharedQueue:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  11.7 xxxxx xxxxx   0.3 xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx   373 xxxxx xxxxx  18.7 xxxxx
Shared LOS:      *     *     *     *     *     *     *     F     *     *     C     *
ApproachDel:        xxxxxx            xxxxxx             373.0              18.7
ApproachLOS:           *                 *                 F                 C
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 S. 1st St / W. Cherry St
*******************************************************************************
Average Delay (sec/veh):     80.5          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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15  412    20     60  549    16     69    5    44     15    5    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:   15  412    20     60  549    16     69    5    44     15    5    30
Added Vol:      0  124     0      0   49     0      0    0     0      0    0     0
PasserByVol:    0    0     0      0    0     0      0    0     0      0    0     0
Initial Fut:   15  536    20     60  598    16     69    5    44     15    5    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:     0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90
PHF Volume:    17  596    22     67  664    18     77    6    49     17    6    33
Reduct Vol:     0    0     0      0    0     0      0    0     0      0    0     0
Final Vol.:    17  596    22     67  664    18     77    6    49     17    6    33
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:  682 xxxx xxxxx    618 xxxx xxxxx   1466 1458   673   1474 1456   607
Potent Cap.:  911 xxxx xxxxx    962 xxxx xxxxx    107  131   458    106  131   500
Move Cap.:    911 xxxx xxxxx    962 xxxx xxxxx     90  119   458     85  119   500
Volume/Cap:  0.02 xxxx  xxxx   0.07 xxxx  xxxx   0.85 0.05  0.11   0.20 0.05  0.07
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx    0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  9.0 xxxx xxxxx    9.0 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  130 xxxxx   xxxx  180 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  7.1 xxxxx xxxxx  1.2 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  146 xxxxx xxxxx 33.8 xxxxx
Shared LOS:     *    *     *      *    *     *      *    F     *      *    D     *
ApproachDel:      xxxxxx           xxxxxx            145.8             33.8
ApproachLOS:        *                *                 F                 D
```

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--------------------------------------------------------------------------------
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                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #5 1st / Country Faire
********************************************************************************
Average Delay (sec/veh):        15.5          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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  1    1  0  0  1  0    1  0  0  0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        1  365   15    20  506    5     2    0    0    20    0   80
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:     1  365   15    20  506    5     2    0    0    20    0   80
Added Vol:       0  124    0     0   49    0     0    0    0     0    0    0
PasserByVol:     0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:     1  489   15    20  555    5     2    0    0    20    0   80
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:      0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:      1  543   17    22  617    6     2    0    0    22    0   89
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      1  543   17    22  617    6     2    0    0    22    0   89
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1 xxxx xxxxx   7.1 xxxx   6.2
FollowUpTim:   2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx xxxxx   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   622 xxxx xxxxx   560 xxxx xxxxx  1262 xxxx xxxxx  1209 xxxx   543
Potent Cap.:   959 xxxx xxxxx  1011 xxxx xxxxx   148 xxxx xxxxx   161 xxxx   543
Move Cap.:     959 xxxx xxxxx  1011 xxxx xxxxx   122 xxxx xxxxx   158 xxxx   543
Volume/Cap:   0.00 xxxx  xxxx  0.02 xxxx  xxxx  0.02 xxxx  xxxx  0.14 xxxx  0.16
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.0 xxxx xxxxx   0.1 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx   0.6
Stopped Del:   8.8 xxxx xxxxx   8.6 xxxx xxxxx  35.1 xxxx xxxxx xxxxx xxxx  12.9
LOS by Move:     A    *    *     A    *    *     E    *    *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   158 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.5 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  31.4 xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     D    *    *
ApproachDel:      xxxxxx           xxxxxx            35.1             16.6
ApproachLOS:        *                *                 E                C
```

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                     Level Of Service Computation Report
          2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #6 1st / Parkway
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):        0.806
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):        38.9
Optimal Cycle:         70                Level Of Service:                  D
********************************************************************************
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:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  0  1  0   1  0  1  0  1   1  0  0  1  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   140    20   505   174     9    20   131    10    14    78   190
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:   20   140    20   505   174     9    20   131    10    14    78   190
Added Vol:      0     4    10    32     9    16     8    17     0    29    50    95
PasserByVol:    0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:   20   144    30   537   183    25    28   148    10    43   128   285
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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:    22   160    33   597   203    28    31   164    11    48   142   317
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   22   160    33   597   203    28    31   164    11    48   142   317
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.:    22   160    33   597   203    28    31   164    11    48   142   317
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.93  0.95  0.95  0.93  0.98  0.83  0.95  0.99  0.99  0.99  0.99  0.85
Lanes:       1.00  0.83  0.17  1.00  1.00  1.00  1.00  0.94  0.06  0.25  0.75  1.00
Final Sat.:  1769  1501   313  1769  1862  1583  1805  1764   119   472  1405  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01  0.11  0.11  0.34  0.11  0.02  0.02  0.09  0.09  0.10  0.10  0.20
Crit Moves:        ****        ****                    ****                    ****
Green/Cycle: 0.06  0.13  0.13  0.42  0.49  0.49  0.12  0.12  0.12  0.24  0.24  0.24
Volume/Cap:  0.22  0.81  0.81  0.81  0.22  0.04  0.15  0.81  0.81  0.42  0.42  0.81
Uniform Del: 45.0  42.1  42.1  25.5  14.4  13.0  39.8  43.1  43.1  31.8  31.8  35.6
IncremntDel:  1.1  17.8  17.8   6.5   0.1   0.0   0.3  19.3  19.3   0.6   0.6  11.6
InitQueuDel:  0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
Delay 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
Delay/Veh:   46.2  60.0  60.0  32.0  14.5  13.0  40.1  62.5  62.5  32.5  32.5  47.2
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:  46.2  60.0  60.0  32.0  14.5  13.0  40.1  62.5  62.5  32.5  32.5  47.2
HCM2kAvg:       1     8     8    19     3     0     1     7     7     5     5    11
********************************************************************************
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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 SR 113 / Midway
*******************************************************************************
Average Delay (sec/veh):        10.8            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:       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:       13  125    29    10   94    31    17   23    12     4   23    36
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:    13  125    29    10   94    31    17   23    12     4   23    36
Added Vol:       0    8     0     0   23    15     5    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    13  133    29    10  117    46    22   23    12     4   23    36
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     14  148    32    11  130    51    24   26    13     4   26    40
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     14  148    32    11  130    51    24   26    13     4   26    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:   181 xxxx xxxxx   180 xxxx xxxxx   403  387   156   390  396   164
Potent Cap.:  1394 xxxx xxxxx  1396 xxxx xxxxx   561  551   895   573  544   886
Move Cap.:    1394 xxxx xxxxx  1396 xxxx xxxxx   509  541   895   536  534   886
Volume/Cap:   0.01 xxxx  xxxx  0.01 xxxx  xxxx  0.05 0.05  0.01  0.01 0.05  0.05
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:         0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:   7.6 xxxx xxxxx   7.6 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  575 xxxxx  xxxx  691 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx  0.3 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.0 xxxxx xxxxx 10.8 xxxxx
Shared LOS:      *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:      xxxxxx           xxxxxx             12.0             10.8
ApproachLOS:         *                *                 B                B
```

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                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #9 Parkway / School Access
********************************************************************************
Average Delay (sec/veh):      10.4            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:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  0  0  1    1  0  1  0  0    0  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0   282   656    0     0     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    0     0     0    0   282   656    0     0     0    0     0
Added Vol:      0    0     0     0    0    88    29   29     0     0   87     0
PasserByVol:    0    0     0     5    0     0     0    0     0     0    0     5
Initial Fut:    0    0     0     5    0   370   685   29     0     0   87     5
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0     6    0   411   761   32     0     0   97     6
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0     6    0   411   761   32     0     0   97     6
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1654 xxxx    99   102 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   109 xxxx   962  1502 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    66 xxxx   962  1502 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.08 xxxx  0.43  0.51 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx   2.2   3.0 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx  11.5   9.8 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx              11.5            xxxxxx           xxxxxx
ApproachLOS:        *                  B                *                *
```

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                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #10 Parkway / Valley Glen
********************************************************************************
Average Delay (sec/veh):      10.1          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:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    84    0   128    42   77     0     0   60    42
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    0     0    84    0   128    42   77     0     0   60    42
Added Vol:      0    0     0     2    0     0     0   23     0     0   59     7
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0    86    0   128    42  100     0     0  119    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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0    96    0   142    47  111     0     0  132    54
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0    96    0   142    47  111     0     0  132    54
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   364 xxxx   159   187 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   640 xxxx   891  1400 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   623 xxxx   891  1400 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.15 xxxx  0.16  0.03 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx   0.5 xxxx   0.6   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx  11.8 xxxx   9.8   7.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     A     A    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx             10.6            xxxxxx           xxxxxx
ApproachLOS:        *                 B                *                *
```

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                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #18 1st / Valley Glen
********************************************************************************
Average Delay (sec/veh):     53.6           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:     Uncontrolled     Uncontrolled      Stop Sign         Stop Sign
Rights:         Include          Include          Include           Include
Lanes:       1  0  0  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:       20  284     0     0  515    70   123    0    60     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:    20  284     0     0  515    70   123    0    60     0    0     0
Added Vol:       0   95    12    18   32     0     0    2     0    25    5    29
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    20  379    12    18  547    70   123    2    60    25    5    29
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     22  421    13    20  608    78   137    2    67    28    6    32
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     22  421    13    20  608    78   137    2    67    28    6    32
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:   686 xxxx xxxxx   434 xxxx xxxxx  1178 1166   343   817 1198   428
Potent Cap.:   908 xxxx xxxxx  1125 xxxx xxxxx   169  196   704   297  187   631
Move Cap.:     908 xxxx xxxxx  1125 xxxx xxxxx   152  188   704   258  179   631
Volume/Cap:   0.02 xxxx  xxxx  0.02 xxxx  xxxx  0.90 0.01  0.09  0.11 0.03  0.05
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:         0.1 xxxx xxxxx   0.1 xxxx xxxxx   6.3 xxxx xxxxx   0.4 xxxx xxxxx
Stopped Del:   9.1 xxxx xxxxx   8.3 xxxx xxxxx 106.7 xxxx xxxxx  20.6 xxxx xxxxx
LOS by Move:     A    *     *     A    *     *     F    *     *     C    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   647  xxxx xxxx   461
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.4 xxxxx xxxx   0.3
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.2 xxxxx xxxx  13.5
Shared LOS:      *    *     *     *    *     *     *    *     B     *    *     B
ApproachDel:       xxxxxx           xxxxxx             74.7              16.5
ApproachLOS:          *                *                 F                 C
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                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #29 West A St / Pitt School Rd
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):        1.372
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):        80.6
Optimal Cycle:          0                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:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  0  1  0    1  0  1  0  1    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95    56    87    74   124    59   119   498    45    58   334   186
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:   95    56    87    74   124    59   119   498    45    58   334   186
Added Vol:     25    30     5     0    12     0     0     0     9     2     0     0
PasserByVol:    0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:  120    86    92    74   136    59   119   498    54    60   334   186
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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:   133    96   102    82   151    66   132   553    60    67   371   207
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  133    96   102    82   151    66   132   553    60    67   371   207
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.:   133    96   102    82   151    66   132   553    60    67   371   207
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Lanes:       1.00  0.48  0.52  1.00  1.00  1.00  1.00  0.90  0.10  1.00  1.00  1.00
Final Sat.:   378   201   215   340   358   382   408   403    44   378   407   437
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35  0.48  0.48  0.24  0.42  0.17  0.32  1.37  1.37  0.18  0.91  0.47
Crit Moves:              ****        ****                    ****        ****
Delay/Veh:   16.8  18.2  18.2  16.1  19.1  13.6  15.3   204 203.8  14.0  54.5  17.7
Delay 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
AdjDel/Veh:  16.8  18.2  18.2  16.1  19.1  13.6  15.3   204 203.8  14.0  54.5  17.7
LOS by Move:    C     C     C     C     C     B     C     F     F     B     F     C
ApproachDel:       17.6              17.0             170.4              38.5
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:        17.6              17.0             170.4              38.5
LOS by Appr:          C                 C                 F                 E
********************************************************************************
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                      Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #1 1st / A
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):         0.865
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):       44.4
Optimal Cycle:         87              Level Of Service:                  D
********************************************************************************
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        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     140  336   24   126  371  155   132  179   84    45  177   51
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:  140  336   24   126  371  155   132  179   84    45  177   51
Added Vol:     20   40   32     0   61    0     0    0   31    53    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  160  376   56   126  432  155   132  179  115    98  177   51
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   178  418   62   140  480  172   147  199  128   109  197   57
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  178  418   62   140  480  172   147  199  128   109  197   57
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.:   178  418   62   140  480  172   147  199  128   109  197   57
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.84 0.87 0.87  0.84 0.85 0.85  0.86 0.85 0.85  0.86 0.87 0.87
Lanes:       1.00 0.87 0.13  1.00 0.74 0.26  1.00 0.61 0.39  1.00 0.78 0.22
Final Sat.:  1592 1431  213  1592 1184  425  1625  980  629  1625 1282  369
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.29 0.29  0.09 0.41 0.41  0.09 0.20 0.20  0.07 0.15 0.15
Crit Moves:  ****                 ****             ****        ****
Green/Cycle: 0.13 0.46 0.46  0.14 0.47 0.47  0.12 0.23 0.23  0.08 0.20 0.20
Volume/Cap:  0.86 0.64 0.64  0.64 0.86 0.86  0.78 0.86 0.86  0.86 0.78 0.78
Uniform Del: 42.7 20.6 20.6  40.7 23.7 23.7  43.0 36.7 36.7  45.6 38.1 38.1
IncremntDel: 29.6  1.8  1.8   6.0 10.3 10.3  18.7 18.4 18.4  42.3 11.5 11.5
InitQueuDel:  0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0
Delay 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
Delay/Veh:   72.3 22.4 22.4  46.7 34.0 34.0  61.7 55.1 55.1  87.9 49.6 49.6
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:  72.3 22.4 22.4  46.7 34.0 34.0  61.7 55.1 55.1  87.9 49.6 49.6
HCM2kAvg:       8   12   12     5   21   21     7   13   13     6    9    9
********************************************************************************
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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
***************************************************************************
Intersection #2 1st / Chestnut
***************************************************************************
Average Delay (sec/veh):       30.9          Level Of Service:          D
***************************************************************************
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:        0  0  1!  0  0   0  0  1!  0  0   0  0  1!  0  0   0  0  1!  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        6   345    10    17   422   146    49     3    31     7     1    23
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:     6   345    10    17   422   146    49     3    31     7     1    23
Added Vol:       0    91     0     0   145     0     0     0     0     0     0     0
PasserByVol:     0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:     6   436    10    17   567   146    49     3    31     7     1    23
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:      0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:      7   484    11    19   630   162    54     3    34     8     1    26
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:      7   484    11    19   630   162    54     3    34     8     1    26
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:   792  xxxx xxxxx   496  xxxx xxxxx  1266  1258   711  1271  1333   490
Potent Cap.:   828  xxxx xxxxx  1068  xxxx xxxxx   147   172   436   146   155   582
Move Cap.:     828  xxxx xxxxx  1068  xxxx xxxxx   137   168   436   130   151   582
Volume/Cap:   0.01  xxxx  xxxx  0.02  xxxx  xxxx  0.40  0.02  0.08  0.06  0.01  0.04
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.0  xxxx xxxxx   0.1  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Stopped Del:   9.4  xxxx xxxxx   8.4  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   186 xxxxx  xxxx   310 xxxxx
SharedQueue:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx   2.4 xxxxx xxxxx   0.4 xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  41.9 xxxxx xxxxx  18.1 xxxxx
Shared LOS:      *     *     *     *     *     *     *     E     *     *     C     *
ApproachDel:       xxxxxx            xxxxxx             41.9              18.1
ApproachLOS:          *                 *                 E                 C
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 S. 1st St / W. Cherry St
*******************************************************************************
Average Delay (sec/veh):       17.4          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:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       35  283     0     0  342    78    30     0    19     5     0     5
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:    35  283     0     0  342    78    30     0    19     5     0     5
Added Vol:       0   91     0     0  145     0     0     0     0     0     0     0
PasserByVol:     0    0     0     0    0     0     0     0     0     0     0     0
Initial Fut:    35  374     0     0  487    78    30     0    19     5     0     5
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     39  416     0     0  541    87    33     0    21     6     0     6
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:     39  416     0     0  541    87    33     0    21     6     0     6
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1 xxxx   6.2   7.1 xxxx   6.2
FollowUpTim:   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   628 xxxx xxxxx  xxxx xxxx xxxxx  1081 xxxx   584  1088 xxxx   416
Potent Cap.:   954 xxxx xxxxx  xxxx xxxx xxxxx   197 xxxx   515   195 xxxx   641
Move Cap.:     954 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   515   181 xxxx   641
Volume/Cap:   0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.18 xxxx  0.04  0.03 xxxx  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:         0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:   8.9 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  251 xxxxx  xxxx  282 xxxxx
SharedQueue:   0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.8 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:   8.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 23.3 xxxxx xxxxx 18.3 xxxxx
Shared LOS:      A    *     *     *    *     *     *    C     *     *    C     *
ApproachDel:      xxxxxx           xxxxxx            23.3             18.3
ApproachLOS:         *                *                C                C
```

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                   Level Of Service Computation Report
         2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #5 1st / Country Faire
********************************************************************************
Average Delay (sec/veh):      11.5          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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  1  0  1    1  0  0  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  267   10     62  254    2      5    0    1     15    0   35
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:    1  267   10     62  254    2      5    0    1     15    0   35
Added Vol:      0   91    0      0  145    0      0    0    0      0    0    0
PasserByVol:    0    0    0      0    0    0      0    0    0      0    0    0
Initial Fut:    1  358   10     62  399    2      5    0    1     15    0   35
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:     0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90   0.90 0.90 0.90
PHF Volume:     1  398   11     69  443    2      6    0    1     17    0   39
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:     1  398   11     69  443    2      6    0    1     17    0   39
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:  446 xxxx xxxxx   409 xxxx xxxxx  1007 xxxx  444    983 xxxx  398
Potent Cap.: 1115 xxxx xxxxx  1150 xxxx xxxxx   221 xxxx  618    230 xxxx  656
Move Cap.:   1115 xxxx xxxxx  1150 xxxx xxxxx   198 xxxx  618    219 xxxx  656
Volume/Cap:  0.00 xxxx  xxxx  0.06 xxxx  xxxx  0.03 xxxx 0.00   0.08 xxxx 0.06
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  0.2
Stopped Del:  8.2 xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.8
LOS by Move:    A    *    *      A    *    *      *    *    *      *    *    B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  224 xxxxx    219 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx    0.2 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 21.6 xxxxx   22.8 xxxx xxxxx
Shared LOS:     *    *    *      *    *    *      *    C    *      C    *    *
ApproachDel:     xxxxxx           xxxxxx             21.6             14.4
ApproachLOS:        *                *                 C                B
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                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
*********************************************************************************
Intersection #6 1st / Parkway
*********************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):         0.485
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):         30.2
Optimal Cycle:         33                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:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        1  0  0  1  0    1  0  1  0  1    1  0  0  1  0    0  1  0  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:     30   239     5    40   170    25    40    40    42     9    53    76
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:  30   239     5    40   170    25    40    40    42     9    53    76
Added Vol:     0    12    32   101     8    14    20    57     0    19    33    59
PasserByVol:   0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:  30   251    37   141   178    39    60    97    42    28    86   135
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:    0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:   33   279    41   157   198    43 .  67   108    47    31    96   150
Reduct Vol:    0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  33   279    41   157   198    43    67   108    47    31    96   150
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.:   33   279    41   157   198    43    67   108    47    31    96   150
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:   1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment: 0.93  0.96  0.96  0.93  0.98  0.83  0.95  0.96  0.96  0.99  0.99  0.85
Lanes:      1.00  0.87  0.13  1.00  1.00  1.00  1.00  0.70  0.30  0.25  0.75  1.00
Final Sat.: 1769  1592   235  1769  1862  1583  1805  1266   548   461  1416  1615
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:    0.02  0.18  0.18  0.09  0.11  0.03  0.04  0.09  0.09  0.07  0.07  0.09
Crit Moves:       ****        ****                    ****                    ****
Green/Cycle: 0.08 0.36  0.36  0.18  0.46  0.46  0.18  0.18  0.18  0.19  0.19  0.19
Volume/Cap: 0.23  0.49  0.49  0.49  0.23  0.06  0.21  0.49  0.49  0.35  0.35  0.49
Uniform Del: 43.0 24.8  24.8  36.7  16.2  14.9  35.3  37.2  37.2  35.1  35.1  36.0
IncremntDel: 0.8   0.6   0.6   1.2   0.1   0.0   0.3   1.2   1.2   0.6   0.6   1.2
InitQueuDel: 0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
Delay 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
Delay/Veh:  43.8  25.3  25.3  37.8  16.4  14.9  35.6  38.3  38.3  35.7  35.7  37.2
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: 43.8  25.3  25.3  37.8  16.4  14.9  35.6  38.3  38.3  35.7  35.7  37.2
HCM2kAvg:      1     8     8     5     4     1     2     5     5     4     4     5
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----------------------------------------------------------------------------
----------------------------------------------------------------------------
                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #7 SR 113 / Midway
****************************************************************************
Average Delay (sec/veh):       12.5          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:     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:      26  140    18    16   88    58    64   24    23     6   13     8
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:   26  140    18    16   88    58    64   24    23     6   13     8
Added Vol:      0   26     0     0   16    10    17    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   26  166    18    16  104    68    81   24    23     6   13     8
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    29  184    20    18  116    76    90   27    26     7   14     9
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    29  184    20    18  116    76    90   27    26     7   14     9
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:  191 xxxx xxxxx   204 xxxx xxxxx   453  451   153   467  479   194
Potent Cap.: 1383 xxxx xxxxx  1367 xxxx xxxxx   521  507   898   509  489   852
Move Cap.:   1383 xxxx xxxxx  1367 xxxx xxxxx   490  490   898   462  472   852
Volume/Cap:  0.02 xxxx  xxxx  0.01 xxxx  xxxx  0.18 0.05  0.03  0.01 0.03  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.7 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  534 xxxxx  xxxx  541 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.1 xxxxx xxxxx  0.2 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 14.2 xxxxx xxxxx 12.0 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:     xxxxxx           xxxxxx            14.2             12.0
ApproachLOS:        *                *                B                B
```

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                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #9 Parkway / School Access
********************************************************************************
Average Delay (sec/veh):       8.7          Level Of Service:       A
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  0  0  1    1  0  1  0  0    0  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0     0     0     0     0   138    85     0     0     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     0     0     0     0   138    85     0     0     0     0     0
Added Vol:      0     0     0     0     0    56    95    95     0     0    56     0
PasserByVol:    0     0     0     5     0     0     0     0     0     0     0     5
Initial Fut:    0     0     0     5     0   194   180    95     0     0    56     5
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:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:     0     0     0     6     0   216   200   106     0     0    62     6
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:     0     0     0     6     0   216   200   106     0     0    62     6
Critical Gap Module:
Critical Gp:xxxxx  xxxx xxxxx   6.4  xxxx   6.2   4.1  xxxx xxxxx xxxxx  xxxx xxxxx
FollowUpTim:xxxxx  xxxx xxxxx   3.5  xxxx   3.3   2.2  xxxx xxxxx xxxxx  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  xxxx xxxxx   571  xxxx    65    68  xxxx xxxxx  xxxx  xxxx xxxxx
Potent Cap.: xxxx  xxxx xxxxx   486  xxxx  1005  1546  xxxx xxxxx  xxxx  xxxx xxxxx
Move Cap.:   xxxx  xxxx xxxxx   438  xxxx  1005  1546  xxxx xxxxx  xxxx  xxxx xxxxx
Volume/Cap:  xxxx  xxxx  xxxx  0.01  xxxx  0.21  0.13  xxxx  xxxx  xxxx  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx  xxxx xxxxx xxxxx  xxxx   0.8   0.4  xxxx xxxxx xxxxx  xxxx xxxxx
Stopped Del:xxxxx  xxxx xxxxx xxxxx  xxxx   9.6   7.7  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  xxxx xxxxx  xxxx  xxxx xxxxx
SharedQueue:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:     *     *     *     *     *     *     *     *     *     *     *     *
ApproachDel:     xxxxxx              9.6            xxxxxx            xxxxxx
ApproachLOS:        *                 A                *                 *
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #10 Parkway / Valley Glen
********************************************************************************
Average Delay (sec/veh):        9.3          Level Of Service:       A
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:         0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:        0    0     0     22    0    25     45  102     0      0   68    40
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    0     0     22    0    25     45  102     0      0   68    40
Added Vol:       0    0     0      8    0     0      0   69     0      0   43     5
PasserByVol:     0    0     0      0    0     0      0    0     0      0    0     0
Initial Fut:     0    0     0     30    0    25     45  171     0      0  111    45
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:      0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90   0.90 0.90  0.90
PHF Volume:      0    0     0     33    0    28     50  190     0      0  123    50
Reduct Vol:      0    0     0      0    0     0      0    0     0      0    0     0
Final Vol.:      0    0     0     33    0    28     50  190     0      0  123    50
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    6.4 xxxx   6.2    4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx    3.5 xxxx   3.3    2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx    438 xxxx   148    173 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    580 xxxx   904   1416 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    564 xxxx   904   1416 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx   0.06 xxxx  0.03   0.04 xxxx  xxxx  xxxx xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx    0.2 xxxx   0.1    0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx   11.8 xxxx   9.1    7.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *      B    *     A      A    *     *     *    *     *
Movement:      LT - LTR - RT     LT - LTR - RT     LT - LTR - RT     LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   xxxx xxxx xxxxx   xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *      *    *     *      *    *     *     *    *     *
ApproachDel:     xxxxxx             10.6             xxxxxx            xxxxxx
ApproachLOS:        *                 B                 *                 *
```

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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*****************************************************************************
Intersection #18 1st / Valley Glen
*****************************************************************************
Average Delay (sec/veh):      17.1         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:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       1  0  0  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      62  180    0     0  197   68    93    0   57     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:   62  180    0     0  197   68    93    0   57     0    0    0
Added Vol:      0   59   32    44  101    0     0    5    0    22    3   32
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   62  239   32    44  298   68    93    5   57    22    3   32
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    69  266   36    49  331   76   103    6   63    24    3   36
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    69  266   36    49  331   76   103    6   63    24    3   36
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:  407 xxxx xxxxx  301 xxxx xxxxx  907  906  203   687  926  283
Potent Cap.: 1152 xxxx xxxxx 1260 xxxx xxxxx  259  278  842   364  271  760
Move Cap.:   1152 xxxx xxxxx 1260 xxxx xxxxx  226  251  842   306  245  760
Volume/Cap:  0.06 xxxx  xxxx 0.04 xxxx  xxxx 0.46 0.02 0.08  0.08 0.01 0.05
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.2 xxxx xxxxx  0.1 xxxx xxxxx  2.2 xxxx xxxxx  0.3 xxxx xxxxx
Stopped Del:  8.3 xxxx xxxxx  8.0 xxxx xxxxx 33.7 xxxx xxxxx 17.8 xxxx xxxxx
LOS by Move:    A    *    *     A    *    *     D    *    *     C    *    *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx  708  xxxx xxxx  644
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  0.3 xxxxx xxxx  0.2
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.6 xxxxx xxxx 10.9
Shared LOS:     *    *    *     *    *    *     *    *    B     *    *    B
ApproachDel:      xxxxxx           xxxxxx            24.5             13.6
ApproachLOS:         *                *                C                B
```

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---------------------------------------------------------------------------------
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                   Level Of Service Computation Report
         2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #29 West A St / Pitt School Rd
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):        1.366
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):       86.3
Optimal Cycle:          0              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:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       1  0  0  1  0   1  0  1  0  1   1  0  0  1  0   1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      91   35   80  114  110  139   88  460   46   78  382  108
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:   91   35   80  114  110  139   88  460   46   78  382  108
Added Vol:     17   23    3    0   35    0    0    0   29    5    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:  108   58   83  114  145  139   88  460   75   83  382  108
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:     0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90
PHF Volume:   120   64   92  127  161  154   98  511   83   92  424  120
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  120   64   92  127  161  154   98  511   83   92  424  120
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   64   92  127  161  154   98  511   83   92  424  120
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       1.00 0.41 0.59 1.00 1.00 1.00 1.00 0.86 0.14 1.00 1.00 1.00
Final Sat.:   369  167  239  353  372  401  399  374   61  371  398  424
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.33 0.39 0.39 0.36 0.43 0.39 0.24 1.37 1.37 0.25 1.07 0.28
Crit Moves:       ****           ****           ****           ****
Delay/Veh:   16.8 16.6 16.6 18.2 19.2 16.9 14.3  201 201.5 15.3 94.0 14.2
Delay 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
AdjDel/Veh:  16.8 16.6 16.6 18.2 19.2 16.9 14.3  201 201.5 15.3 94.0 14.2
LOS by Move:    C    C    C    C    C    C    B    F    F    C    F    B
ApproachDel:       16.7             18.1            175.0            67.6
Delay Adj:         1.00             1.00             1.00            1.00
ApprAdjDel:        16.7             18.1            175.0            67.6
LOS by Appr:         C                C                F               F
*********************************************************************************
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Cumulative

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                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1 1st / A
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        1.215
Loss Time (sec):       9 (Y+R =  4 sec) Average Delay (sec/veh):      132.0
Optimal Cycle:       180               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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      340  632  186   191  586  110    78  237  264   226  331  138
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:   340  632  186   191  586  110    78  237  264   226  331  138
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:      0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:    378  702  207   212  651  122    87  263  293   251  368  153
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   378  702  207   212  651  122    87  263  293   251  368  153
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.:    378  702  207   212  651  122    87  263  293   251  368  153
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:   0.93 0.95 0.95  0.93 0.96 0.96  0.93 0.90 0.90  0.93 0.94 0.94
Lanes:        1.00 0.77 0.23  1.00 0.84 0.16  1.00 0.47 0.53  1.00 0.71 0.29
Final Sat.:   1769 1390  409  1769 1530  287  1769  811  904  1769 1256  524
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.21 0.51 0.51  0.12 0.43 0.43  0.05 0.32 0.32  0.14 0.29 0.29
Crit Moves:   ****                 ****            ****       ****
Green/Cycle:  0.18 0.43 0.43  0.10 0.35 0.35  0.06 0.27 0.27  0.12 0.33 0.33
Volume/Cap:   1.22 1.19 1.19  1.19 1.22 1.22  0.89 1.22 1.22  1.22 0.89 0.89
Uniform Del:  41.2 28.7 28.7  45.0 32.5 32.5  46.9 36.6 36.6  44.2 31.8 31.8
IncremntDel:122.6 97.8 97.8 127.3  111 110.7  57.2  115 115.4 132.7 15.6 15.6
InitQueuDel:   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0
Delay 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
Delay/Veh:   163.8  127 126.6 172.3  143 143.2 104.1  152 152.0 176.8 47.4 47.4
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:  163.8  127 126.6 172.3  143 143.2 104.1  152 152.0 176.8 47.4 47.4
HCM2kAvg:       24   48   48    14   43   43     5   32   32    17   19   19
********************************************************************************
```

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--------------------------------------------------------------------------------
                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #2 1st / Chestnut
********************************************************************************
Average Delay (sec/veh):    >999           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:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30  998    20    30  966    30   125   10    25     5    2    35
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:   30  998    20    30  966    30   125   10    25     5    2    35
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    33 1109    22    33 1073    33   139   11    28     6    2    39
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    33 1109    22    33 1073    33   139   11    28     6    2    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: 1107 xxxx xxxxx  1131 xxxx xxxxx  2364 2354  1090  2363 2360  1120
Potent Cap.:  631 xxxx xxxxx   618 xxxx xxxxx    25   36   264    25   36   254
Move Cap.:    631 xxxx xxxxx   618 xxxx xxxxx    18   32   264    15   32   254
Volume/Cap:  0.05 xxxx  xxxx  0.05 xxxx  xxxx  7.59 0.34  0.11  0.37 0.07  0.15
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.2 xxxx xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del: 11.0 xxxx xxxxx  11.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   22 xxxxx  xxxx   79 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 22.4 xxxxx xxxxx  2.6 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 3509 xxxxx xxxxx  102 xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:      xxxxxx           xxxxxx            3509.3            102.1
ApproachLOS:        *                *                 F                 F
```

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--------------------------------------------------------------------------------
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                       Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #3 S. 1st St / W. Cherry St
********************************************************************************
Average Delay (sec/veh):     >999              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:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|----------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      46  836    20    60  901    35   167    6    76    70    5    45
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:   46  836    20    60  901    35   167    6    76    70    5    45
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    51  929    22    67 1001    39   186    7    84    78    6    50
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    51  929    22    67 1001    39   186    7    84    78    6    50
------------|----------------||---------------||---------------||---------------|
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: 1040 xxxx xxxxx   951 xxxx xxxxx  2224 2207  1021  2242 2216   940
Potent Cap.:  669 xxxx xxxxx   722 xxxx xxxxx    31   45   290    30   44   322
Move Cap.:    669 xxxx xxxxx   722 xxxx xxxxx    20   37   290    16   37   322
Volume/Cap:  0.08 xxxx  xxxx  0.09 xxxx  xxxx  9.07 0.18  0.29  4.78 0.15  0.16
------------|----------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.2 xxxx xxxxx   0.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del: 10.8 xxxx xxxxx  10.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   29 xxxxx  xxxx   26 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 34.0 xxxxx xxxxx 16.4 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 4106 xxxxx xxxxx 2139 xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:      xxxxxx           xxxxxx           4105.6           2139.2
ApproachLOS:         *                *                F                F
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #5 1st / Country Faire
******************************************************************************
Average Delay (sec/veh):      130.9        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:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       1  0  1  0  1    1  0  0  1  0    1  0  0  0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  832    25    30  990     5     2    0     0    42    0    68
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:    1  832    25    30  990     5     2    0     0    42    0    68
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     1  924    28    33 1100     6     2    0     0    47    0    76
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     1  924    28    33 1100     6     2    0     0    47    0    76
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1 xxxx xxxxx   7.1 xxxx   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx xxxxx   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1106 xxxx xxxxx   952 xxxx xxxxx  2148 xxxx xxxxx  2096 xxxx   924
Potent Cap.:  632 xxxx xxxxx   722 xxxx xxxxx    35 xxxx xxxxx    39 xxxx   329
Move Cap.:    632 xxxx xxxxx   722 xxxx xxxxx    26 xxxx xxxxx    37 xxxx   329
Volume/Cap:  0.00 xxxx  xxxx  0.05 xxxx  xxxx  0.08 xxxx  xxxx  1.25 xxxx  0.23
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.1 xxxx xxxxx   0.3 xxxx xxxxx xxxxx xxxx   0.9
Stopped Del: 10.7 xxxx xxxxx  10.2 xxxx xxxxx 154.0 xxxx xxxxx xxxxx xxxx  19.2
LOS by Move:    B    *     *     B    *     *     F    *     *     *    *     C
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx    37 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   4.8 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx 399.8 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     F    *     *
ApproachDel:       xxxxxx           xxxxxx            154.0            164.5
ApproachLOS:          *                *                F                F
```

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                      Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #6 1st / Parkway
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):          0.765
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):        38.0
Optimal Cycle:         61              Level Of Service:                    D
********************************************************************************
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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       1  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     159  318   74   449  475   80   130  272  158    50  160  132
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:  159  318   74   449  475   80   130  272  158    50  160  132
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:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   177  353   82   499  528   89   144  302  176    56  178  147
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  177  353   82   499  528   89   144  302  176    56  178  147
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.:   177  353   82   499  528   89   144  302  176    56  178  147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.93 0.95 0.95  0.93 0.98 0.83  0.93 0.88 0.88  0.95 1.00 0.85
Lanes:       1.00 0.81 0.19  1.00 1.00 1.00  1.00 1.27 0.73  1.00 1.00 1.00
Final Sat.:  1769 1468  342  1769 1862 1583  1769 2115 1228  1805 1900 1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.24 0.24  0.28 0.28 0.06  0.08 0.14 0.14  0.03 0.09 0.09
Crit Moves:       ****       ****                  ****       ****
Green/Cycle: 0.18 0.31 0.31  0.37 0.51 0.51  0.11 0.19 0.19  0.04 0.12 0.12
Volume/Cap:  0.56 0.77 0.77  0.77 0.56 0.11  0.77 0.77 0.77  0.77 0.77 0.75
Uniform Del: 37.5 30.9 30.9  27.8 17.1 13.0  43.5 38.6 38.6  47.5 42.6 42.5
IncremntDel:  2.3  6.2  6.2   5.4  0.8  0.1  17.8  5.6  5.6  37.6 14.8 14.8
InitQueuDel:  0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0
Delay 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
Delay/Veh:   39.8 37.1 37.1  33.2 17.9 13.0  61.3 44.2 44.2  85.1 57.4 57.3
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:  39.8 37.1 37.1  33.2 17.9 13.0  61.3 44.2 44.2  85.1 57.4 57.3
HCM2kAvg:       6   14   14    16   11    1     6    9    9     3    7    6
********************************************************************************
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KDA

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                       Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*********************************************************************************
Intersection #7 SR 113 / Midway
*********************************************************************************
Average Delay (sec/veh):     247.6          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:      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:      34  454    64    42  556    84    63   85    44    18   22    34
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:   34  454    64    42  556    84    63   85    44    18   22    34
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    38  504    71    47  618    93    70   94    49    20   24    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    38  504    71    47  618    93    70   94    49    20   24    38
------------|---------------||---------------||---------------||---------------|
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:  711 xxxx xxxxx   576 xxxx xxxxx  1404 1409   664  1445 1420   540
Potent Cap.:  888 xxxx xxxxx   998 xxxx xxxxx   117  139   460   110  136   542
Move Cap.:    888 xxxx xxxxx   998 xxxx xxxxx    86  126   460    36  125   542
Volume/Cap:  0.04 xxxx  xxxx  0.05 xxxx  xxxx  0.81 0.75  0.11  0.56 0.20  0.07
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  9.2 xxxx xxxxx   8.8 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  128 xxxxx  xxxx  100 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.7 xxxxx xxxxx  4.5 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  390 xxxxx xxxxx  123 xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:      xxxxxx           xxxxxx             390.1            123.0
ApproachLOS:        *                *                  F                F
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                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #9 Parkway / School Access
******************************************************************************
Average Delay (sec/veh):       11.9         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:        Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Rights:          Include          Include           Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     5    0   282   656   94     0     0  182     5
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    0     0     5    0   282   656   94     0     0  182     5
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0     6    0   313   729  104     0     0  202     6
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0     6    0   313   729  104     0     0  202     6
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1767 xxxx   205   208 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    93 xxxx   841  1375 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    54 xxxx   841  1375 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.10 xxxx  0.37  0.53 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx   3.3 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.5 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  671 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  2.6 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 15.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            15.1             xxxxxx           xxxxxx
ApproachLOS:        *                C                *                *
```

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                     Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Parkway / Valley Glen
******************************************************************************
Average Delay (sec/veh):       12.7          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:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    1  0  0  0  1    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     66    0    98    35  494     0     0  323    76
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    0     0     66    0    98    35  494     0     0  323    76
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:     0.90 0.90  0.90   0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0     73    0   109    39  549     0     0  359    84
Reduct Vol:     0    0     0      0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0     73    0   109    39  549     0     0  359    84
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    6.8 xxxx   6.9   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx    3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx    753 xxxx   222   443 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    350 xxxx   788  1113 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    340 xxxx   788  1113 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx   0.22 xxxx  0.14  0.03 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx    0.8 xxxx   0.5   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx   18.5 xxxx  10.3   8.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *      C    *     B     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *      *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx             13.6             xxxxxx           xxxxxx
ApproachLOS:        *                 B                *                *
```

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-------------------------------------------------------------------------------
                      Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #18 1st / Valley Glen
*******************************************************************************
Average Delay (sec/veh):    482.7          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:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      99  584     0     0  876   176   217    0   128     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:   99  584     0     0  876   176   217    0   128     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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   110  649     0     0  973   196   241    0   142     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   110  649     0     0  973   196   241    0   142     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8 xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1169 xxxx xxxxx  xxxx xxxx xxxxx  1616 xxxx   584  xxxx xxxx xxxxx
Potent Cap.:  593 xxxx xxxxx  xxxx xxxx xxxxx    96 xxxx   460  xxxx xxxx xxxxx
Move Cap.:    593 xxxx xxxxx  xxxx xxxx xxxxx    83 xxxx   460  xxxx xxxx xxxxx
Volume/Cap:  0.19 xxxx  xxxx  xxxx xxxx  xxxx  2.92 xxxx  0.31  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.7 xxxx xxxxx xxxxx xxxx xxxxx  23.6 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del: 12.4 xxxx xxxxx xxxxx xxxx xxxxx 972.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     F    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   460  xxxx xxxx     0
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   1.3 xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  16.3 xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     C     *    *     *
ApproachDel:      xxxxxx           xxxxxx            617.7           xxxxxx
ApproachLOS:        *                *                 F                *
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                     Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
**********************************************************************************
Intersection #29 West A St / Pitt School Rd
**********************************************************************************
Cycle (sec):           100              Critical Vol./Cap. (X):         2.045
Loss Time (sec):         0 (Y+R =  4 sec) Average Delay (sec/veh):      218.7
Optimal Cycle:           0              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:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     502  296   460   194  346   185   253  666   218   151  710   391
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:  502  296   460   194  346   185   253  666   218   151  710   391
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   558  329   511   216  384   206   281  740   242   168  789   434
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  558  329   511   216  384   206   281  740   242   168  789   434
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.:   558  329   511   216  384   206   281  740   242   168  789   434
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  1.00  1.00 1.30  0.70  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:   273  284   300   273  374   206   272  564   299   273  564   299
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     2.05 1.16  1.70  0.79 1.03  1.00  1.03 1.31  0.81  0.62 1.40  1.45
Crit Moves:  ****                  ****                  ****                  ****
Delay/Veh:  509.0  140 356.5  51.6 98.5  88.6 102.3  196  50.8  35.1  230 251.5
Delay 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
AdjDel/Veh: 509.0  140 356.5  51.6 98.5  88.6 102.3  196  50.8  35.1  230 251.5
LOS by Move:    F    F     F     F    F     F     F    F     F     E    F     F
ApproachDel:      366.3             83.4             147.2            213.5
Delay Adj:         1.00             1.00              1.00             1.00
ApprAdjDel:       366.3             83.4             147.2            213.5
LOS by Appr:        F                F                 F                F
**********************************************************************************
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---------------------------------------------------------------------------
---------------------------------------------------------------------------
                    Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #1 1st / A
***************************************************************************
Cycle (sec):        100                Critical Vol./Cap. (X):        1.535
Loss Time (sec):      9 (Y+R =  4 sec) Average Delay (sec/veh):       238.2
Optimal Cycle:      180                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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     323  776    55   283 1033   148   330  447   210    86  337    97
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:  323  776    55   283 1033   148   330  447   210    86  337    97
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   359  862    61   314 1148   164   367  497   233    96  374   108
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  359  862    61   314 1148   164   367  497   233    96  374   108
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.:   359  862    61   314 1148   164   367  497   233    96  374   108
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 0.97  0.97  0.93 0.96  0.96  0.93 0.93  0.93  0.93 0.95  0.95
Lanes:       1.00 0.93  0.07  1.00 0.87  0.13  1.00 0.68  0.32  1.00 0.78  0.22
Final Sat.:  1769 1721   122  1769 1598   229  1769 1206   567  1769 1397   402
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.50  0.50  0.18 0.72  0.72  0.21 0.41  0.41  0.05 0.27  0.27
Crit Moves:  ****                   ****       ****                   ****
Green/Cycle: 0.13 0.44  0.44  0.16 0.47  0.47  0.14 0.27  0.27  0.04 0.17  0.17
Volume/Cap:  1.53 1.13  1.13  1.13 1.53  1.53  1.53 1.50  1.50  1.50 1.53  1.53
Uniform Del: 43.4 27.8  27.8  42.1 26.6  26.6  43.2 36.3  36.3  48.2 41.3  41.3
IncremntDel:261.0 73.9  73.9  93.9  247 246.6 260.6  237 237.4 292.4  256 256.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay 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
Delay/Veh:  304.4  102 101.8 136.0  273 273.1 303.9  274 273.7 340.6  297 297.4
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: 304.4  102 101.8 136.0  273 273.1 303.9  274 273.7 340.6  297 297.4
HCM2kAvg:      29   45    45    18   96    96    30   54    54     9   37    37
***************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 1st / Chestnut
*******************************************************************************
Average Delay (sec/veh):     865.9          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:     Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15  990    15    20  937   160    60    5    40    10    2    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:   15  990    15    20  937   160    60    5    40    10    2    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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    17 1100    17    22 1041   178    67    6    44    11    2    33
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    17 1100    17    22 1041   178    67    6    44    11    2    33
------------|---------------||---------------||---------------||---------------|
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: 1219 xxxx xxxxx  1117 xxxx xxxxx  2334 2324  1130  2341 2405  1108
Potent Cap.:  572 xxxx xxxxx   625 xxxx xxxxx    26   38   250    26   34   258
Move Cap.:    572 xxxx xxxxx   625 xxxx xxxxx    20   35   250    18   31   258
Volume/Cap:  0.03 xxxx  xxxx  0.04 xxxx  xxxx  3.26 0.16  0.18  0.63 0.07  0.13
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del: 11.5 xxxx xxxxx  11.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     B    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   32 xxxxx  xxxx   56 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.7 xxxxx xxxxx  3.6 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1422 xxxxx xxxxx  188 xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:      xxxxxx           xxxxxx           1421.7            188.4
ApproachLOS:        *                *                F                F
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #3 S. 1st St / W. Cherry St
******************************************************************************
Average Delay (sec/veh):     421.4            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:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      85  849    0      0  916  179     52    0   33      5    0    5
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:   85  849    0      0  916  179     52    0   33      5    0    5
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    94  943    0      0 1018  199     58    0   37      6    0    6
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:    94  943    0      0 1018  199     58    0   37      6    0    6
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   7.1 xxxx   6.2   7.1 xxxx   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3   3.5 xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1217 xxxx xxxxx  xxxx xxxx xxxxx  2252 xxxx  1117  2268 xxxx   943
Potent Cap.:  573 xxxx xxxxx  xxxx xxxx xxxxx    30 xxxx   255    29 xxxx   321
Move Cap.:    573 xxxx xxxxx  xxxx xxxx xxxxx    25 xxxx   255    22 xxxx   321
Volume/Cap:  0.16 xxxx  xxxx  xxxx xxxx  xxxx  2.27 xxxx  0.14  0.26 xxxx  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del: 12.5 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   39 xxxxx  xxxx   40 xxxxx
SharedQueue:  0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.3 xxxxx xxxxx  0.9 xxxxx
Shrd StpDel: 12.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  865 xxxxx xxxxx  125 xxxxx
Shared LOS:     B    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:      xxxxxx           xxxxxx            865.1            124.8
ApproachLOS:         *                *                F                F
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #5 1st / Country Faire
********************************************************************************
Average Delay (sec/veh):      36.2           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:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  1   1  0  0  1  0   0  0  1! 0  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1  825    30   82  790     2    5    0     1   20    0    50
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:    1  825    30   82  790     2    5    0     1   20    0    50
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:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:     1  917    33   91  878     2    6    0     1   22    0    56
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:     1  917    33   91  878     2    6    0     1   22    0    56
------------|---------------||---------------||---------------||---------------|
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:  880 xxxx xxxxx   950 xxxx xxxxx  2024 xxxx   879  1981 xxxx   917
Potent Cap.:  768 xxxx xxxxx   723 xxxx xxxxx    43 xxxx   350    47 xxxx   333
Move Cap.:    768 xxxx xxxxx   723 xxxx xxxxx    33 xxxx   350    42 xxxx   333
Volume/Cap:  0.00 xxxx  xxxx  0.13 xxxx  xxxx  0.17 xxxx  0.00  0.53 xxxx  0.17
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.6
Stopped Del:  9.7 xxxx xxxxx  10.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  18.0
LOS by Move:    A    *     *     B    *     *     *    *     *     *    *     C
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx    38 xxxxx    42 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.6 xxxxx   1.9 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  117 xxxxx 162.8 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     F    *     *
ApproachDel:      xxxxxx           xxxxxx            117.3             59.4
ApproachLOS:         *                *                F                 F
```

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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #6 1st / Parkway
*****************************************************************************
Cycle (sec):          100                  Critical Vol./Cap. (X):       0.869
Loss Time (sec):        9 (Y+R =  4 sec) Average Delay (sec/veh):         39.5
Optimal Cycle:         89                  Level Of Service:                 D
*****************************************************************************
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        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      324  506   122    80  560   126   202  200   202    22  128   184
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:   324  506   122    80  560   126   202  200   202    22  128   184
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    360  562   136    89  622   140   224  222   224    24  142   204
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   360  562   136    89  622   140   224  222   224    24  142   204
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.:    360  562   136    89  622   140   224  222   224    24  142   204
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.93 0.95  0.95  0.93 0.98  0.83  0.93 0.86  0.86  0.95 1.00  0.85
Lanes:        1.00 0.81  0.19  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Sat.:   1769 1457   351  1769 1862  1583  1769 1636  1636  1805 1900  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.20 0.39  0.39  0.05 0.33  0.09  0.13 0.14  0.14  0.01 0.07  0.13
Crit Moves:   ****                   ****        ****                        ****
Green/Cycle:  0.23 0.55  0.55  0.07 0.38  0.38  0.15 0.27  0.27  0.03 0.15  0.15
Volume/Cap:   0.87 0.71  0.71  0.71 0.87  0.23  0.87 0.51  0.52  0.52 0.51  0.87
Uniform Del:  36.8 16.7  16.7  45.4 28.5  20.8  41.8 31.2  31.3  48.1 39.5  41.8
IncremntDel:  17.6  2.3   2.3  16.6 11.1   0.2  25.6  0.5   0.5   9.6  1.7  27.5
InitQueuDel:   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay 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
Delay/Veh:    54.4 19.0  19.0  62.0 39.6  21.0  67.4 31.7  31.8  57.7 41.1  69.3
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:   54.4 19.0  19.0  62.0 39.6  21.0  67.4 31.7  31.8  57.7 41.1  69.3
HCM2kAvg:       14   17    17     4   21     3    10    6     6     2    5     9
*****************************************************************************
```

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-----------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #7 SR 113 / Midway
*****************************************************************************
Average Delay (sec/veh): >999                   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:       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:      65  649   118   116  569    70    85   32    31    69   75   196
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:   65  649   118   116  569    70    85   32    31    69   75   196
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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    72  721   131   129  632    78    94   36    34    77   83   218
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    72  721   131   129  632    78    94   36    34    77   83   218
------------|---------------||---------------||---------------||---------------|
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:  710 xxxx xxxxx   852 xxxx xxxxx  2011 1926   671  1895 1899   787
Potent Cap.:  889 xxxx xxxxx   787 xxxx xxxxx    44   67   456    53   69   392
Move Cap.:    889 xxxx xxxxx   787 xxxx xxxxx     0   51   456    18   53   392
Volume/Cap:  0.08 xxxx  xxxx  0.16 xxxx  xxxx  xxxx 0.69  0.08  4.22 1.57  0.56
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.3 xxxx xxxxx   0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  9.4 xxxx xxxxx  10.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     B    *     *     *    *     *     *    *     *
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   60 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 43.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 2540 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    F     *
ApproachDel:      xxxxxx           xxxxxx           xxxxxx          2539.8
ApproachLOS:         *                *                F                F
```

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-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #9 Parkway / School Access
*****************************************************************************
Average Delay (sec/veh):      9.2          Level Of Service:        A
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0     5    0   138    85  215     0     0  144     5
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    0     0     5    0   138    85  215     0     0  144     5
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      0    0     0     6    0   153    94  239     0     0  160     6
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0     6    0   153    94  239     0     0  160     6
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   591 xxxx   163   166 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   473 xxxx   887  1425 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   449 xxxx   887  1425 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.01 xxxx  0.17  0.07 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   7.7 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  858 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  0.7 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 10.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    B     *     *    *     *     *    *     *
ApproachDel:      xxxxxx              10.1             xxxxxx           xxxxxx
ApproachLOS:         *                  B                *                *
```

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                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
*********************************************************************************
Intersection #10 Parkway / Valley Glen
*********************************************************************************
Average Delay (sec/veh):        17.7          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:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include           Include
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0    53    0    61   160  563     0     0  518    60
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    0     0    53    0    61   160  563     0     0  518    60
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:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:      0    0     0    59    0    68   178  626     0     0  576    67
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0    59    0    68   178  626     0     0  576    67
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8 xxxx   6.9   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1277 xxxx   321   642 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   161 xxxx   681   938 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   137 xxxx   681   938 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.43 xxxx  0.10  0.19 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx   1.9 xxxx   0.3   0.7 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx  49.5 xxxx  10.9   9.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     E    *     B     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx             28.8            xxxxxx            xxxxxx
ApproachLOS:        *                 D                *                 *
```

```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #18 1st / Valley Glen
*******************************************************************************
Average Delay (sec/veh):    344.8            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:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     170  549     0     0  644   222   206    0   126     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:  170  549     0     0  644   222   206    0   126     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:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   189  610     0     0  716   247   229    0   140     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   189  610     0     0  716   247   229    0   140     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.8 xxxx   6.9 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  962 xxxx xxxxx  xxxx xxxx xxxxx  1522 xxxx   481  xxxx xxxx xxxxx
Potent Cap.:  711 xxxx xxxxx  xxxx xxxx xxxxx   111 xxxx   536  xxxx xxxx xxxxx
Move Cap.:    711 xxxx xxxxx  xxxx xxxx xxxxx    88 xxxx   536  xxxx xxxx xxxxx
Volume/Cap:  0.27 xxxx  xxxx  xxxx xxxx  xxxx  2.59 xxxx  0.26  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        1.1 xxxx xxxxx xxxxx xxxx xxxxx  21.5 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del: 11.9 xxxx xxxxx xxxxx xxxx xxxxx 821.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     F    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   536  xxxx xxxx     0
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   1.0 xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  14.1 xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     B     *    *     *
ApproachDel:        xxxxxx            xxxxxx            515.2            xxxxxx
ApproachLOS:           *                 *                F                 *
```

```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
*****************************************************************************
Intersection #29 West A St / Pitt School Rd
*****************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        2.377
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):     311.2
Optimal Cycle:         0              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:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  1  1  0   1  0  1  1  0   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     356  414   489  324  413   295  354  891   640  240  650   175
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:  356  414   489  324  413   295  354  891   640  240  650   175
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:     0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90
PHF Volume:   396  460   543  360  459   328  393  990   711  267  722   194
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  396  460   543  360  459   328  393  990   711  267  722   194
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.:   396  460   543  360  459   328  393  990   711  267  722   194
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 1.00  1.00 1.00 1.17  0.83 1.00 2.00  1.00 1.00 2.00  1.00
Final Sat.:   273  284   300  273  333   248  271  565   299  272  565   300
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     1.45 1.62  1.81 1.32 1.38  1.32 1.45 1.75  2.38 0.98 1.28  0.65
Crit Moves:             ****      ****                  ****       ****
Delay/Veh:  253.4  324 403.0 200.9  222 198.4 252.9  381 654.5 88.0  184  34.6
Delay 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
AdjDel/Veh: 253.4  324 403.0 200.9  222 198.4 252.9  381 654.5 88.0  184  34.6
LOS by Move:   F    F     F    F    F     F    F    F     F    F    F     D
ApproachDel:     334.8            208.7            449.7            137.6
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:      334.8            208.7            449.7            137.6
LOS by Appr:        F                F                F                F
*****************************************************************************
```

Appendix E

Air Quality Technical Information

APPENDIX E. AIR QUALITY TECHNICAL INFORMATION

Carbon Monoxide Modeling

Dispersion Modeling

Predicting the ambient air quality impacts of pollutant emissions requires an assessment of the transport, dispersion, chemical transformation, and removal processes that affect pollutant emissions after their release from a source. Gaussian dispersion models are frequently used for such analyses. The term "Gaussian dispersion" refers to a general type of mathematical equation used to describe the horizontal and vertical distribution of pollutants downwind from an emission source.

Gaussian dispersion models treat pollutant emissions as being carried downwind in a defined plume, subject to horizontal and vertical mixing with the surrounding atmosphere. The plume spreads horizontally and vertically with a reduction in pollutant concentrations as it travels downwind. Mixing with the surrounding atmosphere is greatest at the edge of the plume, resulting in lower pollutant concentrations outward (horizontally and vertically) from the center of the plume. This decrease in concentration outward from the center of the plume is treated as following a Gaussian ("normal") statistical distribution. Horizontal and vertical mixing generally occur at different rates. Because turbulent motions in the atmosphere occur on a variety of spatial and time scales, vertical and horizontal mixing also vary with distance downwind from the emission source.

The CALINE4 Model

The ambient air quality effects of traffic emissions were evaluated using the CALINE4 dispersion model (Benson 1989). CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway link analyzed in the model is treated as a sequence of short segments. Each segment of a roadway link is treated as a separate emission source producing a plume of pollutants which disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments.

When winds are essentially parallel to a roadway link, pollution plumes from all roadway segments overlap. This produces high concentrations near the roadway (near the center of the overlapping pollution plumes), and low concentrations well away from the roadway (at the edges of the overlapping pollution plumes). When winds are at an angle to the roadway link, pollution plumes from distant roadway segments make essentially no contribution to the pollution concentration observed at a receptor location. Under such cross-wind situations, pollutant concentrations near the highway are lower than under parallel wind conditions (fewer overlapping plume contributions), while pollutant concentrations away from the highway may be greater than would occur with parallel winds (near the center of at least some pollution plumes).

The CALINE4 model employs a "mixing cell" approach to estimating pollutant concentrations over the roadway itself. The size of the mixing cell over each roadway segment is based on the width of the traffic lanes of the highway (generally 12 feet per lane) plus an additional turbulence zone on either side (generally 10 feet on each side). Parking lanes and roadway shoulders are not counted as traffic lanes. The height of the mixing cell is calculated by the model.

Pollutants emitted along a highway link are treated as being well mixed within the mixing cell volume due to mechanical turbulence from moving vehicles and convective mixing due to the temperature of vehicle exhaust gases. Pollutant concentrations downwind from the mixing cell are calculated using horizontal and vertical dispersion rates which are a function of various meteorological and ground surface conditions.

Modeling Procedures

Roadway and Traffic Conditions. Traffic volumes and operating conditions used in the modeling were obtained from the traffic analysis prepared for this project by kdANDERSON Transportation Engineers. Free flow traffic speeds were adjusted to reflect congested speeds using methodology from the Highway Capacity Manual (Highway Research Board 1965). CO modeling was conducted for the First Street/Chestnut Street, First Street/Cherry Street, West A Street/Pitt School Road (2007), and First Street/Valley Glen Drive (2025) intersections. These intersections were selected based on the worst-case level of service of the intersections, as well as the intersection with the greatest lane volumes.

Vehicle Emission Rates. Vehicle emission rates were determined using the California Air Resources Board's EMFAC2002 (version 2.2) emission rate program.

Receptor Locations. CO concentrations were estimated at 4 receptor locations for each intersection modeled. These receptors were located 50 feet from the intersection diagonal to represent a worst-case scenario. Receptor heights were set at 5.9 feet.

Meteorological Conditions. Meteorological inputs to the CALINE4 model were determined using methodology recommended in Air Quality Technical Analysis Notes (California Department of Transportation 1988). The meteorological conditions used in the modeling represent a calm winter period. Worst case wind angles were modeled to determine a worst-case concentration for each receptor. The meteorological inputs include: 1 meter per second wind speed, ground-level temperature inversion (atmospheric stability class G), wind direction standard deviation equal to five degrees, and a mixing height of 1000 meters.

Background Concentrations and Eight-Hour Values. A background concentration of 7.8 ppm was added to the modeled cumulative 1-hour values, while a background concentration of 2.0 ppm was added to the modeled cumulative 8-hour values. Background concentration data for 1- and 8-hour values were obtained from the EPA’s Air Data webpage (USEPA 2002). Maximum 1- and 8-hour values for the years 2002-2004 were averaged to obtain a background concentration.

Eight-hour modeled values were calculated from the 1-hour values using a persistence factor of 0.7.

Reference:

Benson, P. E. 1989. CALINE4---a dispersion model for predicting air pollution concentrations near roadways. California Department of Transportation. Sacramento, CA.

California Department of Transportation. 1988. Air Quality Technical Analysis Notes. Sacramento, CA.

Highway Research Board. 1965. Highway Capacity Manual. Washington, D.C.

U.S. Environmental Protection Agency. 2002. Air Data. Last Revised: February 7, 2002. Available: <http://www.epa.gov/air/data/reports.html>. Accessed: February 19, 2002.

Appendix F

URBEMIS 2002

APPENDIX F: URBEMIS 2002 For Windows   7.5.0

```
File Name:                      G:\LGT-Air&Noise\Air\Brookfield-Bertolero Residential (City of
Dixon)\Brookfield URBEMIS.urb
Project Name:                   Brookfield (Dixon)
Project Location:               Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

                       SUMMARY REPORT
                    (Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES
                                                                           PM10      PM10      PM10
 *** 2006 ***                          ROG       NOx        CO       SO2     TOTAL   EXHAUST      DUST
 TOTALS (lbs/day,unmitigated)    218.34    690.77    631.23      0.01    168.94     31.90    137.04
 TOTALS (lbs/day, mitigated)     218.34    475.77    631.23      0.01     75.16     11.82     63.33

                                                                           PM10      PM10      PM10
 *** 2007 ***                          ROG       NOx        CO       SO2     TOTAL   EXHAUST      DUST
 TOTALS (lbs/day,unmitigated)    218.12    597.36    643.55      0.02     26.25     25.81      0.44
 TOTALS (lbs/day, mitigated)     218.12    411.54    643.55      0.02     10.01      9.57      0.44


AREA SOURCE EMISSION ESTIMATES
                                       ROG       NOx        CO       SO2      PM10
 TOTALS (lbs/day,unmitigated)     23.43      4.59      5.08      0.08      0.02


OPERATIONAL (VEHICLE) EMISSION ESTIMATES
                                       ROG       NOx        CO       SO2      PM10
 TOTALS (lbs/day,unmitigated)     24.26     22.87    235.78      0.12     20.81

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES
                                       ROG       NOx        CO       SO2      PM10
 TOTALS (lbs/day,unmitigated)     47.69     27.46    240.86      0.20     20.83



Page: 2


               URBEMIS 2002 For Windows   7.5.0

File Name:                      G:\LGT-Air&Noise\Air\Brookfield-Bertolero Residential (City of
Dixon)\Brookfield URBEMIS.urb
Project Name:                   Brookfield (Dixon)
Project Location:               Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

                        DETAIL REPORT
                    (Pounds/Day - Summer)

Construction Start Month and Year: January, 2006
Construction Duration: 18
Total Land Use Area to be Developed: 54.7 acres
Maximum Acreage Disturbed Per Day: 13.7 acres
Single Family Units: 210 Multi-Family Units: 254
Retail/Office/Institutional/Industrial Square Footage: 0
```

```
CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)
                                                                      PM10     PM10        PM10
    Source                       ROG       NOx        CO       SO2   TOTAL  EXHAUST        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                      -         -         -         -  137.00        -      137.00
Off-Road Diesel                86.14    689.10    613.30         -   31.87    31.87        0.00
On-Road Diesel                  0.00      0.00      0.00      0.00    0.00     0.00        0.00
Worker Trips                    0.89      1.67     17.93      0.01    0.07     0.03        0.04
  Maximum lbs/day              87.03    690.77    631.23      0.01  168.94    31.90      137.04

Phase 3 - Building Construction
Bldg Const Off-Road Diesel     80.32    622.93    586.00         -   28.18    28.18        0.00
Bldg Const Worker Trips         1.59      0.95     20.18      0.00    0.24     0.02        0.22
Arch Coatings Off-Gas         134.84         -         -         -       -        -           -
Arch Coatings Worker Trips      1.59      0.95     20.18      0.00    0.24     0.02        0.22
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             218.34    624.83    626.36      0.00   28.66    28.22        0.44

  Max lbs/day all phases      218.34    690.77    631.23      0.01  168.94    31.90      137.04


 *** 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     80.32    595.56    605.63         -   25.77    25.77        0.00
Bldg Const Worker Trips         1.48      0.90     18.96      0.00    0.24     0.02        0.22
Arch Coatings Off-Gas         134.84         -         -         -       -        -           -
Arch Coatings Worker Trips      1.48      0.90     18.96      0.00    0.24     0.02        0.22
Asphalt Off-Gas                 3.26         -         -         -       -        -           -
Asphalt Off-Road Diesel        19.86    123.53    166.56         -    4.51     4.51        0.00
Asphalt On-Road Diesel          0.52      8.46      1.91      0.02    0.23     0.22        0.01
Asphalt Worker Trips            0.09      0.04      1.03      0.00    0.01     0.00        0.01
  Maximum lbs/day             218.12    597.36    643.55      0.02   26.25    25.81        0.44

  Max lbs/day all phases      218.12    597.36    643.55      0.02   26.25    25.81        0.44
```

```
Phase 1 - Demolition Assumptions:  Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '06
Phase 2 Duration: 6 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment
  No.     Type                               Horsepower    Load Factor     Hours/Day
    20    Rubber Tired Dozers                   352           0.590           8.0
    20    Tractor/Loaders/Backhoes               79           0.465           8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jul '06
Phase 3 Duration: 12 months
  Start Month/Year for SubPhase Building: Jul '06
  SubPhase Building Duration: 11 months
  Off-Road Equipment
  No.     Type                               Horsepower    Load Factor     Hours/Day
    13    Concrete/Industrial saws               84           0.730           8.0
    27    Other Equipment                       190           0.620           8.0
    13    Rough Terrain Forklifts                94           0.475           8.0
  Start Month/Year for SubPhase Architectural Coatings: Sep '06
  SubPhase Architectural Coatings Duration: 10 months
  Start Month/Year for SubPhase Asphalt: Jun '07
  SubPhase Asphalt Duration: 0.5 months
  Acres to be Paved: 13.7
  Off-Road Equipment
  No.     Type                               Horsepower    Load Factor     Hours/Day
     2    Graders                               174           0.575           8.0
     2    Off Highway Trucks                    417           0.490           8.0
     2    Pavers                                132           0.590           8.0
     2    Paving Equipment                      111           0.530           8.0
     5    Rollers                               114           0.430           8.0


CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)
                                                                       PM10     PM10        PM10
    Source                       ROG       NOx        CO       SO2     TOTAL   EXHAUST      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                      -         -         -         -     63.29         -     63.29
Off-Road Diesel                86.14    474.10    613.30         -     11.79     11.79      0.00
On-Road Diesel                  0.00      0.00      0.00      0.00      0.00      0.00      0.00
Worker Trips                    0.89      1.67     17.93      0.01      0.07      0.03      0.04
  Maximum lbs/day              87.03    475.77    631.23      0.01     75.16     11.82     63.33

Phase 3 - Building Construction
Bldg Const Off-Road Diesel     80.32    428.58    586.00         -     10.43     10.43      0.00
Bldg Const Worker Trips         1.59      0.95     20.18      0.00      0.24      0.02      0.22
Arch Coatings Off-Gas         134.84         -         -         -         -         -         -
Arch Coatings Worker Trips      1.59      0.95     20.18      0.00      0.24      0.02      0.22
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             218.34    430.48    626.36      0.00     10.90     10.46      0.44

  Max lbs/day all phases      218.34    475.77    631.23      0.01     75.16     11.82     63.33
```

```
 *** 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


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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     80.32    409.75    605.63         -      9.53      9.53      0.00
Bldg Const Worker Trips         1.48      0.90     18.96      0.00      0.24      0.02      0.22
Arch Coatings Off-Gas         134.84         -         -         -         -         -         -
Arch Coatings Worker Trips      1.48      0.90     18.96      0.00      0.24      0.02      0.22
Asphalt Off-Gas                 3.26         -         -         -         -         -         -
Asphalt Off-Road Diesel        19.86     84.99    166.56         -      1.67      1.67      0.00
Asphalt On-Road Diesel          0.52      8.46      1.91      0.02      0.23      0.22      0.01
Asphalt Worker Trips            0.09      0.04      1.03      0.00      0.01      0.00      0.01
  Maximum lbs/day             218.12    411.54    643.55      0.02     10.01      9.57      0.44

  Max lbs/day all phases      218.12    411.54    643.55      0.02     10.01      9.57      0.44


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: Water exposed surfaces - 2x daily
   Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 34.0%)
 Phase 2: Off-Road Diesel Exhaust: Use aqueous diesel fuel
   Percent Reduction(ROG 0.0% NOx 14.0% CO 0.0% SO2 0.0% PM10 63.0%)
 Phase 2: Off-Road Diesel Exhaust: Use lean-NOx catalyst
   Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
 Phase 3: Off-Road Diesel Exhaust: Use aqueous diesel fuel
   Percent Reduction(ROG 0.0% NOx 14.0% CO 0.0% SO2 0.0% PM10 63.0%)
 Phase 3: Off-Road Diesel Exhaust: Use lean-NOx catalyst
   Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
 Phase 3: Off-Road Diesel Exhaust: Use aqueous diesel fuel
   Percent Reduction(ROG 0.0% NOx 14.0% CO 0.0% SO2 0.0% PM10 63.0%)
 Phase 3: Off-Road Diesel Exhaust: Use lean-NOx catalyst
   Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 1 - Demolition Assumptions:  Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '06
Phase 2 Duration: 6 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment
  No.     Type                               Horsepower    Load Factor     Hours/Day
    20    Rubber Tired Dozers                    352          0.590            8.0
    20    Tractor/Loaders/Backhoes                79          0.465            8.0
```

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Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jul '06
Phase 3 Duration: 12 months
  Start Month/Year for SubPhase Building: Jul '06
  SubPhase Building Duration: 11 months
  Off-Road Equipment
  No.     Type                               Horsepower    Load Factor     Hours/Day
    13    Concrete/Industrial saws               84          0.730            8.0
    27    Other Equipment                       190          0.620            8.0
    13    Rough Terrain Forklifts                94          0.475            8.0
  Start Month/Year for SubPhase Architectural Coatings: Sep '06
  SubPhase Architectural Coatings Duration: 10 months
  Start Month/Year for SubPhase Asphalt: Jun '07
  SubPhase Asphalt Duration: 0.5 months
  Acres to be Paved: 13.7
  Off-Road Equipment
  No.     Type                               Horsepower    Load Factor     Hours/Day
     2    Graders                               174          0.575            8.0
     2    Off Highway Trucks                    417          0.490            8.0
     2    Pavers                                132          0.590            8.0
     2    Paving Equipment                      111          0.530            8.0
     5    Rollers                               114          0.430            8.0



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AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)
    Source                        ROG       NOx        CO       SO2      PM10
 Natural Gas                     0.35      4.55      1.93         -      0.01
 Wood Stoves - No summer emissions
 Fireplaces - No summer emissions
 Landscaping                     0.38      0.04      3.15      0.08      0.01
 Consumer Prdcts                22.70         -         -         -         -
 TOTALS(lbs/day,unmitigated)    23.43      4.59      5.08      0.08      0.02


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                 UNMITIGATED OPERATIONAL EMISSIONS

                                ROG       NOx        CO       SO2      PM10
Single family housing         16.36     17.12    176.46      0.09     15.58
Congregate care (Assisted      7.89      5.75     59.32      0.03      5.24

TOTAL EMISSIONS (lbs/day)     24.26     22.87    235.78      0.12     20.81

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2007  Temperature (F): 85   Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type                         Trip Rate                   Size    Total Trips

Single family housing        9.57 trips / dwelling units     210.00     2,009.70
Congregate care (Assisted    2.66 trips / dwelling units     254.00       675.64
```

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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-     Home-     Home-
                          Work      Shop      Other   Commute  Non-Work Customer
Urban Trip Length (miles)  9.7       3.8       4.6       7.8       4.5       4.5
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  27.3      21.2      51.5



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Changes made to the default values for Land Use Trip Percentages


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: Water exposed surfaces - 2x daily
     has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use aqueous diesel fuel
     has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use lean-NOx catalyst
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use aqueous diesel fuel
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use lean-NOx catalyst
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use aqueous diesel fuel
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use lean-NOx catalyst
     has been changed from off to on.

Changes made to the default values for Area

The wood stove option switch changed from on to off.
The fireplcase option switch changed from on to off.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.
The operational emission year changed from 2004 to 2007.
The travel mode environment settings changed from  both to: none
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