Alpine Village Center
Final EIR
Volume II – Technical Appendices

S99-047, ER 99-14-036
SCH #2000061004

Project Proponent:

Jeff Dierk
Senior Real Estate Manager
Albertsons
1421 S. Manhattan Avenue
Mail Drop L320
Fullerton, California 92831-522

Prepared for:

County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, California 92123

Prepared by:

Cotton/Bridges/Associates
A Division of P&D Consultants
8954 Rio San Diego Drive, Suite 610
San Diego, California 92108

800 East Colorado Boulevard, Suite 270
Pasadena, California 91101-2103

720 Sunrise Avenue
Roseville, California 95661

Submitted to:

Jason Giffen
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, California 92123
(619) 232-4466

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January 2003

LIST OF APPENDICES

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Appendix A:
Notice of Preparation (NOP) and Responses to the NOP

GARY L. PRYOR
DIRECTOR
(858) 694-2962

County of San Diego

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
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NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT

November 2, 2000

NOTICE IS HEREBY GIVEN that the County of San Diego, Department of Planning and Land Use (DPLU) will be the Lead Agency and will prepare an Environmental Impact Report in accordance with the California Environmental Quality Act for the following projects. The Department is seeking public and agency input on the scope and content of the environmental information to be contained in the Environmental Impact Report. A Notice of Preparation document, which contains a description of the probable environmental effects of the project, can be reviewed at the Department of Planning and Land Use (DPLU), Project Processing Counter, 5201 Ruffin Road, Suite B, San Diego, California 92123 and at the public libraries listed below. Comments on the Notice of Preparation document must be sent to the DPLU address listed above and should reference the project number and name.

S99-047, LOG NO. 99-14-036; SCH NO. 2000061004 ALPINE VILLAGE CENTER. The project is the construction of an approximately 73,000-square-foot neighborhood commercial shopping center complex on approximately 9.65 acres of land which will include a supermarket building of up to 58,000 square feet, a retail shop building of approximately 9,000 square feet, a fast food restaurant building of up to 3,500 square feet with a drive-thru lane, and a gasoline service station with a mini-mart building of up to 2,500 square feet and 4 fueling pump islands with 8 pumps. The supermarket and the service station will operate on a 24-hour schedule. The supermarket will sell alcoholic beverages for off premises consumption and the service station will sell beer and wine for off premises consumption. The supermarket building will be the tallest building at 29 feet, with architectural projections up to 40 feet. The supermarket building will have a truck loading dock and a trash compactor located adjacent to the southeast portion of such building. The site will contain approximately 325 parking spaces, almost all of which will be northerly of the supermarket building. The site will be accessible at two points from Alpine Boulevard (on the north), and one point each on Highlands View Road (on the west), and Old South Grade Road (on the east). The project also includes the grading of approximately 70,000 cubic yards of balanced cut and fill, including the creation of an approximately 45-foot high 1-1/2 to 1 cut slope

on Highlands View Road (on the west), and Old South Grade Road (on the east). The project also includes the grading of approximately 70,000 cubic yards of balanced cut and fill, including the creation of an approximately 45-foot high 1-1/2 to 1 cut slope immediately adjacent to and south of the proposed supermarket building. Rock is expected to be encountered and is expected to be removable, but a minor amount of blasting may be required. Some of the rock, which will be removed, is in exposed outcroppings. On-site work will include installation of a parking lot with drainage, lighting, and landscaping. Off-site work will be completed in the public rights-of-way along the project frontage in compliance with San Diego County Centerline Ordinance. The site will also include retaining walls as needed as well as a 19-foot high screen wall along the truck loading dock and a 4-foot to 6-foot high wall along the eastern property boundary. The site will be landscaped where building, paving, and other improvements are not constructed, except the southernmost portion of the site will be left in its natural condition. At least 25 percent of the site will be either landscaped or unimproved. As mitigation for traffic impacts, the project will design and improve Alpine Boulevard to a three-lane Town-Collector Road standard from West Victoria Drive to a point approximately 100 feet east of Marshall Road. The project applicant shall also design and construct a signal at the intersection of Alpine Boulevard and West Victoria. Traffic improvements also include the conversion the intersections of Willows Road with I-8 eastbound ramps and Willows Road with I-8 westbound ramps from one-way stop control to all-way stop control. The project is located on the southeast corner of Alpine Boulevard and South Grade Road, in Alpine; APN: 404-032-10, 72. The project is located within the Alpine Community Plan in the unincorporated portion of San Diego County. Comments on this Notice of Preparation document must be received no later than December 4, 2000, at 4:00 p.m. (a 30-day public review period). This Notice of Preparation can also be reviewed at the Alpine Branch Library, located at 2130 Arnold Way, Alpine. For additional information, please contact Alex Jewell at (619) 232-4466 or by e-mail at a_jewell@pdconsultants.com.

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DEPARTMENT OF PLANNING AND LAND USE

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NOTICE OF PREPARATION DOCUMENTATION

DATE: November 2, 2000

PROJECT NAME: Alpine Village Center

PROJECT NUMBER(S): S99-047

PROJECT APPLICANT: Albertsons c/o Courtney Architects, 656 Santa Rosa Street, Suite 3A, San Luis Obispo, CA 93401

ENV. REVIEW NUMBER: Log No. 99-14-036

PROJECT DESCRIPTION:

The project is the construction of an approximately 73,000-square-foot neighborhood commercial shopping center complex on approximately 9.65 acres of land which will include a supermarket building of up to 58,000 square feet, a retail shop building of approximately 9,000 square feet, a fast food restaurant building of up to 3,500 square feet with a drive-thru lane, and a gasoline service station with a mini-mart building of up to 2,500 square feet and 4 fueling pump islands. The supermarket and the service station will operate on a 24-hour schedule. The supermarket will sell alcoholic beverages for off premises consumption and the service station will sell beer and wine for off premises consumption. The supermarket building will be the tallest building at 29 feet, with architectural projections up to 40 feet. The supermarket building will have a truck loading dock and a trash compactor located adjacent to the southeast portion of such building. The site will contain approximately 325 parking spaces, almost all of which will be northerly of the supermarket building. The site will be accessible at two points from Alpine Boulevard (on the north), and one point each on Highlands View Road (on the west), and Old South Grade Road (on the east).

The project also includes the grading of approximately 70,000 cubic yards of balanced cut and fill, including the creation of an approximately 45-foot high 1-1/2 to 1 cut slope immediately adjacent to and south of the proposed supermarket building. Rock is expected to be encountered and is expected to be removable, but a minor amount of

blasting may be required. Some of the rock, which will be removed, is in exposed outcroppings.

On-site work will include installation of a parking lot with lighting and landscaping. Off-site work will be completed in the public rights-of-way along the project frontage in compliance with San Diego County Centerline Ordinance. The site will also include retaining walls as needed.

The site will be landscaped where building, paving, and other improvements are not constructed, except the southernmost portion of the site will be left in its natural condition. The site will contain at least 25 percent open space including landscaped areas.

As mitigation for traffic impacts, the project will design and improve Alpine Boulevard to a three-lane Town-Collector Road standard from West Victoria Drive to a point approximately 100 feet east of Marshall Road. The project applicant shall also design and construct a signal at the intersection of Alpine Boulevard and West Victoria. Traffic improvements also include the conversion the intersections of Willows Road with I-8 eastbound ramps and Willows Road with I-8 westbound ramps from one-way stop control to all-way stop control.

PROJECT LOCATION:

The project is located on the southeast corner of Alpine Boulevard and South Grade Road, in Alpine; APN: 404-032-10, 72. The project is located within the Alpine Community Plan in the unincorporated portion of San Diego County.

PROBABLE ENVIRONMENTAL EFFECTS:

The probable environmental effects associated with the project are detailed in the attached Environmental Initial Study. All questions answered "Potentially Significant Impact" or "Less than Significant with Mitigation Incorporated" will be analyzed further in the Environmental Impact Report. All questions answered "Less than Significant Impact" or "Not Applicable" will not be analyzed further in the Environmental Impact Report (EIR).

The following is a summary of the subject areas to be analyzed in the EIR and the particular issues of concern:

Traffic/Circulation

Based on a technical traffic report, prepared by Darnell and Associates, dated April 7, 2000, the project will generate approximately 11,770 average daily trips. The traffic

report analyzed the surrounding traffic network and determined that the project would have potentially significant impacts to the existing traffic and circulation pattern. The EIR will analyze potential traffic impacts and any feasible mitigation measures to reduce those impacts.

Biological Resources

A biological technical report, prepared by Pacific Southwest Biological Services, dated February 10, 2000, identified the following vegetation communities on the project site: Southern mixed chaparral (2.24 acres), Diegan coastal sage scrub (0.51 acres), Coastal sage-chaparral scrub (4.28 acres), and disturbed habitat (2.57 acres). Impacts to Diegan sage scrub and Coastal sage-chaparral scrub habitats are considered significant. Because the project is located within the County's subarea plan of the Multiple Species Conservation Program (MSCP), impacts to Southern mixed chaparral must be mitigated. All mitigation must be consistent with the County's Biological Mitigation Ordinance. The project will impact all of the Diegan coastal sage scrub, Coastal sage-chaparral scrub habitats, and Southern mixed chaparral habitats. The EIR will analyze potential biological impacts and any feasible mitigation measures to reduce those impacts.

Air quality

No significant source of either stationary or indirect air pollutants has been identified from the project. The primary source of air pollutants would be generated from vehicle trips associated with the proposed project. The vehicle trips generated from the project will result in 11,770 Average Daily Trips (ADT). A technical Air Quality Impact report prepared by Giroux and Associates, dated December 27, 1999, concludes that the project will not have a significant impact to air quality. EIR will analyze potential air quality impacts and any feasible mitigation measures to reduce those impacts.

The air quality impact report does identify the need for mitigation measures to reduce potential impacts from particulates (dust) during the construction phase of the project. The applicant is required to submit prior to the issuance of a grading plan a construction impact mitigation program. The mitigation program is required to identify construction practices that will reduce excessive fugitive dust from the project site.

Water Resources - Drainage/Flooding

The project has the potential to change the drainage and runoff pattern on the 9.65 acre site. A drainage report will be required to evaluate the project's impacts on the quantity and pattern of runoff to the surrounding area. The report shall also address potential siltation, erosion, and pollution associated with runoff. Drainage within the site should also be described. The report will analyze the drainage amounts falling on the site and

show how the drainage is directed within the project site. If it is determined that the project will have potential impacts, mitigation measures will be proposed.

Noise

Based on an Environmental Noise Study prepared by Dudek and Associates, dated August 5, 1999, the proposal could generate potentially significant noise levels (i.e., in excess of the County General Plan or Noise Ordinance), associated with the parking lot cleaning activities, idling and maneuvering delivery trucks, and outdoor mechanical equipment would result in significant noise impacts. EIR will analyze potential noise impacts and any feasible mitigation measures to reduce those impacts.

Cumulative Impacts

Development of the proposed project will (on a conceptual level) incrementally add to cumulative project pacts of regional development. Those impacts are of both a quantifiable nature (for example, traffic, noise, air quality, biological affects, and drain on public facilities and services) and a non-quantifiable nature (such as visual, community character, and regional loss of open space). The Draft EIR (DEIR) will evaluate the potential for maximum-level project implementation to add to cumulative area impacts, and will include mitigation to address significant impacts.

Alternatives to the Project

The DEIR will study three alternatives to the proposed project:

Alternative 1: Tavern Road, west of the freeway bridge, and north of Interstate 8 (Shaw property).

Alternative 2: Tavern Road, east of the freeway Bridge and on the north side of Interstate (Dyke Property).

Alternative 3: No Project Alternative.

An environmentally superior alternative will be discussed.

Mitigation Monitoring

Per Assembly Bill 3180, mitigation implementation and a monitoring program, including funding, to insure compliance with any adopted mitigation measures, will be discussed.

In addition to these issues, the DEIR will include all mandatory sections required under California Environmental Quality Act.

Attachments:
- Project Regional Location Map
- Plot Plan Exhibit
- Environmental Initial Study

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DEPARTMENT OF PLANNING AND LAND USE

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November 2, 2000

INITIAL STUDY FORM

1. Project Number(s)/Environmental Log Number/Title:

   S99-047, Log No. 99-14-036; Alpine Village Center

2. Description of Project:

   The project is the construction of an approximately 73,000-square-foot neighborhood commercial shopping center complex on approximately 9.65 acres of land which will include a supermarket building of up to 58,000 square feet, a retail shop building of approximately 9,000 square feet, a fast food restaurant building of up to 3,500 square feet with a drive-thru lane, and a gasoline service station with a mini-mart building of up to 2,500 square feet and 4 fueling pump islands with 8 pumps. The supermarket and the service station will operate on a 24-hour schedule. The supermarket will sell alcoholic beverages for off premises consumption and the service station will sell beer and wine for off-premises consumption. The supermarket building will be the tallest building at 29 feet, with architectural projections up to 40 feet. The supermarket building will have a truck loading dock and a trash compactor located adjacent to the southeast portion of such building. The site will contain approximately 325 parking spaces, almost all of which will be northerly of the supermarket building. The site will be accessible at two points from Alpine Boulevard (on the north), and one point each on Highlands View Road (on the west), and Old South Grade Road (on the east).

   The project also includes the grading of approximately 70,000 cubic yards of balanced cut and fill, including the creation of an approximately 45-foot high 1-1/2 to 1 cut slope immediately adjacent to and south of the proposed supermarket building. Rock is expected to be encountered and is expected to be removable, but a minor amount of blasting may be required. Some of the rock, which will be removed, is in exposed outcroppings.

   On-site work will include installation of a parking lot with drainage, lighting, and landscaping. Off-site work will be completed in the public rights-of-way along

the project frontage in compliance with San Diego County Centerline Ordinance. The site will also include retaining walls as needed as well as a 19-foot high screen wall along the truck loading dock and a 4-foot to 6-foot high wall along the eastern property boundary.

The site will be landscaped where building, paving, and other improvements are not constructed, except the southernmost portion of the site will be left in its natural condition. At least 25 percent of the site will be either landscaped or unimproved.

As mitigation for traffic impacts, the project will design and improve Alpine Boulevard to a three-lane Town-Collector Road standard from West Victoria Drive to a point approximately 100 feet east of Marshall Road. The project applicant shall also design and construct a signal at the intersection of Alpine Boulevard and West Victoria. Traffic improvements also include the conversion the intersections of Willows Road with I-8 eastbound ramps and Willows Road with I-8 westbound ramps from one-way stop control to all-way stop control.

3. Project Sponsor's Name and Address:

Jeff Dierck, Senior Real Estate Manager, Albertsons, 6565 Knott Avenue, Buena Park, CA 90620

4. Project Location:

The project is located on the southeast corner of Alpine Boulevard and South Grade Road, in Alpine; APN: 404-032-10, 72. The project is located within the Alpine Community Plan in the unincorporated portion of San Diego County.

Thomas Brothers Coordinates: Page 1233, Grid F/4

5. Surrounding Land Uses and Environmental Setting:

The irregular-shaped project is surrounded primarily by development. To the north is Alpine Boulevard, and immediately north of Alpine Boulevard is Interstate 8. To the west (along the northern portion of the project site) is South Grade Road and immediately beyond South Grade Road to the west is residential construction completed in 1999 by Reynolds Communities. On the west side (along the southern portion of the project site) is Highlands View Road and beyond that Reynolds Communities completed residential construction in 2000. To the south is a 47 unit residential subdivision completed in the early 1990's by Reynolds communities. To the southeast, Reynolds Communities is

constructing a 14-lot subdivision. Also to the east, toward the north end of the property is a single-family home and stables. Contiguous to the northeast is a professional office building. The Reynolds project on the western boundary of the property is 70 units on approximately 10 acres. The project is surrounded on all sides except for the south side by roads.

The property is bounded by Highlands View Road, South Grade Road, Alpine Boulevard, Old South Grade Road, which becomes a private road to serve the homes under construction along the eastern boundary, and residential housing units on the south (which will be the area where a non-building area is designated for an additional buffering).

6. General Plan Designation

Community Plan:	Alpine
Land Use Designation:	21 Specific Plan Area Designation
Density:	5.6 du/du acre

7. Zoning

Use Regulation:	C 36 General Commercial
Density:	7.26 du/acre
Special Area Regulation:	B Design Review

8. Environmental resources either significantly affected or significantly affected but avoidable as detailed on the following attached "Environmental Analysis Form".

Air Quality
Transportation/Circulation
Biological Resources
Noise
Water Resources

9. Lead Agency Name and Address:

County of San Diego, Department of Planning and Land Use
5201 Ruffin Road, Suite B, M.S. O650
San Diego, California 92123-1666

10. Lead Agency Contact and Phone Number:

Alex Jewell (619) 232-4466

11. Anticipated discretionary actions and the public agencies whose discretionary approval is necessary to implement the proposed:

Permit Type/Action	Agency
Site Plan	County of San Diego

12. State agencies (not included in #11) that have jurisdiction by law over natural resources affected by the project:

California Department of Fish and Game

13. Participants in the preparation of this Initial Study:

Kevin Mallory, Department of Planning and Land Use
Joe Farace, Department of Planning and Land Use
Dawn Dickman, Department of Planning Land Use
Bob Goralka, Department of Public Works
Ed Sinsay, Department of Public Works
Alex Jewell, P&D Environmental for the Department of Planning and Land Use
Larry Tucker, GrantTucker Properties for Albertsons
Pacific Southwest Biological Services, Inc; Biological Consultant
Dudek and Associates, Inc; Acoustical Engineers
Giroux and Associates; Air Quality Specialists
Brian F. Smith and Associates; Cultural Resources
Darnell and Associates; Traffic Engineers
Stuart Engineering, Civil Engineers
Courtney Architects, Project Architect

14. Initial Study Determination:

On the basis of this Initial Study, the Department of Planning and Land Use believes that the proposed project MAY have a potentially significant effect on the environment. An ENVIRONMENTAL IMPACT REPORT is required.

ALEX JEWELL, Environmental Analyst
P&D Environmental for the Department of Planning and Land Use
Resource Planning

Date: November 2, 2000

ENVIRONMENTAL ANALYSIS FORM

DATE: November 2, 2000

PROJECT NAME: Alpine Village Center

PROJECT NUMBER(S): S99-047, Log No. 99-14-036

EXPLANATION OF ANSWERS:

The following questions are answered either "Potentially Significant Impact", "Potentially Significant Unless Mitigation Incorporated", "Less Than Significant Impact", or "Not Applicable" and are defined as follows.

"Potentially Significant Impact." County staff is of the opinion there is substantial evidence that the project has a potentially significant environmental effect and the effect is not clearly avoidable with mitigation measures or feasible project changes. "Potentially Significant Impact" means that County staff recommends the preparation of an Environmental Impact Report (EIR) for the project.

"Potentially Significant Unless Mitigation Incorporated." County staff is of the opinion there is substantial evidence that the project may have a potentially significant adverse effect on the resource. However, the incorporation of mitigation measures or project changes agreed to by the applicant has clearly reduced the effect to a less than significant level.

"Less Than Significant Impact." County staff is of the opinion that the project may have an effect on the resource, but there is no substantial evidence that the effect is potentially significant and/or adverse.

"Not Applicable." County staff is of the opinion that, as a result of the nature of the project or the existing environment, there is no potential for the proposed project to have an effect on the resource.

I. LAND USE AND PLANNING

1. Would the proposal potentially be in conflict with any element of the General Plan including community plans, land use designation, or zoning?

   Less Than Significant Impact.

The proposed project is subject to the Regional Land Use Element Policy 2.6 Special Purpose and General Plan Land Use Designation (21) Specific Plan Area. The General Plan requires development consistent with the adopted specific plan. The site is zoned C36 General Commercial. The Alpine Highlands Specific Plan is adopted and provides for commercial use of the site. The proposed project is consistent with the Alpine Highlands Specific Plan and all other policies of the Alpine Community Plan.

2. Would the proposal potentially be in conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?

Less Than Significant Impact.

In the review of the project, no conflicts with environmental plans or policies adopted by other agencies have been identified. These agencies include, but are not limited to: the California Regional Water Quality Control Board, the San Diego Air Pollution Control District, California Department of Fish and Game, the Federal Department of Fish and Wildlife Service, the State Department of Health Services, and the County Department of Environmental Health.

The project area is within the County's Multiple Species Conservation Program (MSCP) Sub-area plan and is subject to the Biological Mitigation Ordinance (BMO). The project is not within an area that is defined as a Biological Resource Core Area or linkage area. The project proposes to mitigate impacts to sensitive biological resources in a manner that is consistent with the BMO.

3. Does the proposal have the potential to be incompatible with existing or planned land uses or the character of the community?

Less Than Significant Impact.

The proposed use does not have the potential to be incompatible with existing of planned land uses as the site is planned for general commercial use and is zoned with a C36 Use Regulation. To remain consistent with the character of the area, less than 75 percent of the site will be covered with buildings and pavement, resulting in a more open, rural type atmosphere. The C36 zone anticipates commercial uses encompassing a wide range of retail goods and services. Existing

development to the north is a freeway and frontage road which creates a definitive geographic boundary. Existing development to the south and west is suburban style single-family residences on 4,000 to 10,000 square foot lots. To the east, the existing development of a professional office building and a 14-lot subdivision, the land use will transition from a suburban to a rural residential use however the planned use is for a residential density of 2 dwelling units per acre. Therefore, this project will be compatible with the existing character of development and planned land use.

4. Would the proposal have a potentially significant adverse effect on agricultural resources or operation?

Less Than Significant Impact.

The proposed project is not in prime agricultural soils, as identified on the soils map for the Conservation Element of the San Diego County General Plan. The proposed project site does not support any agricultural resources or operations, nor have any agricultural resources or operations been identified in the immediate vicinity.

5. Would the proposal have the potential to significantly disrupt or divide the physical arrangement of an established community?

Less Than Significant Impact.

The proposed project will not significantly disrupt or divide the established community because the physical arrangement of established development is one of suburban-style residential use and character with commercial uses along Alpine Boulevard.

II. POPULATION AND HOUSING

1. Would the proposal potentially induce substantial growth either directly or indirectly?

Less Than Significant Impact.

The project does not involve substantial extensions of utilities such as water, sewer or new roads systems into previously unserved areas and is consistent with the County General Plan. The project will not induce substantial growth not consistent with County planning goals.

2. Would the proposal displace a potentially significant amount of existing housing, especially affordable housing?

Less Than Significant Impact.

The proposed project is a commercial use within a commercial zone which will not displace any residential uses. The project site is currently vacant, and therefore, will not displace any housing including affordable housing.

III. GEOLOGIC ISSUES

1. Would the proposal have the potential to significantly increase the exposure of people to hazards related to fault rupture (Alquist-Priolo Zone), seismic ground shaking, seismic ground failure (liquefaction), rockfall, or landslides?

Less Than Significant Impact.

The project is not located in a hazard zone identified by the Alquist-Priolo Earthquake Fault Zoning Act, Special Publication 42, Revised 1994, Fault-Rupture Hazards Zones in California.

2. Would the proposal result in potentially significant increased erosion?

Less Than Significant Impact.

According to the Soil Survey of San Diego County, the soils on-site are identified as Fallbrook sandy loams, 9-15 percent eroded slopes and 15-30 percent eroded slopes. The project will not result in unprotected erodible soils; will not alter existing drainage patterns; is not located in a floodplain, wetland, or significant drainage feature; and will not develop steep slopes. The project is required to comply with the Sections 87.414 (DRAINAGE - EROSION PREVENTION) and 87.417 (PLANTING) of Division 7, EXCAVATION AND GRADING, of the San Diego County Zoning and Land Use Regulations. Due to these factors, it has been found that the project will not result in significantly increased erosion potential.

3. Would the proposal result in potentially significant unstable soil conditions (expansive soils) from excavation, grading, or fill?

Less Than Significant Impact.

A review of the Soil Survey, San Diego Area CA by the U.S. Department of Agriculture has identified no soils on the site which have a HIGH shrink-swell behavior. All mapped soils on the site have a low to moderate shrink-swell behavior. Therefore, on-site soil conditions are stable and do not have adverse potential for development activity.

4. Would the proposal result in a potentially significant adverse effect to unique geologic features?

Less Than Significant Impact.

No significant geological features have been identified on-site. No known unique geologic features were identified on the property or in the immediate vicinity on the Natural Resources Inventory of San Diego County listed in the Conservation Element of the San Diego County General Plan. Since no unique geologic features are present on the site, no adverse impacts will result from the proposed project.

5. Would the proposal result in potentially significant loss of availability of a significant mineral resource that would be of future value to the region?

Less Than Significant Impact.

The project will not result in a loss of availability of a known significant mineral resource that would be of value to the region. The project is not located in a significant mineral resource area, as identified on maps prepared by the Department of Conservation, Division of Mines and Geology (Update of Mineral Land Classification: Aggregate Materials in the Western San Diego Production-Consumption Region, 1996). No past or present mining activities were identified on the project.

IV. WATER RESOURCES

1. Would the proposal create a potentially adverse effect on drainage patterns or the rate and amount of runoff?

Potentially Significant Unless Mitigation Incorporated.

The project has the potential to change the drainage and runoff pattern on the 9.65-acre site. A drainage report will be required to evaluate the

project's impacts on the quantity and pattern of runoff to the surrounding area. The report shall also address potential siltation, erosion, and pollution associated with runoff. Drainage within the site should also be described. The report will analyze the drainage amounts falling on the site and show how the drainage is directed within the project site. If it is determined that the project will have potential impacts, mitigation measures will be proposed.

2. Would the proposal result in a potentially significant increase in the demand on the local imported water system?

Less Than Significant Impact.

A Service Availability Letter from the local water district has been provided indicating adequate water resources and infrastructure to provide requested water resources.

3. Would the proposal have a potentially significant adverse effect on surface water quality?

Less Than Significant Impact.

Included in the project design are fossil filters that will be installed at all of the storm drain outlets. The fossil filters are designed to separate oil and water as well as other pollutants before the water runoff is deposited into the stormwater system. As such, the project is not expected to contribute excessive amounts of pollutants into the stormwater system. The proposed project does not indicate significant potential sources of chemicals or compounds which will contaminate surface water sources so as to decrease the quality of surface water to below standards as established by the San Diego Regional Water Quality Control Board's (SDRWQCB's) Basin Plan, Surface Water Quality Objectives. However, prior to construction/grading of the site, a Notice of Intent (NOI) must be filed with the State Water Resources Control Board (SWRCB) for a General Construction Storm Water Permit. Once construction is complete, the site owner and/or facility operator is required to investigate coverage under the General Industrial Storm Water Permit by contacting the SDRWQCB at (619) 467-2952.

Additionally, the project is located within the Loveland Reservoir Watershed Boundary. The Loveland Reservoir is under the jurisdiction of the Sweetwater Authority. The increase of commercial uses may have an

incremental effect of increased runoff associated with this type of development. However, no substances or materials that may be associated with the project's construction or operation have been identified that would result in a significant impact to water quality. Therefore, potential impacts to the Sweetwater Reservoir are considered to be less than significant.

4. If the proposal is groundwater dependent, plans to utilize groundwater for non-potable purposes, or will obtain water from a groundwater dependent water district, does the project have a potentially significant adverse effect on groundwater quantity?

Not Applicable.

The project will obtain its water supply from the Padre Dam Municipal Water District which obtains water from surface reservoirs and/or imported sources. The project will not use any groundwater for any purpose, including irrigation or domestic supply.

5. Does the project comply with the requirements of the San Diego County Groundwater Ordinance?

Not Applicable.

The project does not require the use of groundwater, and as such, the San Diego County Groundwater Ordinance does not apply.

6. Would the project have a potentially significant adverse effect on groundwater quality?

Less Than Significant Impact.

The proposed project does not indicate any significant potential sources of chemicals or compounds which will contaminate groundwater sources and decrease the quality of the groundwater to below the standards as set by the SDRWQCB's Basin Plan, Groundwater Quality Objectives. However, prior to construction/grading of the site, the owner and/or facility operator is required to investigate coverage under the General Dewatering Permit by contacting the SDRWQCB at (619) 467-2952.

V. AIR QUALITY

1. Would the proposal have the potential to significantly contribute to the violation of any air quality standard or significantly contribute to an existing or projected air quality violation?

Potentially Significant Unless Mitigation Incorporated.

No significant source of either stationary or indirect air pollutants has been identified from the project. The primary source of air pollutants would be generated from vehicle trips associated with the proposed project. The vehicle trips generated from the project will result in 11,770 Average Daily Trips (ADT). A technical Air Quality Impact report prepared by Giroux and Associates, dated December 27, 1999, concludes that the project will not have a significant impact to air quality.

Mobile source emission may exceed daily significance thresholds for Reactive Organic Gases (ROG) and ??????? (NO_x) as regional smog precursors. However, higher levels of vehicular emissions to obtain goods and services would result if the project is not developed. These emissions would be released up-wind of Alpine and then flow through the area in their most unhealthful form after undergoing photochemical transformations. Therefore, because people living in Alpine and people living east of Alpine must travel a greater distance to obtain the goods and services the project will provide, the project will offer a reduced travel distance for people needing these goods and services. Subsequently, less emssions will be released in areas that are upwind of Alpine, ultimately resulting in less air pollution in Alpine.

The report also concludes that there will not be any "hot spots" (concentrated amounts) of carbon monoxide (CO) concentrations in the immediate vicinity of the proposed project. Local CO levels will be well within the allowable criteria and the project impact to microscale air quality will be negligible.

Potential air quality impacts associated with the operation of a filling station were shown to be less than significant because the operator of the gas station must demonstrate that all equipment satisfies applicable San Diego Air Pollution Control District (SDAPCD) rules and regulations. Compliance with the specific performance criteria of the SDAPCD rules and regulations is considered adequate control of air emissions from gas stations.

The project does require mitigation measures to reduce potential impacts from particulates (dust) during the construction phase of the project. The applicant is required to submit prior to the issuance of a grading plan a construction impact mitigation program. The mitigation program is required to identify construction practices that will reduce excessive fugitive dust from the project site.

2. Would the proposal have the potential to significantly increase the exposure of people to any excessive levels of air pollutants?

Less Than Significant Impact.

A technical Air Quality Impact report prepared by Giroux and Associates, dated December 27, 1999, states that if any measurable impacts from the project were to occur, it would be in the immediate vicinity of the project site itself. Emissions from cars entering or leaving the parking lots or idling at nearby intersections, in conjunction with possible stagnation meteorology, could increase localized air pollution exposure above safe limits.

Carbon Monoxide was used as an indicator of any local "hot spot" potential because cars emit ten times as much CO as any other pollutant. As noted above, other exhaust pollutants also require a chemical transformation to reach an unhealthful stage while CO is already in its most unhealthful form. The analysis was performed using a Caltrans screen procedure for CO based on the CALINE4 roadway emission dispersion computer model.

Maximum one hour background levels are currently 5 parts per million (ppm) in Alpine. It would require a 15 ppm local contribution to equal the California one-hour standard of 20 ppm. The analysis calculated the maximum worst case local exposure is 4.1 ppm. As such, potential impacts from exposing people to excessive levels of air pollutants are considered to be less than significant.

3. Would the proposal potentially result in the emission of objectionable odors at a significant intensity over a significant area?

Not Applicable.

No potential sources of objectionable odors have been identified within the proposed project. Thus, the project is not expected to generate any significant levels of objectionable odors.

VI. TRANSPORTATION/CIRCULATION

1. Would the proposal result in a potential degradation of the level of service of affected roadways in relation to the existing traffic volumes and road capacity?

Potentially Significant Unless Mitigation Incorporated.

Based on the technical traffic report, prepared by Darnell and Associates, dated April 7, 2000, the project will generate approximately 11,770 ADT. The traffic report analyzed the surrounding traffic network and determined that the project would have potentially significant impacts to the existing traffic and circulation pattern. The traffic report concluded the following:

Project traffic increased the v/c ratio on the segment of Tavern Road on the bridge over Interstate 8 by 1.5 percent which is less than the allowable 2 percent increase according to the County of San Diego's Draft Significance Criteria. Therefore, traffic impacts to Tavern Road are considered to be less than significant.

The traffic trips generated by the project when added to current traffic volumes lowers the Level of Service (LOS) on the segments of Alpine Boulevard between West Victoria Drive and Arnold Way and Bay Meadows to LOS E using the County's Public Road Level of Service Standards look-up table. Alpine Boulevard between Arnold Way/West Victoria Drive and Marshall Road was found to have an operational LOS E and the segments between Marshall Road and South Grade Road/East Victoria Drive was found to have an operational LOS D under existing plus project conditions. A reduction in the LOS to these roadway segments are considered to be significant.

As mitigation of the project traffic impacts, the project applicant shall design and improve Alpine Boulevard to a three-lane Town-Collector Road standards from West Victoria Drive to a point approximately 100 feet east of Marshall Road. The project applicant shall also design and construct a signal at the intersection of Alpine Boulevard and West Victoria.

The project applicant shall be required to pay a "fair share" monetary contribution to the future signalization of these intersections:

Tavern Road/I-8 Ramps
Alpine Boulevard/East Victoria Drive

The project applicant shall convert the intersections of Willows Road with I-8 eastbound ramps and Willows Road with I-8 westbound ramps from one-way stop control to all-way stop control.

Implementation of these mitigation measures will improve the Level of Service on impacted roadway segments and intersections to acceptable levels. The mitigation measures will result in roadway improvements that meet traffic engineering standards known to decrease congestion at intersections and improve traffic flow along street segments. With the implementation of the mitigation listed above Alpine Boulevard from West Victoria Drive to a point approximately 100 feet east of Marshall Road will operate at an acceptable LOS D. The project applicant is required to design and construct a signal at the intersection of Alpine Boulevard and West Victoria. When this intersection is improved and signalized it will operate at an acceptable LOS D. The project applicant is paying a fair share contribution to the signalization of Tavern Road/I-8 Ramps intersection and the Alpine Boulevard/East Victoria Drive intersection. When these intersections are signalized, they will operate at an acceptable LOS D or better. The project applicant is required to convert the intersections of Willows Road with I-8 eastbound ramps and Willows Road with I-8 westbound ramps from one-way stop control to all-way stop control. After conversion of these intersections to an all-way stop they will operate at an acceptable LOS C or better.

2. Would the proposal result in potentially significant impacts to traffic safety (e.g., limited sight distance, curve radii, right-of-way)?

Less Than Significant Impact.

No significant impacts to traffic safety have been identified. The project will be required to provide adequate sight distance at the street intersections and the public roads will be required to be built to County Public Road Standards.

3. Would the proposal potentially result in insufficient parking capacity on-site or off-site?

Less Than Significant Impact.

The Zoning Ordinance Section 6758 Parking Schedule requires provision for on-site parking spaces based upon the gross floor area. The project description provides an analysis for the total parking requirement which is consistent with the Parking Schedule. Hence, the proposed project is providing adequate on-site parking. As mitigation for potential traffic impacts the applicant is required to design and construct a traffic signal at the intersection of Alpine Boulevard and West Victoria. As part of the improvement of the intersection, restriping of Alpine Boulevard will be required. Four on-street parking spaces on the south side of Alpine Boulevard, west of Marshall will be eliminated and three on-street parking spaces on the south side of Alpine Boulevard east of Marshall will be eliminated. Additionally, to correct the existing condition of vehicles backing up into Alpine Boulevard traffic lanes, up to five additional diagonal parking spaces on the south side of Alpine Boulevard east of the new Texaco, and five perpendicular parking spaces on the north side of Alpine Boulevard, just east of West Victoria may be converted to parallel parking spaces. This will result in a loss of three spaces east of the Texaco and four spaces east of West Victoria Drive. The design of the proposed mitigation improvements are consistent with the existing circulation element classification of Alpine Boulevard as a four lane collector. The improvements are also consistent with the proposed reclassification of Alpine Boulevard to a three-lane Town collector road which is currently being evaluated by the County.

The elimination of the parking spaces is not considered to be significant because there is adequate other on-street parking and there is off-street parking for the Alpine Inn, the liquor store west of the Alpine Inn and the new Texaco station just east of Marshall Road which will accommodate reasonable parking needs for those businesses.

4. Would the proposal result in a potentially significant hazard or barrier for pedestrians or bicyclists?

Less Than Significant Impact.

In review of the project design and mitigation measures, no elements of the project have been identified that present a potentially significant hazard for pedestrians or bicyclists.

VII. BIOLOGICAL RESOURCES

1. Would the proposal result in potentially significant adverse effects, including noise from construction or the project, to an endangered, threatened, or rare plant or animal species or their habitats?

Potentially Significant Unless Mitigation Incorporated.

A biological technical report, prepared by Pacific Southwest Biological Services, dated February 10, 2000, identified the following vegetation communities on the project site: Southern mixed chaparral (2.24 acres), Diegan coastal sage scrub (0.51 acres), Coastal sage-chaparral scrub (4.28 acres), and disturbed habitat (2.57 acres). Impacts to Diegan sage scrub and coastal sage-chaparral scrub habitats are considered significant. Because the project is located within the County's subarea plan of the MSCP, impacts to Southern mixed chaparral must be mitigated. All mitigation must be consistent with the County's BMO. The project will impact all of the Diegan coastal sage scrub, Coastal sage-chaparral scrub habitats, and Southern mixed chaparral habitats.

The Alpine Village Center site was created as part of TM 4941 RPL[1]. Mitigation requirements for TM 4941 RPL[1], required the acquisition for 0.6 acres of wetlands and 0.8 acres of Coastal sage scrub. These mitigation requirements were satisfied prior to the recordation of TM 4941 RPL[1]. The only Coastal sage scrub formerly appearing on TM 4941RPL[1] is that on the Alpine Village Center site. As such, no further mitigation is required for Coastal sage scrub. The surplus 0.29 acre (0.8 – 0.51) can be applied towards mitigation for the remaining Tier II habitat (Coastal sage-chaparral scrub).

Therefore, the applicant is required to satisfy the following mitigation measures prior to the issuance of any other permits:

Provide evidence to the satisfaction of the Director of the Department of Planning and Land Use that credits have been secured in a County approved mitigation bank for impacts to 2.24 acres of Southern mixed chaparral. If the mitigation bank is located in a MSCP Pre-Approved Mitigation Area (as defined by the BMO) then the impacts shall be mitigated at a ratio of 0.5:1. If the mitigation bank is outside of a Pre-Approved area, the mitigation shall be at a ratio of 1:1.

Provide evidence to the satisfaction of the Director of the Department of Planning and Land Use that credits have been secured in a County approved mitigation bank for impacts to 3.99 acres (4.28 acres – 0.29 acres) of Coastal sage-Chaparral scrub. If the mitigation bank is located in a MSCP Pre-Approved Mitigation Area (as defined by the BMO) then the impacts shall be mitigated at a ratio of 1:1. If the mitigation bank is outside of a Pre-Approved area, the mitigation shall be at a ratio of 1.5:1.

2. Does the project comply with the Sensitive Habitat Lands section (Article IV, Item 6) of the Resource Protection Ordinance (RPO)?

Yes.

Sensitive habitat lands as defined by the RPO were identified on the site. The mitigation is required as a condition of approval and will provide an equal or greater benefit to the affected species, because the mitigation will occur in a preserve system that provides long term viability for sensitive species in large blocks of undeveloped natural habitat. Therefore, it has been found that the proposed project complies with Article IV, Item 6 of the RPO.

3. Would the proposal result in potentially significant adverse effects to wetland habitats or wetland buffers? Is the project in conformance with wetland and wetland buffer regulations within the RPO?

Less Than Significant Impact.

The site contains no wetland habitats as defined by the San Diego County RPO. The site does not have a substratum of predominately undrained hydric soils, the land does not support, even periodically, hydric plants, nor does the site have a substratum that is non-soil and is saturated with water or covered by water at some time during the growing season of each year.

4. Would the proposal result in potentially significant adverse effects to wildlife dispersal corridors?

Less Than Significant Impact.

No linear features (drainages, ridges, valley or linear-shaped patches of native vegetation) that connect areas of native vegetation or natural open space were identified on the site within the site in the biological technical

report, prepared by Pacific Southwest Biological Services, dated February 10, 2000. Therefore, the site is not expected to be used as a wildlife dispersal corridor and will not impact the dispersal of wildlife.

5. Does the proposed project conform to the MSCP and BMO?

Yes.

The project site is not within a Biological Resource Core Area. The habitat types found on-site are Tier II and Tier III, which means they are typically considered sensitive. However, the site has been heavily disturbed and vegetation is now lower quality with minimal biological value. Based on that fact, developing the entire 9.6-acre site is not considered a significant impact to sensitive habitats. There were no threatened, endangered, or narrow endemic species detected on-site. No significant populations of sensitive species would reside on the property due to its disturbed nature and proximity to dense development and high traffic roads. The project site as a whole is not considered a sensitive resource and project related impacts are not considered significant. Impacts to sensitive habitats will be mitigated at ratios and in locations that are consistent with the BMO.

6. Does the proposed project conform to the Habitat Loss Permit/Coastal Sage Scrub Ordinance findings?

Not Applicable.

The proposed project and any off-site improvements are located within the boundaries of the MSCP. Therefore, conformance to the Habitat Loss Permit/Coastal Sage Scrub Ordinance findings is not required.

VIII. HAZARDS

1. Would the proposal present a significant risk of accidental explosion or release of hazardous substances?

Less Than Significant Impact.

The proposed project will not contain, handle, or store any potential sources of chemicals or compounds that would present a significant risk of accidental explosion or release of hazardous substances. The project does propose a gas station within the project area. Current federal, state, and local safety regulations have specific performance criteria that gas

station equipment, including storage tanks, and fuel handlers must satisfy in order to operate. The operators of the gas station must obtain a permit from the County Department of Environmental Health which administers, among others, State Regulations AB 3205 which regulates the handling of hazardous substances. Compliance with these regulations is considered adequate to reduce potential risks of accidental explosions to less than significant. In addition, modern fuel equipment has technological controls that aide in the prevention of accidental explosions. For these reasons, potential impacts are considered to be less than significant.

2. Would the proposal have the potential to significantly interfere with the County of San Diego Operational Area Emergency Plan or the County of San Diego Operational Site Specific Dam Failure Evacuation Data Plans?

Less Than Significant Impact.

The project lies outside any mapped dam inundation area for major dams/reservoirs within San Diego County, as identified on inundation maps prepared by the dam owners. Thus, the project complies with all applicable plans as established by the County Office of Disaster Preparedness.

3. Would the proposal have the potential to significantly increase the fire hazard in areas with flammable vegetation?

Less Than Significant Impact.

The project will not significantly increase the fire hazard because it will comply with the regulations relating to emergency access, water supply, and defensible space specified in the Uniform Fire Code, Article 9 and Appendix II-A, Section 16, as adopted and amended by the local fire protection district. Implementation of these fire safety standards will occur during the building permit process. Fire Service will be from the Alpine Fire Protection District.

4. a. Would the proposal expose people or property to flooding?

Less Than Significant Impact.

The project will not expose people or property to flooding because it is located outside any dam inundation zone and outside an identified flood zone.

b. Does the project comply with the Floodways and Floodplain Fringe section (Article IV, Section 3) of the RPO?

Yes.

Because the project is not located within a floodway or floodplain it will comply with all elements of Article IV, Section 3 of the RPO.

5. Would the proposal expose people to any other demonstrable potentially significant health or safety hazard not listed above?

Less Than Significant Impact.

No other health or safety hazard has been identified in the review of the proposed project.

IX. NOISE

1. Would the proposal result in exposing people to potentially significant noise levels (i.e., in excess of the San Diego County Noise Control Regulations)?

Less Than Significant Impact.

The proposal would not expose people to potentially significant noise levels which exceed the allowable limits of the County of San Diego Noise Element of the General Plan, County of San Diego Noise Ordinance, and other applicable local, State, and Federal noise control regulations. People coming to the project site will not be exposed to excessive noise levels.

Transportation (traffic, railroad, aircraft) noise levels at the project site are not expected to exceed Community Noise Equivalent Level (CNEL)=60 decibels (dB) limit.

Noise impacts to the proposed project from adjacent land uses are not expected to exceed the property line sound level limits of the County of San Diego Noise Ordinance.

2. Would the proposal generate potentially significant adverse noise levels (i.e., in excess of the San Diego County Noise Control Regulations)?

Potentially Significant Unless Mitigation Incorporated.

Based on an Environmental Noise Study prepared by Dudek and Associates, dated August 5, 1999, the proposal could generate potentially significant noise levels (i.e., in excess of the County General Plan or Noise Ordinance), associated with the parking lot cleaning activities, idling and maneuvering delivery trucks, and outdoor mechanical equipment would result in significant noise impacts. The following noise mitigation measures are proposed to reduce the noise impacts to applicable limits: Proposed mitigation measures include not allowing power blowers to be used to clean the parking lot, and constructing a minimum 6-foot high parapet along the top of the roof of the fast food restaurant.

A five foot high fence has been constructed as part of the development of the homes built as a result of TM 4941RPL[1] for the three homes located adjacent to Highlands View Road by the developer of the homes. This wall will act to reduce project noise off of the site to an allowable level within the homes.

By prohibiting the use of power blowers and incorporating noise attenuation measures such as sound walls and barriers into the project design, potential impacts from noise generating sources are reduced to less than significant.

X. PUBLIC SERVICES

Would the proposal create potentially significant adverse effects on, or result in the need for new or significantly altered services or facilities? This could include a significantly increased maintenance burden on fire or police protection, schools, parks, or other public services or facilities. Also, will the project result in inadequate emergency access?

Less Than Significant Impact.

The proposed project will not result in the need for significantly altered services or facilities. Facilities are existing to the proposed project site from Padre Dam Municipal Water Department for water and the Alpine Sanitation District for sewer and the Alpine Fire Protection District for fire and emergency response. The project is accessed by Alpine Boulevard and South Grade Road which are existing public roads that afford adequate emergency access.

XI. UTILITIES AND SERVICES

Would the proposal result in a need for potentially significant new distribution systems or supplies, or substantial alterations to the following utilities:

Power or natural gas;
Communication systems;
Water treatment or distribution facilities;
Sewer or septic tanks;
Storm water drainage;
Solid waste disposal;
Water supplies?

Less Than Significant Impact.

The proposed project will not result in the need for significant new distribution systems or substantial alterations to existing systems because the existing utility systems listed above are available to serve the proposed project.

XII. AESTHETICS

1. Would the proposal result in a demonstrable, potentially significant, adverse effect on a scenic vista or scenic highway?

   Less Than Significant Impact.

   The proposed project is situated adjacent to Interstate 8 which is not a scenic highway. However, Interstate 8 is identified in the Scenic Highway Element as a proposed second priority scenic highway corridor. The project includes development standards through the design review process to ensure that adequate visual screening is provided.

2. Would the proposal result in a demonstrable, potentially significant, adverse visual effect that results from landform modification, development on steep slopes, excessive grading (cut/fill slopes), or any other negative aesthetic effect?

   Less Than Significant Impact.

   The proposed project will require significant alteration of the existing landform. Grading of the site will redistribute on-site approximately 70,000 cubic yards of earth. The project design includes leaving the

southern portion of the site in its natural state and intensive landscaping of all cut and fill slopes. The topography of this southern portion of the site screens the project from the view of the residents to the south. Grading will create one north facing cut slope of approximately 45 vertical feet. The effect of such slope face is somewhat minimized by an unpopulated northward view which is from Alpine Boulevard and the Interstate. The effect is further minimized because the majority of the slope face will be screened by the height of the Albertsons store (approximately 28 to 34 feet high) that backs-up onto the toe of the slope. Additionally, an intensive landscape scheme is proposed for all cut and fill slopes. Although initially there is sizable earth movement, the location of buildings and the use of landscaping to screen the manufactured grades will yield a site character that will have an ultimate minimal visual impact.

3. Does the project comply with the Steep Slope section (Article IV, Section 5) of the RPO?

Yes.

The project site does not have any slopes that meet the RPO steep slope criteria of a gradient greater than 25 percent and a minimum of 50 feet in height. Therefore, the project complies with Article IV, Section 5 of the RPO.

4. Would the project produce excessive light, glare, or dark sky impacts?

Less Than Significant Impact.

The project design has not proposed any structures or materials that would create a public nuisance or hazard. The project conforms to the San Diego County Light Pollution Code (San Diego County Code Section 59.101). Any future lighting would be regulated by the Code. Light standards will not exceed 15-feet in height. Lighting will be low pressure sodium and lighting will be directed downward. The proposed project will not generate excessive glare or have excessive reflective surfaces.

XIII. CULTURAL AND PALEONTOLOGICAL RESOURCES

1. Would the proposal grade or disturb geologic formations that may contain potentially significant paleontological resources?

Less Than Significant Impact.

A review of the paleontological maps provided by the San Diego Museum of Natural History indicates that the project is not located on geological formations that contain significant paleontological resources. The geological formations that underlie the project have a low probability of containing paleontological resources.

2. Does the project comply with the Significant Prehistoric and Historic Sites section (Article IV, Section 7) of the RPO?

Yes.

The property has been surveyed by a County of San Diego certified archaeologist/historian, Brian F. Smith of Brian F. Smith and Associates and it has been determined that the property does not contain any archaeological/historical sites. An archaeological evaluation, dated September 29, 1999 was performed by Brian F. Smith and Associates to determine if any significance was associated with a site previously recorded on the project property. The testing determined that the feature is a non-significant cultural resource. As such the project complies with Article IV, Section 7 of the RPO.

3. Would the proposal grade, disturb, or threaten a potentially significant archaeological, historical, or cultural artifact, object, structure, or site which:

   a. Contains information needed to answer important scientific research questions;

   b. Has particular quality or uniqueness (such as being the oldest of its type or the best available example of its type);

   c. Is directly associated with a scientifically recognized important prehistoric or historic event or person;

   d. Is listed in, or determined to be eligible to be listed in, the California Register of Historical Resources, National Register of Historic Places, or a National Historic Landmark; or

   e. Is a marked or ethnohistorically documented religious or sacred shrine, landmark, human burial, rock art display, geoglyph, or other important cultural site?

Less Than Significant Impact.

The project will not impact significant archaeological resources because a field survey has been performed by a County certified archaeologist and no archaeological sites are present. An archaeological evaluation was performed by Brian F. Smith and Associates to determine if any significance was associated with a site previously recorded on the project property. The testing determined that the feature is a non-significant cultural resource.

XIV. OTHER IMPACTS NOT DETAILED ABOVE

None.

XV. MANDATORY FINDINGS OF SIGNIFICANCE

1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

   Less Than Significant Impact.

   As discussed in Section VII, Biological Resources, Questions 1., 2., 3., and 4., and Section XIII, Cultural and Paleontological Resources, Questions 1., 2., and 3., the project will not degrade the quality of the environment and will not substantially reduce the habitat of a fish or wildlife species. The project will not cause a fish or wildlife population to drop below self-sustaining levels and will not threaten to eliminate a plant or animal community. Also, the project would not reduce the number or restrict the range of a rare or endangered plant or animal and will not eliminate important examples of the major periods of California history or prehistory.

2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?

   Less Than Significant Impact.

In the completion of this Initial Study, it has been determined that no significant unmitigated environmental impacts will result from the project. Thus, all long-term environmental goals have been addressed.

3. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potentially Significant Unless Mitigation Incorporated.

Development of the proposed project will (on a conceptual level) incrementally add to cumulative project pacts of regional development. Those impacts are of both a quantifiable nature (for example, traffic, noise, air quality, biological affects, and drain on public facilities and services) and a non-quantifiable nature (such as visual, community character, and regional loss of open space). The Draft EIR will evaluate the potential for maximum-level project implementation to add to cumulative area impacts, and will include mitigation to address significant impacts.

4. Does the project have environmental effects which will cause substantially adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact.

In the completion of this Initial Study, it has been determined that the project will not cause substantial adverse effects on human beings, either directly or indirectly. This conclusion is based on the analysis completed in Sections: I, Land Use and Planning; II, Population and Housing; III, Geologic Issues; IV, Water Resources; V, Air Quality; VI, Transportation/ Circulation; VII, Biological Resources; VIII, Hazards; IX, Noise; X, Public Services; XI, Utilities and Services; and XII, Aesthetics. In totality, these analyses have determined that the project will not cause substantial adverse effects on human beings. However, an EIR ??????????

XVI. EARLIER ANALYSIS

Earlier California Environmental Quality Act (CEQA) analyses are used where one or more effects have been adequately analyzed in an earlier EIR or Negative Declaration.

1. Earlier analyses used: TM 4941RPL[1] Negative Declaration

2. Impacts adequately addressed in earlier CEQA documents. The following effects from the above checklist that are within the scope of, and were analyzed in, an earlier CEQA document: Impacts to Diegan sage scrub.

3. Mitigation measures: Purchase 0.8 acre of Diegan coastal sage scrub in a County approved mitigation bank.

XVII. REFERENCES USED IN THE COMPLETION OF THE INITIAL STUDY CHECKLIST

Environmental File for S99-047, Log No. 99-14-036, and information from a field visit; on file at the Department of Planning and Land Use

An Archaeological Evaluation of SDI-14,537 for the Albertson Alpine Project; prepared by Brian F. Smith and Associates; September 29, 1999; on file at the Department of Planning and Land Use

Preliminary Environmental Noise Study; prepared by Dudek and Associates, Inc.; August 5, 1999; on file at the Department of Planning and Land Use

Report of a Biological Assessment of the Alpine Village Center, Alpine, San Diego County, California; prepared by Pacific Southwest Biological Services; February 10, 2000; on file at the Department of Planning and Land Use

Air Quality Impact, Albertson's Market (Alpine), San Diego County, California; prepared by Giroux and Associates; December 27, 1999

Traffic Analysis for Alpine Albertsons; prepared by Darnell and Associates; April 7, 2000; on file at the Department of Planning and Land Use

Air in San Diego County, 1996 Annual Report, Air Pollution Control District, San Diego County

Bay Area Air Quality Management District - Assessing the Air Quality Impacts of Projects and Plans, April 1996

California Environmental Quality Act, CEQA Guidelines 1997

California State Clean Air Act of 1988

County of San Diego General Plan

County of San Diego Code Zoning and Land Use Regulation Division Sections 88.101, 88.102, and 88.103

County of San Diego Code Zoning and Land Use Regulation, Division 7, Excavation and Grading

County of San Diego Groundwater Ordinance (Chapter 7, Sections 67.701 through 67.750)

County of San Diego Noise Element of the General Plan (especially Policy 4b, Pages VIII-18 and VIII-19)

County of San Diego Noise Ordinance (Chapter 4, Sections 36.401 through 36.437)

County of San Diego Zoning Ordinance (Performance Standards, Sections 6300 through 6314, Section 6330-6340)

Dam Safety Act, California Emergency Services Act; Chapter 7 of Division 1 of Title 2 of the Government Code

General Construction Storm Water Permit, State Water Resources Control Board

General Dewatering Permit, San Diego Regional Water Quality Control Board

General Impact Industrial Use Regulations (M54), San Diego Regional Water Quality Control Board

Groundwater Quality Objectives, San Diego Regional Water Quality Control Board's Basin Plan

Health and Safety Code (Chapters 6.5 through 6.95), California Codes of Regulations Title 19, 22, and 23, and San Diego County Ordinance (Chapters 8, 9, and 10)

Resource Protection Ordinance of San Diego County, Articles I-VI inclusive. October 10, 1993

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Steve Nisse
ACTING DIRECT

Notice of Preparation

November 3, 2000

To: Reviewing Agencies

Re: S99-047, Log No. 99-14-036; Alpine Village Center
SCH# 2000061004

Attached for your review and comment is the Notice of Preparation (NOP) for the S99-047, Log No. 99-14-036; Alpine Village Center draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Alex Jewell
San Diego County, DPLU
5201 Ruffin Road, Suite B
San Diego, CA 92123-1666

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

RECEIVED
NOV 0 9 2000
San Diego County
DEPT. OF PLANNING & LAND USE

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 WWW.OPR.CA.GOV/CLEARINGHOUSE.HTML

SCH# 2000061004
Project Title S99-047, Log No. 99-14-036; Alpine Village Center
Lead Agency San Diego County

Type NOP Notice of Preparation

Description The project is the construction of an approximately 72,500 square foot neighborhood commercial shopping center complex on approximately 9.65 acres of land which will include a supermarket building of up to 58,000 square feet, a retail shop building of approximately 9,000 square feet, a fast food restaurant building of up to 3,500 square feet with a drive-thru lane, and a gasoline service station with a mini-mart building of up to 2,500 square feet and 4 fueling pump islands.

Lead Agency Contact

Name Alex Jewell
Agency San Diego County, DPLU
Phone (619) 232-4466 **Fax**
email
Address 5201 Ruffin Road, Suite B
City San Diego **State** CA **Zip** 92123-1666

Project Location

County San Diego
City Alpine
Region
Cross Streets
Parcel No. 404-032-10, 72
Township **Range** SBM **Section** **Base**

Proximity to:

Highways I-8
Airports
Railways
Waterways
Schools
Land Use The project site is currently vacant. The project is zoned C-36 General Commercial.

Project Issues Aesthetic/Visual; Air Quality; Noise; Traffic/Circulation; Vegetation; Water Quality; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Fish and Game, Region 5; Native American Heritage Commission; State Lands Commission; Caltrans, District 11; Department of Housing and Community Development; California Highway Patrol; Caltrans, Division of Transportation Planning; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 9

Date Received 11/02/2000 **Start of Review** 11/02/2000 **End of Review** 12/01/2000

Distr ion List

County: San Diego

SCH# 200006004

rces Agency

sources Agency
dell Gayou

pt. of Boating & Waterways
l Curry

lifornia Coastal
mmission
zabeth A. Fuchs

pt. of Conservation
n Trott

pt. of Forestry & Fire
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bra Gilbert
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pt. of Water Resources

n & Welfare

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pt. of Health/Drinking Water

& Agriculture

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ept. of Food and Agriculture

Fish and Game

- [ ] Dept. of Fish & Game
  Joe Vincenty
  Environmental Services Division
- [ ] Dept. of Fish & Game
  Donald Koch
  Region 1
- [ ] Dept. of Fish & Game
  Banky Curtis
  Region 2
- [ ] Dept. of Fish & Game
  Brian Hunter
  Region 3
- [ ] Dept. of Fish & Game
  William Laudermilk
  Region 4
- [x] Dept. of Fish & Game
  Sandy Peterson
  Region 5, Habitat Conservation Program
- [ ] Dept. of Fish & Game
  Gabrina Gatchel
  Region 6, Habitat Conservation Program
- [ ] Dept. of Fish & Game
  Tammy Allen
  Region 6, Inyo/Mono, Habitat Conservation Program
- [ ] Dept. of Fish & Game
  DeWayne Johnston
  Marine Region

Independent Commissions

- [ ] California Energy Commission
  Environmental Office
- [x] Native American Heritage Comm.
  Debbie Treadway
- [ ] Public Utilities Commission
  Andrew Barnsdale
- [x] State Lands Commission
  Betty Silva
- [ ] Colorado River Board
  Gerald R. Zimmerman
- [ ] Tahoe Regional Planning Agency (TRPA)
  Lyn Barnett
- [ ] Office of Emergency Services
  John Rowden, Manager
- [ ] Delta Protection Commission
  Debby Eddy
- [ ] Santa Monica Mountains Conservancy
  Paul Edelman

Dept. of Transportation

- [ ] Dept. of Transportation
  IGR/Planning
  District 1
- [ ] Dept. of Transportation
  Vicki Roe
  Local, Development Review, District 2
- [ ] Dept. of Transportation
  Jeff Pulverman
  District 3
- [ ] Dept. of Transportation
  Jean Finney
  District 4
- [ ] Dept. of Transportation
  Lawrence Newland
  District 5
- [ ] Dept. of Transportation
  Marc Birnbaum
  District 6
- [ ] Dept. of Transportation
  Stephen J. Buswell
  District 7
- [ ] Dept. of Transportation
  Mike Sim
  District 8
- [ ] Dept. of Transportation
  Caroline Yee for Kate Walton
  District 9
- [ ] Dept. of Transportation
  Chris Sayre
  District 10
- [x] Dept. of Transportation
  Lou Salazar
  District 11
- [ ] Dept. of Transportation
  Aileen Kennedy
  District 12

Business, Trans & Housing

- [x] Housing & Community Development
  Cathy Creswell
  Housing Policy Division
- [ ] Caltrans - Division of Aeronautics
  Sandy Hesnard
- [x] California Highway Patrol
  Lt. Dennis Brunette
  Office of Special Projects
- [x] Dept. of Transportation
  Ron Helgeson
  Caltrans - Planning
- [ ] Dept. of General Services
  Robert Sleppy
  Environmental Services Section

Air Resources Board

- [ ] Airport Projects
  Rob Rogen
- [ ] Transportation Projects
  Ann Geraghty
- [ ] Industrial Projects
  Mike Tollstrup

- [ ] California Integrated Waste Management Board
  Sue O'Leary
- [ ] State Water Resources Control Board
  Diane Edwards
  Division of Clean Water Programs
- [ ] State Water Resources Contro Board
  Greg Frantz
  Division of Water Quality
- [ ] State Water Resouces Control Board
  Mike Falkenstein
  Division of Water Rights
- [x] Dept. of Toxic Substances Co
  CEQA Tracking Center

Regional Water Quality Contro Board (RWQCB)

- [ ] RWQCB
  Cathleen Hudson
  North Coast Region (1)
- [ ] RWQCB
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] RWQCB
  Central Coast Region (3)
- [ ] RWQCB
  Jonathan Bishop
  Los Angeles Region (4)
- [ ] RWQCB
  Central Valley Region (5)
  - [ ] RWQCB
    Ce tral Valley Region (5)
    Fr no Branch Office
  - [ ] RW QCB
    Central Valley Region (5)
    Redding Branch Office
- [ ] RWQCB
  Lahontan Region (6)
  - [ ] RWQCB
    Lahontan Region (6)
    Victorville Branch Office
- [ ] RWQCB
  Colorado River Basin Region (7)
- [ ] RWQCB
  Santa Ana Region (8)
- [x] RWQCB
  San Diego Region (9)

STATE OF CALIFORNIA Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

November 16, 2000

RECEIVED
NOV 21 2000
San Diego County
DEPT. OF PLANNING & LAND USE

Alex Jewell
San Diego Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123-1666

RE: SCH# 2000061004, Log No. 99-14-036, Alpine Village Center

Dear Mr. Jewell:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess the project-related impact on archaeological resources, the Commission reccomends the following action be required:

1. Contact the appropriate Information Center for a records search. The record search will determine:
   - Whether a part or all of the project area has been previously surveyed for cultural resources.
   - Whether any known cultural resources have already been recorded on or adjacent to the project area.
   - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
   - Whether a survey is required to determine whether previously unrecorded cultural resources are present.

2. If a archaeological inventory survey is required, the final stage of the is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   - Required the report containing site significance and mitigation be submitted immediately to the planning department.
   - Required site forms and final written report be submitted within 3 months after work has been completed to the Information Center.

3. Contact the Native American Heritage Commission for:
   - A Sacred Lands File Check.
   - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.

Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f). Health and Safety Code §7050.5 and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (916) 653-4040.

Sincerely,

Rob Wood

Rob Wood
Associate Governmental Program Analyst

CC: State Clearinghouse

Department of Toxic Substances Control

Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davi
Governor

November 29, 2000

RECEIVED
DEC 05 2000
San Diego County
DEPT. OF PLANNING & LAND USE

Mr. Alex Jewell
Department of Planning and Land Use
San Diego County
5201 Ruffin Road, Suite B
San Diego, California 92123-1666

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE S99-047, LOG NO. 999-14-036 - ALPINE VILLAGE CENTER (SCH #2000061004)

Dear Mr. Jewell:

The Department of Toxic Substances Control (DTSC) has received your Notice of Preparation (NOP) of a draft Environmental Impact Report (EIR) for the above-mentioned Project.

Based on the review of the document, DTSC's comments are as follows:

1) The draft EIR needs to identify and determine whether current or historic uses at the Project site have resulted in any release of hazardous wastes/substances at the Project area.

2) The draft EIR needs to identify any known or potentially contaminated site within the proposed Project area. For all identified sites, the draft EIR needs to evaluate whether conditions at the site pose a threat to human health or the environment.

3) The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation, and which government agency will provide appropriate regulatory oversight.

4) If during construction of the project, soil contamination is suspected, construction in the area should stop and appropriate Health and Safety procedures should be implemented. If it is determined that contaminated soil exists, the draft EIR should identify how any required investigation and/or remediation will be conducted, and which government agency will provide appropriate regulatory oversight.

DTSC provides guidance for the Preliminary Endangerment Assessment (PEA) preparation and cleanup oversight through the Voluntary Cleanup Program (VCP). For additional information on the VCP or to meet/discuss this matter further, please contact Mr. Johnson P. Abraham, Project Manager at (714) 484-5476 or me at (714) 484-5463.

Sincerely,

Haissam Y. Salloum, P.E.
Unit Chief
Southern California Cleanup Operations Branch
Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

Padre Dam Municipal Water District

Every Drop Counts!

10887 Woodside Avenue / P.O. Box 719
Santee, CA 92072-9
Telephone: 619-448-3
FAX Administration: 619-449-9
FAX Operations: 619-449-9
http://www.PadreDam.
E-mail: Customer@Padre.

Board of Directo
Jesse T. Di
Divisi
Mark Rol
Divisi
Andrew J. Mensi
Divisi
Lax Bosv
Divisi
Dan McMil
Divisi

November 30, 2000

RECEIVED
DEC 0 4 2000
San Diego County
DEPT. OF PLANNING & LAND USE

Mr. Alex Jewell
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123-1666

SUBJECT: ALPINE VILLAGE CENTER, S99-047, LOG NO. 99-14-036 – RESPONSE TO NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT

Padre Dam Municipal Water District (the District) has reviewed the environmental documents dated November 2, 2000. The proposed project is in the Eastern Service Area of the District.

The District's comments are as follows:

Environmental Analysis Form dated November 2, 2000

Section II. Population and Housing, Item 1 – This section states, "The project does not involve substantial extensions of ... water ... systems..." While this is essentially true, the project will require some onsite and offsite water main installations to provide service for anticipated demands.

Specific water demands, primarily influenced by the anticipated requirements of the local fire protection agency, are assumed to be determined later in the design process. Based on the current site plan, the District may request that the existing twenty-inch diameter water main in Alpine Boulevard be extended from its current easterly terminus at the "realigned" South Grade Road to the "Old South Grade Road." This pipeline extension will extend the District's service capabilities by over 700 feet beyond the easterly limit of our current service capabilities.

For reasons of fire safety and water quality "looping," the District also requests the installation of a water main in Suncrest Vista Lane (the road serving the Suncrest housing development, TM 4939-1, located immediately southeast of the subject project) and in "Old South Grade Road" between the northerly terminus of the eight-inch diameter water main in Suncrest Vista Lane and the easterly terminus of above described requested extension of the twenty-inch diameter water main in Alpine Boulevard.

Section VI. Transportation / Circulation, Item 1 – Street improvements as called for in this section and elsewhere may impact Padre Dam Municipal Water District's existing 14" water main in Alpine Boulevard. Specific potential impacts cannot be addressed until construction drawings are submitted for review.

Section X. Public Services – Please see comments at Section II, regarding the need for water main extensions around and within the project site. While these will be altered water facilities, they will not have an environmentally significant impact.

Section XI. Utilities and Services – This section states, "The proposed project will not result in the need for significant new distribution systems or substantial alterations to existing utility systems..."

Please see comments in Section II, regarding the need for water main extensions around the project site. While there will be new distribution systems constructed, they will not have an environmentally significant impact.

If there are any questions or clarifications needed, please contact me at (619) 258-4632, or Fax No. (619) 449-9469, or e-mail: scw@padre.org.

PADRE DAM MUNICIPAL WATER DISTRICT

Steve C. Weston

Steve C. Weston
Manager of Development Services

SCW:cc

#20957

MOUNTAIN DEFENSE LEAGUE

P.O. Box 19852, San Diego, California 92159-0852
(619) 298-3738

December 1, 2000

RECEIVED
DEC 05 2000
San Diego County
DEPT. OF PLANNING & LAND USE

TO: **Alex Jewell**
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123

The Mountain Defense League
P.O. Box 19852
San Diego, CA 92159-0852

SUBJECT: Notice of Preparation of an EIR for Alpine Village Center S99-047, LOG NO. 99-14-026

The Mountain Defense League (MDL) has received a copy of the Notice of Preparation for an EIR for the subject project.

We believe that the scope of the DEIR for the proposed project should include community character and visual impacts. The property owner has developed residential units on part of the property which was previously zoned commercial. While the new residential units do not conform to the rural character of Alpine as detailed in the Alpine Community Plan, the addition of the proposed large, intense commercial use in what has now become predominately a residential area is inconsistent with the community plan. How this project would impact community character should be discussed in the DEIR.

A complete and accurate visual analysis should be included in the DEIR, which includes visual simulations of how the project will actually look in relationship to its adjacent residential neighborhood after implementation, and how the air conditioning and other rooftop ductwork, as well as staging areas and trash containers will appear from Interstate 8, a scenic highway. The graphic visuals should include only those landscaping and mitigation measures which are to be required in the DEIR.

Further, the landscape plans should be regulatory as opposed to conceptual because the County of San Diego has relinquished enforcement of landscape plans for development projects. This is evident in such Alpine projects as Alpine Country Village on Alpine Boulevard where the landscaping on 25-foot to 50-foot fill slopes is no larger than the weeds after three years since planting. Also, the landscaping "mitigation" on the adjacent Sun River development will never be adequate to remedy the horrible visual impacts of that project to the community and the driving public on scenic I-8. The regulatory landscape plans should include plant species, size of container, location, irrigation, monitoring by an objective entity and an enforcement mechanism to be considered adequate as mitigation for the project's visual

impacts.

The EIR should include an analysis of why the project is needed, because Alpine already has multiple quantities of the services and amenities proposed by the project. Alpine is not large enough for "one stop shopping" to be considered a benefit.

There are opposing reports in the record regarding what would constitute adequate mitigation for the traffic impacts brought by the proposed project. We anticipate that a new study, indicating the long-existing LOS F freeway ramps at Tavern Road and I-8 (as indicated by Darnell and Associates' own study dated October 1997 for the Alpine Community Center) will be prepared. It is amazing that the county is working so hard with a developer to squeeze 11,800 more ADTs into a community already overburdened with excessive traffic, knowing the roadways are and will continue to be inadequate. We will expect to see an honest and accurate report with adequate mitigation measures, if such are possible.

The DEIR should include the air quality impacts generated by diesel delivery trucks driving through the community adjacent to numerous residential areas, as well as idling at the delivery docks of the proposed project's commercial enterprises. As is well known, diesel fumes have been determined to be carcinogenic. Alpine has consistently been a non-attainment area for air particulates for years. The incremental addition of project after project throughout Alpine with no mitigation measures proposed because each project is considered "de minimus" has exacerbated the air quality problems in that community. We will look forward to reviewing the air quality report including the latest readings of air quality in Alpine.

The noise impacts will not be confined to the immediate project vicinity, because of the large number of delivery trucks and cars anticipated. These impacts should be accurately assessed and discussed in the DEIR. Rock blasting and drilling noise abatement measures should be included for the construction period.

We will expect to review an accurate Cumulative Impacts section and cumulative impact analyses for other sections of the DEIR for the proposed project, which include an list of projects in process of planning and development, including schools, as well as already-approved tentative maps and SPAs.

It will be interesting to review the rationale for dismissing the Off-Site Project Alternative on the Dyke property at the corner of I-8 and Tavern off ramp, inasmuch as Mr. Tom Dyke has publicly offered to trade his larger and more suitably located property for the project site and donate the currently proposed property to the community as a public park. Reduced Project and No-Project

alternatives should also be included in the DEIR.

MDL appreciates the opportunity to comment on this large commercial development. We look forward to reviewing the DEIR.

Please keep MDL on the notification distribution list for this project,including all documents and hearings.

Thank you.

Respectfully,

Byron F. Lindsley, Jr.
bg

Byron F. Lindsley, Jr.
Director, Mountain Defense League

bg

cc: Supervisor Dianne Jacob
Gary Pryor, DPLU Director
Others as requested

November 13, 2000

County of San Diego
Department of Planning and Land Use
5201 Ruffin Road Suite B
San Diego, CA 92123-1666

Subject: Comments Re: project S99-047, Log # 99-14- 036;
SCH NO. 22000061004 ALPINE VILLAGE CENTER

I would appreciate your consideration of my comments concerning:

1. The proposed traffic signal at the Alpine Blvd. and West Victoria intersection.

2. Improvements to the I-8 / Willows Road interchange

3. Alternate site

4. Traffic trips to the development location

5. Noise factor at the store

OPINIONS:

1. A traffic signal at the West Victoria and Alpine Blvd. location should NOT be constructed if it is NOT NECESSARY AND WILL NOT IMPROVE TRAFFIC FLOW.

2. A traffic signal system at the location should not be constructed if the only justification is that the developer of this project will pay for the construction!

3. With the opening of this new grocery store, some traffic now flowing thru this intersection enroute to the Alpine Creek shopping center as well as west to the Von's grocery store, will stop at the new Albertson's store. I do not believe the traffic flow from the west portions of the community to this development will exceed the reduction in the traffic from residents east of the intersection going to the new facility. I believe that the traffic thru this intersection will show little short term change after the opening promotions at the store end and the shopping patterns of the community establish themselves.

4. I DO NOT BELIEVE that a complicated signal system at this 5 street intersection will improve the flow of traffic thru what is now a very satisfactory ALL STOP intersection with traffic proceeding in "rotation when the intersection is clear and safe",

5. To accommodate space for an east bound left turn lane for Arnold way and a left turn lane for east bound Alpine Blvd. these streets must be widened and some trees removed. This work would change the entire appearance of the main intersection in the Alpine community. This change needs to be considered against beneficial values, IF ANY, to be received by making this a signal controlled intersection.

6. Construction of either a "demand" sensor controlled or a rotating traffic pattern at this intersection is bound to SLOW THE FLOW OF TRAFFIC except during the late night and early morning hours when possibly Alpine Blvd. would have green light thru traffic. This 5 way intersection will need 5 left turn lane controls and 5 pedestrian crossing controls.

7. It is my opinion that traffic using light controls at this complicated traffic control intersection will cause more vehicles to exceed safe speed limits to get thru before lights change and running red lights and will cause more accidents than the present 'ALL STOP' intersection.

8. Traffic signal control at this intersection will increase the already risk driving practices on Alpine Blvd. especially at night if the traffic signal is on a green thru traffic mode for Alpine Blvd.

9. Concerning the proposed work at the Willows/I-8 exit and on ramps: it is TOTALLY RIDICULOUS to expect the developer, Albertson's, to improve this interchange. The Albertson's development will increase the traffic flow at this interchange no more than 1%. That increase will be the delivery trucks to the store. The traffic problems at this interchange are those DIRECTLY RELATED TO THE VIEJAS CASINO AND THE OUTLET MALL. Any major traffic increase at this location will be the direct result of the new casino to be built off of Willows Road. Any traffic improvements at this interchange should be borne by Viejas 80%, the new casino15% and Albertson's no more than 5% of the costs incurred. Just because this development is proposed by a large corporation which is an out of town developer is no reason for the Alpine community and the Alpine Planning Group to get out their Christmas shopping list and expect this developer to make mitigation improvements for problems that already exist as well as projected problems NOT even related to the project or operation of the store.

10. Alternative sites #1 and #2 would put the development in a location that would be reasonably accessible only to the small portion of the community that lives in the neighborhood of N. Tavern Road and West Victoria. The mitigation factor of building an additional bridge across I-8 would exceed the basic cost of the developmer' This would make the development financially unsound. The ONLY people that are proposing these locations on the north side of I-8 are the ones who own land and one of the business owners who would benefit from additional traffic past his service station. NEITHER ALTERNATIVE SITE SHOULD BE CONSIDERED The alternatives would NOT serve the Alpine community nearly as well as the planned location at Alpine Blvd. and East Victoria, a property that has been zoned for this type of development for [illegible] decades.

11. There are now adequate commercial and grocery store facilities in the west end of the community. Additional commercial development on the western edge of the community would dramatically increase the traffic flow on Alpine Blvd. rather than have a negative impact on the traffic flow as the community grows. The proposed site on the east edge of the community would be a balance to what is already available at the Alpine Creek center on the western edge of the community.

12. Prior to any construction activity, sound surveys should be taken for the record of existing noise levels at the site from I-8 during several 24 hour periods so that those noise levels are in no way charged against the project noise levels which those who are opposed to the development think will originate from the store operation. Other than the parking lot vacuuming operation that has already been mitigated to specific limited hours, I do not believe that there will be any noise levels above those acceptable under county standards. The Albertson's delivery trucks have a good muffler system. All the unloading noise from electric powered fork lifts will be contained within the truck bodies. Trash compactor trucks will emit noise as they do thruout the community. If the trash compactor truck noise exceeds standards, then their noise should be addressed to those individual waste haulers, NOT this specific development

RECOMMENDATIONS..

1. DO NOT CONSTRUCT A TRAFFIC CONTROL LIGHT SYSTEM AT WEST VICTORIA/ALPINE BLVD. intersection until the shopping patterns and traffic flow in the community is established following the opening of the Albertson's development. Make traffic evaluations well before the project opens, especially during those shopping days prior to Thanksgiving and Christmas when the peak grocery shopping days of the year are concentrated. This information to be collected for comparison to traffic surveys taken at like periods following the opening of the project and AT LEAST 6 to 12 MONTHS AFTER THE ALBERTSON'S STORE OPENS and the community shopping patterns have been reasonably established.

2. When the traffic surveys are taken as recommended under #1, SPECIAL ATTENTION NEEDS TO BE TAKEN TO RECOGNIZE THE SCHOOL CHILDREN TRANSPORTATION AND TRAFFIC BUILDUP THAT OCCURS EACH MORNING AND AFTERNOON. Especially the afternoon school pick-up rush that regularly clogs this intersection each school day. This parent transportation "surge" goes to and comes from Alpine Elementary, Boulder C[illegible] [illegible]entary and later the McQueen Middle School, now under construction, will increase this traffic flow thru the Alpine Blvd./West Victoria intersection. The traffic survey at this intersection needs to be flexible enough to be able to implement traffic flow surveys on rainy days so that the additional school commute traffic flow can be evaluated. From my experience
as a Sheriff's Dept. Senior Volunteer assigned to these schools during peak traffic periods, I know the traffic on a rainy day may easily be three times as heavy as regular school commute traffic.

3. With the scheduled opening of the new McQueen Middle School on Tavern Road, the traffic flow to this new school should also be included in the traffic surveys at this project intersection. It would be very easy for community activists who are against this project to point to additional McQueen School traffic flow as being caused by the development of this project. It would NOT be fair to have this increased school traffic laid at the door of the project, the developer nor Albertson's. To properly estimate what impact the added traffic at the new McQueen School will have on this project intersection, the volume of parent transportation at the present McQueen Middle School should be evaluated, especially on rainy days. This information could then be projected according to the student numbers scheduled to attend the new school. Tho these figures, too, will be only projections and "guesstimates", there will be established a possible additional traffic flow pattern that IS NOT IN ANY WAY CONNECTED TO THE DEVELOPMENT OF THIS ALBERTSON'S PROJECT!

4. Following the traffic surveys after the opening of the Albertson's store and a period of time for the shopping patterns to become established after opening sales and promotions have ended, ONLY THEN AND ONLY UNLESS IT CAN BE SHOWN THAT TRAFFIC SIGNAL CONTROL AT THIS INTERSECTION WILL POSITIVELY EXPEDITE TRAFFIC FLOW AND IMPROVE SAFETY, SHOULD THE TRAFFIC CONTROLS BE CONSTRUCTED. Again, these traffic controls should NOT be constructed just because the developer is required to pay for the construction even if the controls will NOT improve traffic flow and safety If and when traffic controls are installed, the speed limit should be lowered to 30 mph for ¼ mile on ALL streets approaching the intersection.

5. The final report should clarify WHEN the estimated 11,700 average daily trips to the development Will occur. This figure has been drastically misinterpreted and misconstrued to claim the Alpine community will be OVERWHELMED by all the traffic generated by this development. This traffic estimate certainly is NOT the estimated traffic to be expected at the Alberston's development the first month or year the store is open. I could possibly see this number of trips when the community population doubles or at the end of ten or fifteen years. Clarification of this estimated average daily trips should make it possible for the community to better understand and accept the development.

Sincerely,

Clyde C. Slonaker
2400 Alpine Blvd. #75
Alpine, CA 91901-3996

Fortune R. Alesi
3662 Victoria Heights Place
Alpine, Ca. 91901
619-445-7652
Fax 619-445-0714

November 14,2000

County of San Diego
Department of Planning and Land Use
5201 Ruffin Rd., Suite B
San Diego, Ca. 92123-1666

Re: Project No. S99-047, LogNo.99-14-036, SCH No. 2000061004
Alpine Village Center

To the Planning Department

Our primary and viable objection to the above named project is as follows:

It will be an eyesore to the entire surrounding area. It might behoove the entire department to visit the site and actually see what damage will be done to the community with the work as planned.

The traffic will be horrendous. Just this past two weeks we have had cable work done in the area, cars were backed up from Victoria Dr. to Tavern Rd.

Drainage problems, native plants destroyed.

"Minor " blasting requirements on rocks is probably one of the biggest understatements I have ever heard or read! The damages to the houses adjacent will be prohibitive!

Furthermore, the other sites that are mentioned in the report seem to be more appropriate for a project of this size and demeanor.

You have an invitation to visit us at our home and see the area involved for yourselves and get a complete overall picture.

Sincerely,

Peter H. Alesi Sr.

Fortune R. Alesi

RECEIVED
NOV 20 2000
San Diego County
DEPT. OF PLANNING & LAND USE

Martin Cochran
1838 Highlands View Road
Alpine, CA 91901

November 24, 2000

County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, California 92123

Re: S99-047,LOG NO. 99-14-036; SCH NO. 2000061004 Alpine Village Center

I would like to comment on the Notice of Preparation dated November 2, 2000. I would like to have the Environmental Impact Report address the impact this project will have on traffic specifically at the intersection of South Grade Road and Alpine Blvd. immediately adjacent to the project. This is a very difficult intersection to negotiate at the present time and while traffic mitigation has been offered a mile to the west as well as a mile to the east of the project, I have heard no mention of enhanced traffic control at this particular intersection.

Also, since the project is immediately adjacent to residential housing on 3 sides, I hope the report will address the impact this project will have in regards to noise generated during it's planned 24 hour operation. Hopefully methods will be found to mitigate the noise generated by chillers, waste compaction and diesel delivery trucks.

Thank you for this opportunity to comment.

Sincerely,

Martin Cochran

RECEIVED
DEC 01 2000
San Diego County
DEPT. OF PLANNING & LAND USE

Jane C. Fitz, M.D.
Member, Alpine Planning Group
2564 Via Dieguenos
Alpine, CA 91901
(619) 445-5731
planerjane@ips.net

November 3, 2000

Alex Jewell
DPLU
5201 Ruffin Road, Suite B
San Diego, CA 92123

Dear Mr. Jewell:

Thank you for sending me the Notice of Preparation of an EIR for Alpine Village Center (Albertson's), S99-047. I will be sending my comments shortly.

Please continue to send me any further reports on this project.

Sincerely,

(Signed)

Jane C. Fitz, M.D.

Transmitted by Facsimile

Appendix B
Traffic Report

TRAFFIC STUDY

For

Albertsons Market and Associated Commercial Uses

in the County of San Diego

Submitted By:

Darnell & Associates, Inc.

January 7, 2002

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

January 7, 2002

Mr. Jeff Dierck
Albertsons, Inc.
6565 Knott Avenue
Buena Park, CA 90620

D&A Ref. No: 990509-R

Subject: Revised Traffic Study for Proposed Albertsons Market and Associated Commercial Uses in the County of San Diego Alpine Community

Dear Mr. Dierck:

In accordance with your authorization, Darnell & Associates, Inc. (D&A) has completed the revisions to the October 22, 2002 traffic study to respond to comments received from the county of San Diego. The revised traffic study analyzes the traffic impacts related to the proposed project on local roadways and intersections for existing, existing plus project, and existing plus other approved/pending projects plus the proposed project conditions. The revised report incorporates the responses to the County of San Diego's comment letter dated December 26, 2001. A copy of the County's comment letter and D&A's specific responses to each comment can be found in Appendix P.

Please call me if you have any questions or need additional information.

Sincerely,

DARNELL & ASSOCIATES, INC.

Vicki S. Root
Transportation Planner

Bill E. Darnell, P.E.
RCE 22338

REGISTERED PROFESSIONAL ENGINEER
BILL E. DARNELL
No. 22338
EXPIRES 3/31/03
CIVIL
STATE OF CALIFORNIA

Date Signed: 1/7/02

BED/vsr/bm/ld/dw
990509AlbertsonsRPT3.wpd/02-01

1446 FRONT STREET • SUITE 300 • SAN DIEGO, CA 92101
PHONE: 619-233-9373 • FAX: 619-233-4034

TRAFFIC STUDY

FOR

ALBERTSONS MARKET & ASSOCIATED COMMERCIAL USES IN THE COUNTY OF SAN DIEGO

Submitted By:

Darnell & Associates, Inc.
1446 Front Street, Third Floor
San Diego, CA 92101
619-233-9373

January 7, 2002

990509AlbertsonsRPT8.wpd/02-01

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INTRODUCTION

PROJECT DESCRIPTION

This transportation report has been prepared to evaluate the traffic related impacts of the proposed project consisting of 67,000 square feet of neighborhood shopping center (58,000 square foot Albertsons Market and 9,000 square feet of shops), 3,285 square feet of fast food restaurant with drive thru, and a gas station with 8 fueling stations and a 2,029 square foot food mart. The project is located in the County of San Diego Community of Alpine.

The site is located south of Interstate 8 at the southeast corner of Alpine Boulevard and South Grade Road (realigned). Figure 1 shows the regional location of the project and Figure 2 shows the latest detailed site plan. The site is general planned and zoned for the proposed use and is subject only to site plan review by the County Department of Planning and Land Use.

REPORT ORGANIZATION

Section I evaluates the existing roadway characteristics and traffic conditions surrounding the project area. Section II examines the potential trips generated by the proposed project and it defines the trip distribution assumptions. Section III analyzes the traffic for existing plus project and existing plus project plus other approved/pending projects conditions. Section IV discusses the project's access and on-site circulation. Section V provides recommended mitigation measures and Section VI summarizes the report's findings and conclusions.

ALTERNATIVE INFORMATION

At the request of the County of San Diego, certain information is being provided based upon trip distribution methodology set forth in SANDAG's TRANPLAN 2020 Model. As discussed in this report, the actual analysis and conclusions of this report are based upon extensive market information generated by Albertsons.

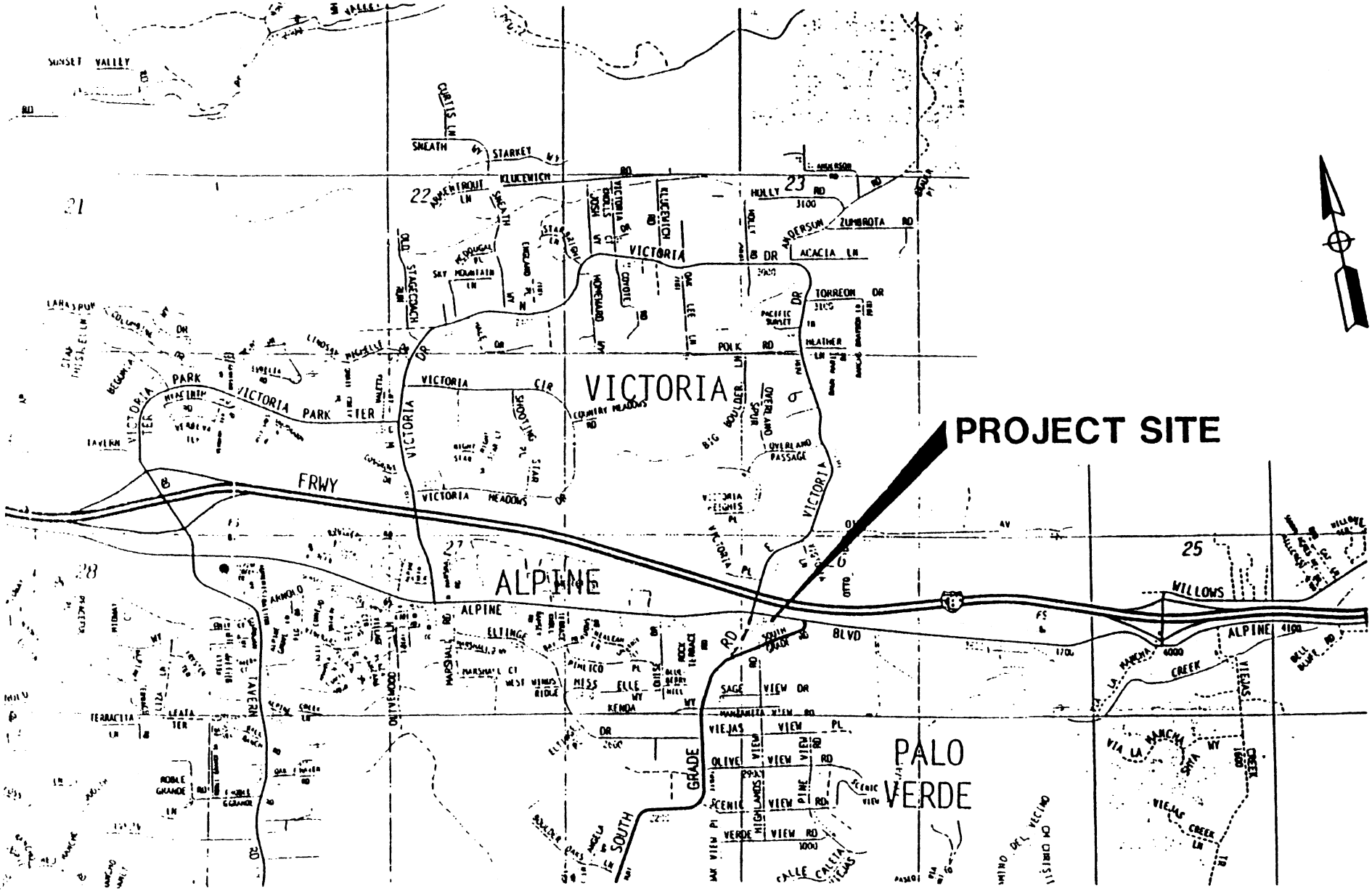

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FIGURE 1
VICINITY MAP

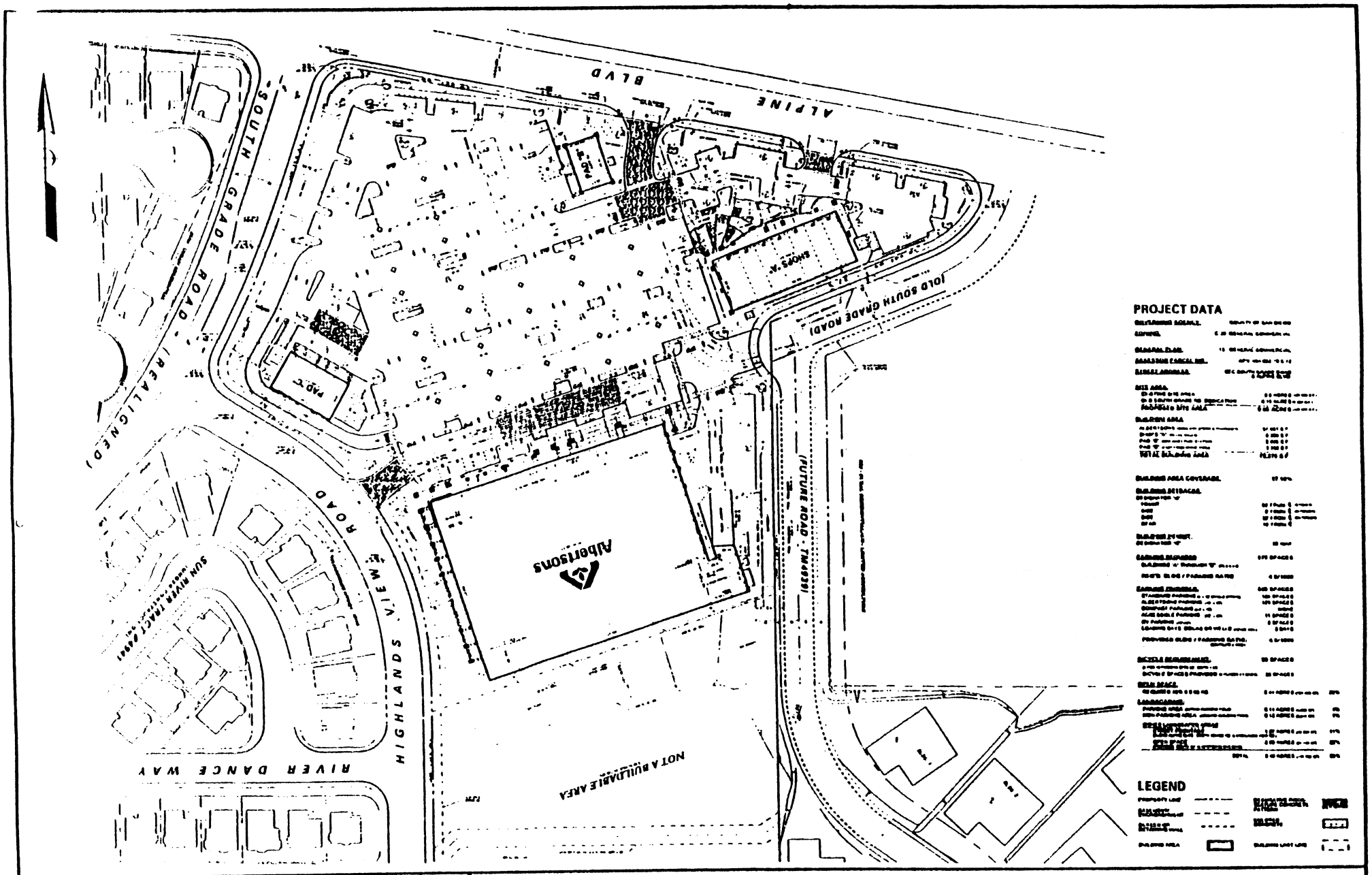

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FIGURE 2

SITE PLAN

SECTION I

EXISTING CONDITIONS

This section of the traffic study is intended to assess the existing conditions of the roadways and intersections within the vicinity of the project to determine travel flow and/or delay difficulties, if any, that exist prior to adding the traffic generated by the proposed project. The existing conditions analysis establishes a base condition which is used as a comparison for the other scenarios discussed in this report. Darnell & Associates conducted a field review of the area surrounding the project in April, 1999. Figure 3 depicts existing roadway and intersection geometrics in the project vicinity. A figure has also been included in Appendix A which shows the adopted County of San Diego Circulation Element with the classifications of the roads serving the proposed project.

EXISTING ROADWAY CHARACTERISTICS

Existing Roadway Segments

Interstate 8 is an east/west four-lane freeway in the vicinity of the project. The posted speed limit on Interstate 8 is 70 miles per hour.

Alpine Boulevard (SC 1883) is constructed as an east/west two-lane undivided roadway. The posted speed limit on Alpine Boulevard is 40 miles per hour. Alpine Boulevard has the County Circulation Element classification of a four-lane Collector Road with bike lanes, capacity of 30,800 ADT at LOS D. Between West Victoria Drive and approximately 100 feet of Marshall Road, Alpine Boulevard is striped to provide 19 on-street parking spaces.

The County of San Diego staff is currently processing a General Plan Amendment (GPA) to consider changing the Circulation Element classification of Alpine Boulevard from Tavern Road to East Victoria Drive from a four-lane Collector to either a two-lane or three-lane Collector. Environmental review of this proposal is not complete. A date has not been scheduled for when the Alpine Boulevard GPA will be presented to the Board of Supervisors for its consideration.

The Capacity of the current Facility is considered to be that of a two-lane Light Collector Road, 10,900 ADT at LOS D. This traffic study was based on Alpine Boulevard being a two-lane Light Collector Road, although it is shown as a four-lane Collector Road on the County's General Plan.

Arnold Way (SC 1971) is constructed as an east/west two-lane undivided roadway. Arnold Way has the County Circulation Element classification of a Light Collector with a capacity of 10,900 ADT at LOS D. The posted speed limit is 35 miles per hour (mph).

South Grade Road (SA 370) is built as an east/west two-lane undivided roadway. South Grade Road has the County Circulation Element classification of a Light Collector with bike lanes, capacity of 10,900 ADT at LOS D. The posted speed limit is 45 miles per hour.

Tavern Road (SC 380) from the east bound ramps with Interstate 8 south to Arnold Way has been improved with a cross-section equivalent to a four-lane Collector Road. The capacity of these segments is approximately 30,800 ADT at LOS D with a posted speed limit of 50 miles per hour. North of the east bound ramps to Victoria Park Terrace: Tavern Road has two lanes including the bridge section over Interstate 8. The capacity of this segment is 10,900 ADT at LOS D. The classification of Tavern Road from Victoria Park Terrace to Arnold Way on the Circulation Element is a Major Road with a planned capacity of 33,400

ADT at LOS D.

Between Arnold Way and South Grade Road, Tavern Road is also currently built as a two-lane road. The capacity of these segments is estimated to be 10,900 ADT at LOS D and a posted speed limit of 25 miles per hour through the school zone. The Circulation Element classification of this portion of Tavern Road is a Collector Road with a capacity of 30,800 ADT at LOS D.

South of the intersection with South Grade Road; the current cross-section of Tavern Road is two lanes with a current capacity of 10,900 ADT at LOS D. The classification of this segment of Tavern Road is a Rural Mountain Road.

The segments of Tavern Road from Arnold Way south to Dehesa Road are designated bike routes on the Circulation Element.

Highland View Road - is constructed as a two-lane undivided roadway with permitted parkway. Highland View Road has 40 feet of pavement with no fronting driveways west of the proposed project driveway. This section of Highland View Road has the cross-section equivalent to that of a Light Collector Road. A Light Collector Road has a capacity of 10,900 ADT at LOS D.

Victoria Drive (SC 1990) is built as a two-lane undivided roadway. South of Victoria Park Terrace, Victoria Drive has the County Circulation Element classification of a Collector Road with a capacity of 30,800 ADT at LOS D. The current cross-section is equivalent to a Light Collector Road. North and east of Victoria Park Terrace, Victoria Drive has the County Circulation Element classification of a Light Collector with a capacity of 10,900 ADT at LOS D. The posted speed limit on Victoria Drive is 40 miles per hour.

Willows Road (SC 2000) is constructed as an east/west two-lane undivided roadway with no on-street parking. The capacity of the current facility is considered to be that of a two-lane Light Collector Road, 10,900 ADT at LOS D. As illustrated in Figure 3, the Willows Road/I-8 eastbound ramp is stop-controlled on the eastbound approach and it has two eastbound approach lanes (on exclusive left turn lane, and one shared through-right turn lane), one northbound approach lane (shared through-right turn lane), and one southbound approach lane (shared through-left turn lane). The Willows Road/I-8 westbound ramp is stop-controlled on the westbound approach and it has one lane per each of the three approach lanes. Willows Road has the County Circulation Element classification of a Collector Road with a capacity of 30,800 ADT at LOS D.

Existing Intersections

The project is located on approximately 10 acres at the southeast corner of Alpine Boulevard and the realigned South Grade Road which was recently renamed Honey Hill Ranch Road. AM and PM turn counts were taken in April and September of 1999 and again in March of 2001, to reflect the completed South Grade Road realignment project. Darnell & Associates also conducted counts at the following ten intersections:

Tavern Road/ Interstate 8 Westbound Ramps
Tavern Road/ Interstate Eastbound Ramps
Tavern Road/ Alpine Boulevard
Tavern Road/ Arnold Way
Tavern Road/ South Grade Road
Alpine Boulevard/ West Victoria Drive/ Arnold Way
Alpine Boulevard/ East Victoria Drive
Alpine Boulevard/ Willows Road

Willows Road/ Interstate 8 Eastbound Ramps
Willows Road/ Interstate 8 Westbound Ramps

Daily traffic counts were also taken (1999 and 2000) for the segments of Alpine Boulevard, Arnold Way, South Grade Road, Tavern Road, Victoria Drive, and Willows Road in the vicinity of the proposed project. These counts can be found in Appendix A.

Existing traffic volumes for the remaining roadway and freeway segments were taken from SANDAG's publication of the "San Diego Region Average Weekday Traffic Volumes." The existing traffic volumes were used to calculate the current levels of service presented in Table 1. Figure 4 shows the average daily volumes and the morning and afternoon peak hour turn volumes.

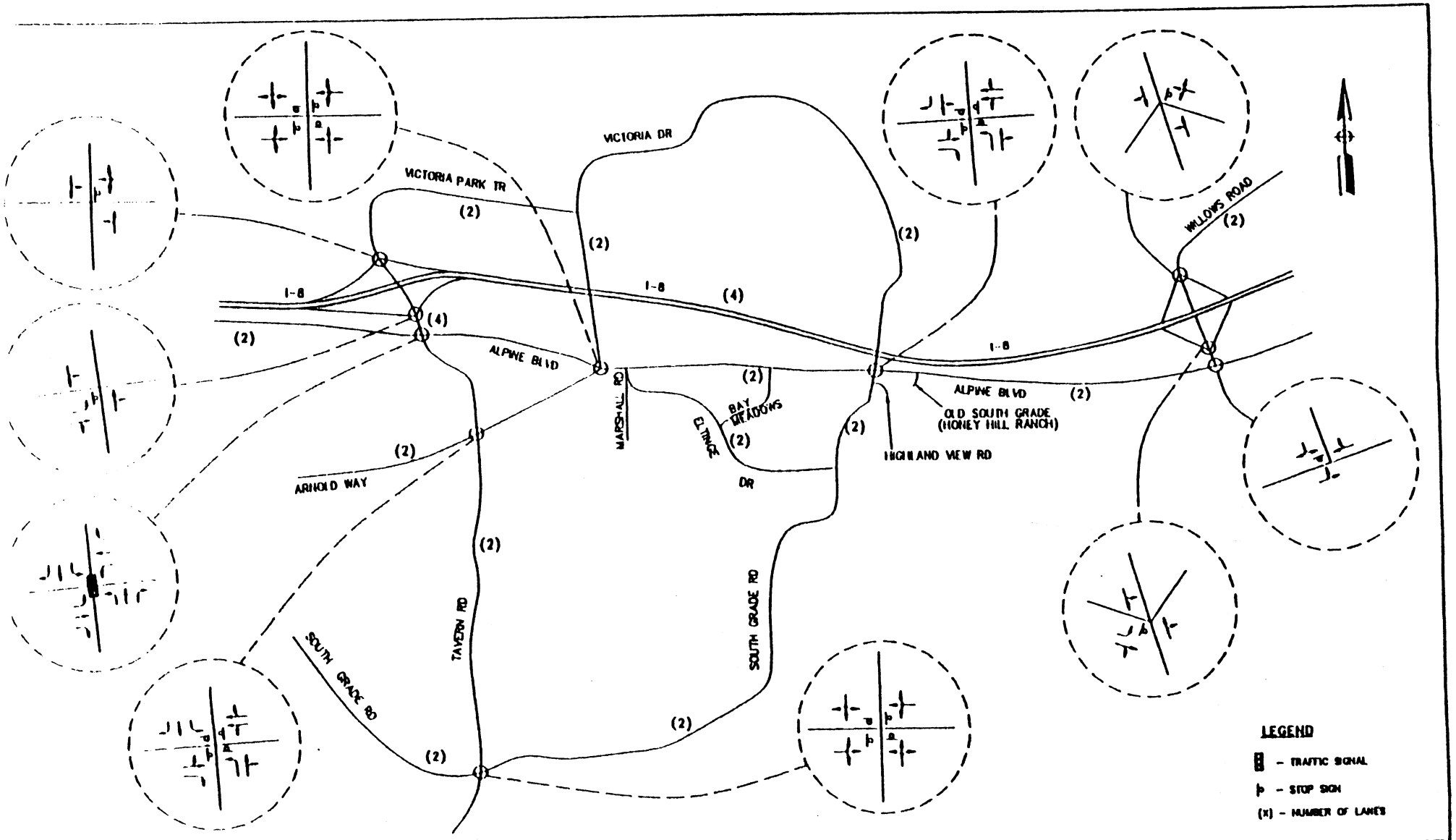

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FIGURE 3

EXISTING CONDITIONS

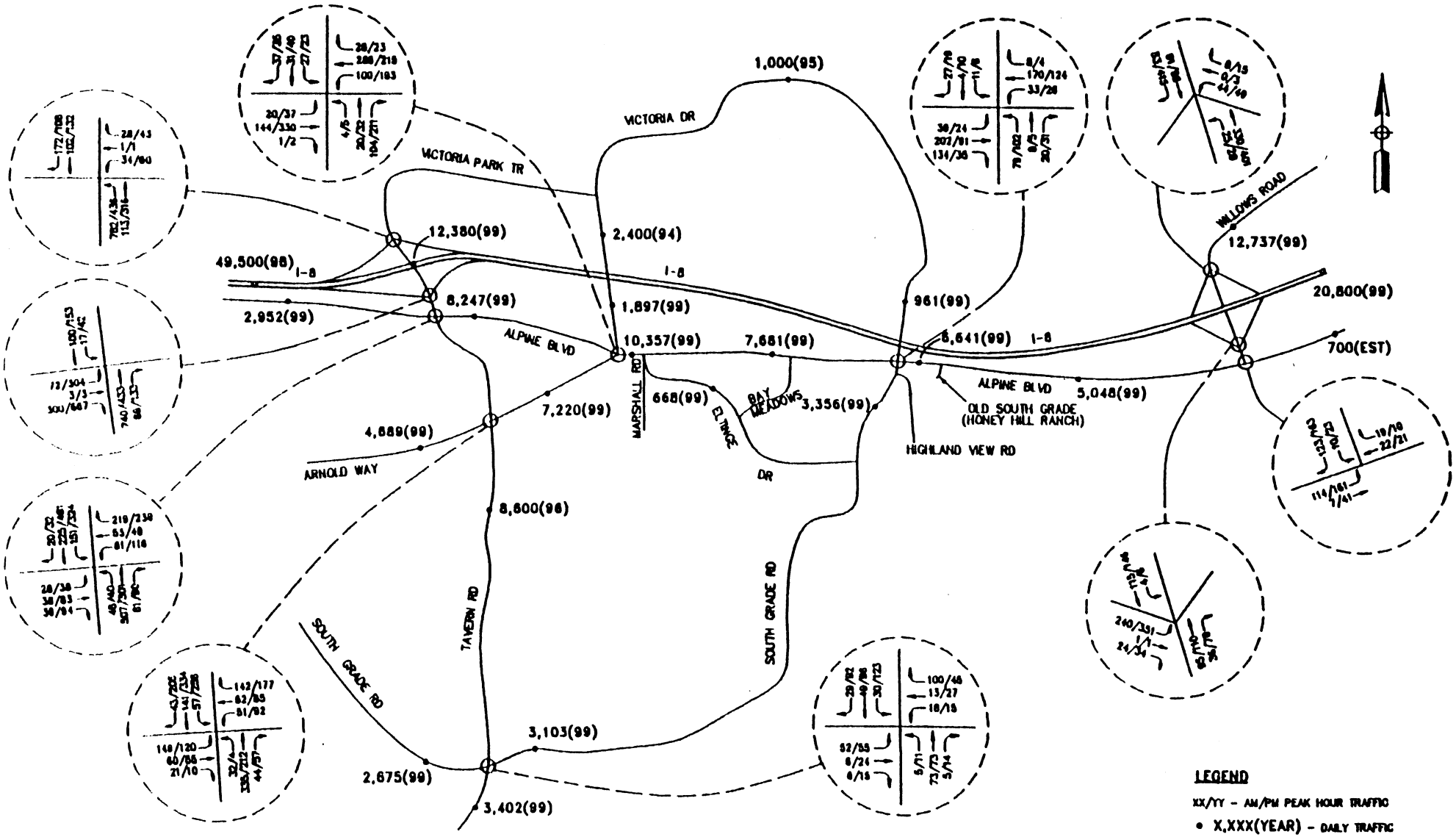

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FIGURE 4

EXISTING DAILY/AM/PM TRAFFIC VOLUMES

EXISTING LEVEL OF SERVICE CONDITIONS

Roadway Segments

For the purpose of this report, the daily traffic volumes of the roadway segments in the vicinity of the project (as presented in Figure 4) were compared to the County of San Diego Level of Service classification thresholds. The daily (24 hour) traffic volumes and a copy of "The Summary of County of San Diego Public Roads Standards" are included in Appendix A.

Tables 1A and 1B show that all roadway and freeway segments, with the exception of the segment of Tavern Road on the bridge over Interstate 8 and Willows Road east of I-8, currently operate at LOS D or better. Those two segments currently operate at LOS E, using the look-up table from the County's Public Road Standards. The PM peak hour analysis, using the Highway Capacity Software (HCS), on the 1.5 mile segment of Willows Road east of I-8 revealed an operational LOS D.

The counts used in this analysis were collected in April and September of 1999 and January of 2000. A review of the County's Traffic Census shows the daily volumes on two segments of Alpine Boulevard (Arnold Way to Marshall/Eltinge Drive and East of Marshall/Eltinge Drive to approximately Bay Meadows Drive) counted in 1993 and 1996 to be higher by some 2,000 ADT (12,401-1996). The County has not counted these segments since 1996. In the absence of continuous count data and no explanation of why the older counts would be higher, the current count data was analyzed within this report. However, we have provided in Table 1C segment analysis using the older counts, again with Alpine Boulevard as a Light Collector, to insure a worst case analysis is made.

Table 1C shows that when the older (1996) counts shown in the County's Traffic Census Data are analyzed, the two segments of Alpine Boulevard (Arnold Way to Marshall/Eltinge Drive and East of Marshall/Eltinge Drive to approximately Bay Meadows Drive) operate at LOS E, with Alpine Boulevard operating as a two-lane Light Collector, using the Look-Up Table from the County's Public Road Standards. The PM Peak Hour analysis using the Highway Capacity Software (HCS), however, revealed an operational Level of Service D. Since the distance between stop-controlled intersections on Alpine Boulevard at West Victoria Drive and East Victoria Drive is 0.91 miles and the intersection LOS at both intersections is C during the PM peak condition, the peak hour operational analysis reflects actual field conditions.

Table 1A
Existing Daily Volumes & Roadway Segment Level of Service Summary

Segment	A.D.T.	Design Capacity[a]	v/c Ratio	Level of Service
Alpine Boulevard				
- West of Tavern Road	2,952	16,200	0.182	B
- Tavern Road to W. Victoria Drive	8,247	16,200	0.5109	D
- West Victoria Drive to Marshall	10,357	16,200	0.639	D
- Marshall to Bay Meadows	7,681	16,200	0.474	D
- Bay Meadows South Grade Rd/E. Victoria Dr.	6,827	16,200	0.421	C
- W. victoria Drive to Old South Grade Road	6,641	16,200	0.410	C
- Old South Grade Road to Willows Road	5,048	16,200	0.312	C
- East of Willows Road*	700 (Est.)	<1,500 @ LOS C	N/A	N/A
Arnold Way				
- West of Tavern Road	4,689	16,200	0.289	C
-Tavern Road to Alpine Boulevard	7,220	16,200	0.446	D
South Grade Road				
- West of Tavern Road	2,675	16,200	0.165	B
-Tavern Road to Eltinge Dr.	3,103	16,200	0.192	B
- Eltinge Dr. to Alpine Boulevard	3,356	16,200	0.207	B
Tavern Road				
- North of Alpine Boulevard (on bridge)	12,380	16,200	0.760	E
- Alpine Boulevard to South Grade Road	8,600	16,200	0.531	D
- South of South Grade Road	3,402	16,200	0.210	B
West Victoria Drive				
- North of Alpine Boulevard	1,897	16,200	0.117	A
East Victoria Drive				
- North of Alpine Boulevard	961	16,200	0.059	A
Willows Road				
- East of Interstate 8 Westbound Ramps	12,737	16,200	0.786	E
Highland View Road				
- East of South Grade Road	1,026	16,200	0.063	A

[a] These values represent the daily volume at the upper limit of LOS E for each link per County standards.
* Levels of Service are not applied to non-circulation element roads.

Table 1B
Existing Freeway Segment Volumes and Level of Service Summary

Route	Limits	# Lanes	Capacity	ADT	Peak Hour %	Direction Split	Truck Factor	v/c Ratio	LOS
Interstate 8	Dunbar Lane/Harbison Canyon to Tavern Rd	2	4,400	49,500	8.60%	60.0%	12.0%	0.650	C
	East of West Willows Road	2	4,400	20,800	8.60%	60.0%	12.0%	0.273	A

Lanes - Number of lanes in one direction: HOV-High Occupancy Lanes
Capacity - Capacity in one direction
ADT - Average Daily Traffic
Peak Hour % - Percentage of average daily traffic occurring during the peak hour
Direction Split - Percentage of peak hour traffic traveling in peak direction.
Truck Factor - Truck/terrain factor to represent influence of heavy vehicles and/or grades.
Peak Hour Volume - Peak hour traffic in peak direction of travel/ For facilities with HOV lanes, ten percent is assumed to use HOV lanes.
v/c Ratio - Volume to Capacity Ratio
LOS - Caltrans District 11 procedure was used to estimate the freeway level of service. Designations vary from A to F, with four level of LOS F from F(0) to F(3).

Table 1C
Existing Roadway Segment Level of Service Summary
Using the County of San Diego Traffic Census Data

Levels of Service Using Look-Up Table from the County Public Road Standards

Roadway Segment	Design Capacity[a]	A.D.T. (Year Counted)	v/c Ratio	Level of Service
Alpine Boulevard				
- Arnold Way to Marshall/Eltinge Drive	16,200	12,401 (96)	0.765	E
- East of Marshall/Eltinge Drive	16,200	11,871 (93)	0.733	E

PM Peak Hour Operational Levels Of Service Using HCS

Two-Lane Roadway Segment	v/c Ratio	LOS
Alpine Boulevard		
- Arnold Way to Marshall/Eltinge Drive	0.502	D
- East of Marshall/Eltinge Drive	0.486	D

[a] These values represent the daily volume at the upper limit of LOS E for each link per County Public Road Standards.

Intersections

The County of San Diego requires the use of the most recent, Highway Capacity Manual (HCM) methodology for peak hour analysis at the intersections through which project traffic is assigned. Utilizing the existing lane geometrics shown in Figure 3 the Highway Capacity Software (HCS) version 4.1, which is based on the 2000 HCM methodology was used to calculate the existing levels of service. The results of the analysis are posted in Table 2. The intersection of Tavern Road with Alpine Boulevard is currently signalized, the remaining nine intersections examined in the report are currently unsignalized (two-way or four-way stop-controlled).

The Level of Service at signalized intersections is based on delay using variables such as lane configuration, traffic volumes, and signal timings, while the Level of Service at unsignalized intersections is determined by the longest delay time for any single turn move. The movement with the longest delay is identified as the Critical Movement.

Table 2 presents the delay in seconds and the corresponding LOS for each intersection. The Highway Capacity Software (HCS) worksheets for existing conditions can be found in Appendix C. These worksheets and all subsequent HCS worksheets covering Alpine Boulevard include between 1% and 2% heavy trucks as a component of traffic. All project heavy truck traffic will be using the Willows ramps for deliveries. No project heavy truck traffic will be using Alpine Boulevard west of the project.

As can be seen from Table 2, the intersections of Tavern Road/Interstate 8 Westbound Ramps, Tavern Road/Interstate 8 Eastbound Ramps, and Tavern Road/Arnold Way currently have critical movements operating at a Level of Service F during one or both peak hours. Existing traffic volumes at these three intersections presently warrant signalization. A summary of the analysis is presented on Table 3 in Section V of this report. The traffic signal warrant worksheets can be found in Appendix O.

The remaining seven intersections have critical movements that operate at Level of Service D or better.

Table 2
Existing Intersection Level of Service Summary

Intersection	AM Peak			PM Peak		
	Critical Movement	Delay (sec/veh)	LOS	Critical Movement	Delay (sec/veh)	LOS
Tavern Road @ Interstate 8 WB Ramps (One-Way Stop-Controlled)	NB WB	12.7 *	B F	NB WB	9.1 87.9	A F
Tavern Road @ Interstate 8 EB Ramps (One-Way Stop-Controlled)	SB EBLT	9.6 22.6	A C	SB EBLT	8.8 89.2	A F
Tavern Road @ Alpine Boulevard (Signalized)	Intersection	18.9	B	Intersection	18.7	B
Tavern Road @ Arnold Way[1] (Four-Way Stop-Controlled)	NB SB EB WB	23.09 12.42 14.65 11.86	D B C B	NB SB EB WB	21.11 139.93 16.64 15.66	C F C B
	Intersection	16.7	C	Intersection	79.32	F
Tavern Road @ South Grade Road (Four-Way Stop-Controlled)	NB SB EB WB	7.98 8.02 8.04 7.71	A A A A	NB SB EB WB	8.42 10.34 8.85 8.41	A B A A
	Intersection	7.9	A	Intersection	9.50	A
Alpine Boulevard @ West Victoria Drive (Four-Way Stop-Controlled)	NB SB EB WB	9.36 9.48 9.87 14.46	A A A B	NB SB EB WB	14.07 11.71 19.87 25.90	B B C D
	Intersection	12.1	B	Intersection	20.20	C
Alpine Blvd @ E. Victoria Dr/S. Grade Rd (Two-way Stop-Controlled)	NBL SBLT EB WB	14.8 16.1 7.7 8.1	B C A A	NBL SBLT EB WB	12.0 11.9 7.5 7.5	B B A A
Alpine Boulevard @ Willows (One-Way Stop-Controlled)	SB EB	9.2 7.5	A A	SB EB	9.9 7.6	A A
Willows @ Interstate 8 EB Ramps (One-Way Stop-Controlled)	SB EBL	7.5 12.3	A B	SB EBL	7.6 16.8	A C
Willows @ Interstate 8 WB Ramps (One-Way Stop-Controlled)	NB WB	7.5 12.4	A B	NB WB	8.6 16.8	A C

[1]Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than three lanes that currently exist.
* Delay exceeds 999 9 seconds

NB - northbound approach
SB - southbound approach
EB - eastbound approach
WB - westbound approach

NBL - northbound left lane
EBLT - eastbound left-through lane
EBL - eastbound left lane
SBLT - southbound left-through lane

SECTION II

PROJECT RELATED CONDITIONS

TRIP GENERATION RATES

The trip generation potential for the project is based on trip generation rates, both daily and peak hour rates, which were obtained from SANDAG. Trip generation rates are a function of the characteristics of the proposed project. Utilizing these rates, estimates of daily and peak hour traffic volumes which will be generated by the project can be calculated.

Table 3 summarizes the trip generation rates and volumes for the proposed project. The proposed project will generate a total of 11,620 average daily trips (ADTs) with 596 trips being generated during the morning peak hour and 1,090 trips (which consists of 643 new trips and 447 pass-by trips) being generated during the afternoon peak hour.

The trip generation rates developed by SANDAG allow for a 40 percent reduction in trips for the shopping center and fast food restaurant and a 50 percent reduction in trips for the gas station during the PM peak hour to account for pass-by and diverted trips (trips made to a site from traffic already "passing by" that site on an adjacent street"). Applying the pass-by reduction percentages allowed by SANDAG, the project will generate 643 trips (1,090 ADT less 447 pass-by trips) during the PM peak hour. It should be noted that pass-by reductions cannot be applied to driveway turn volumes.

This daily trip generation scenario is considered worst case, because the daily trips generated by the service station/mini-mart, and fast food restaurant are treated as stand-alone uses. No daily trip reductions are applied to these on-site uses. A portion of the trips attracted to these uses will be customers of each other and will also be customers of Albertsons Market.

Table 3
Trip Generation Rates and Calculation Summary

Trip Generation Rates

Land Use	Daily	AM Peak Hour % of Daily (In:Out)	PM Peak Hour % of Daily (In:Out)	% Pass-By Trips In PM Peak Hour
Neighborhood Shopping Center	120 Trips/1,000 SF	4% (6:4)	10% (5:5)	-40%
Fast Food With Drive Thru	700 Trips/1,000 SF	8% (5:5)	8% (6:4)	-40%
Gas Station With Food Mart	160 Trips/Fueling Station	7% (5:5)	8% (5:5)	-50%

Trip Generation

Land Use	Total No. of Units	Daily Trips	AM Peak Hour (In:Out)	PM Peak Hour (In:Out)	PM Pass-By Trip (In:Out)
Neighborhood Shopping Center	67,000 SF	8,040	322 (193:129)	804 (402:402)	-322 (-161:-161)
Fast Food With Drive Thru	3,285 SF	2,300	184 (92:92)	184 (110:74)	-74 (-44:-30)
Gas Station With Food Mart	8 Fuel Stations	1,280	90 (45:45)	102 (51:51)	-51 (-26:-25)
Total Trips Generated by Project:		11,620	596 (330:266)	1,090 (563:527)	-447 (-231:-216)

SF = Square Feet
Trip Generation is based on rates published by SANDAG
Note: Trip generation rates assume a separate trip for each patron of the neighborhood shopping center, fast food restaurant and gas station, even though some of those patrons will visit more than one portion of the project on one shopping trip.

TRIP DISTRIBUTION

Project distribution percentages are presented on Figures 5A and 5B. The trip distribution percentages shown on Figure 5A were based on a Marketing Survey performed by Albertsons. In addition, the County requested that information be presented based on a Select Zone assignment from SANDAG's TRANPLAN model, supplied by the County of San Diego's Department of Public Works. See Figure 5B for this information.

Marketing Survey

The marketing survey is a detailed assessment of the potential customer base and sales projections for the proposed site, and is organized into Trade Areas. In this survey, there are twelve (12) Trade Areas. The survey is produced by the Albertsons's Economic Research Department as the first step in a process of determining whether a proposed site is economically feasible.

Trade areas are defined by data on population, age distribution, sex, and household incomes. Trade area boundaries also consider physical considerations such as rivers, mountains and roads. A copy of the Marketing Survey map and a detailed discussion of how it was developed can be found in Appendix A.

The regional distribution of project trips by percentage was determined by developing a ratio between trips from a single trade area or a group of trade areas, as a percentage of the total weekly shopping trips. For example, the Marketing Survey map (Appendix A) shows that only 142 trips would originate west of Dunbar Lane and use Interstate 8 to access the site, because there are more convenient existing shopping opportunities at Los Coches Road and Interstate 8. However, to the east there are no existing markets like the proposed project and the number of trips from the trade areas (6.1 through 12) is higher and the percentage of daily trips is up to 38 percent.

The Marketing Survey indicates that sub-regionally, Harbison Canyon and Alpine Trade Areas, 30 percent of the customers would travel to and from the west, 38 percent would travel to and from the east, 24 percent would travel to and from the south, and the remaining 8 percent would travel to and from the north.

Select Zone

In addition to the Marketing Study distribution of project traffic, the County has requested that a distribution based on a SANDAG buildout Year 2020 Select Zone forecast be included in the analysis. The Select Zone forecast places the project in its own Traffic Analysis Zone, and traces the daily trips generated and attracted to the site through the road network. The select zone assignment indicates that 61 percent of the customers would travel to and from the west, 17 percent would travel to and from the east, 5 percent would travel to and from the north, and the remaining 17 percent would travel to and from the south. This distribution was analyzed only in the cumulative analysis.

Discussion of Select Zone

Under the Select Zone, the level of development, population assumptions, and road network are those forecast by SANDAG Year 2020 outside the community of Alpine. Inside the Alpine Community Planning area the land use and road network reflect the full development of the land uses and road network (Circulation Element) allowed under the adopted General Plan.

The County of San Diego is currently preparing a Caltrans Project Study Report (PSR) to determine the configuration of a future interchange of I-8 with East Victoria and South Grade Road. The production of the PSR is required by Caltrans and is the first step in the planning and implementation of a future interchange. The implementation of this interchange will change the distribution assumed in the Select Zone, in that it will allow traffic destined for the eastern portions of the Alpine community from the west to remain on I-8 and avoid the Tavern Road interchange. The interchange will also allow a percentage of the local traffic associated with the residential uses on the east side of the Planning Area (Palo Verde) to avoid both the Tavern Road interchange and Alpine Boulevard.

The implementation of this future interchange is also an important element of a potential General Plan Amendment now being processed by the County, which proposes downgrading Alpine Boulevard from the currently adopted four (4) lane Collector Road to a narrower two (2) and three (3) lane facility. The Year 2020 volumes range from 18,100 ADT near South Grade Road to 24,700 ADT at West Victoria and Alpine Boulevard. Volumes of this magnitude are LOS E and F on the three lane town collector road and LOS F on a two lane light collector road, but would be LOS D or better on a four-lane Collector Road, signalized as needed.

Accordingly, either the distribution in the Select Zone will be affected by the construction of the interchange which, under County policy, would be necessary to support the downgrading of Alpine Boulevard to a two

or three-lane collector road; or the classification of Alpine Boulevard would need to remain a four-lane Collector Road. It should also be noted that the project is developing under the land use and zoning identified on the currently adopted Community Plan, thus the application of buildout conditions to determine mitigation is not appropriate.

Rationale For Using Marketing Study

As noted above, trip distributions were made on the basis of a marketing survey prepared by Albertson's Economic Research Department. The marketing survey was prepared in October 1998, approximately eight (8) months before an application was made for the project with the Department of Planning and Land Use. The sole focus of the marketing survey is to determine if an Albertson's store is economically feasible at a given location. While preparing the initial iteration of this traffic study in or about July 1999, Darnell & Associates, Inc., inquired of Albertson's if Albertson's had conducted economic research in order to determine where it customers would come from. This is standard procedure for Darnell & Associates, Inc. in analyzing the traffic impacts of retail development. Albertson's provided Darnell & Associates, Inc. with the trade area analysis which had been conducted many months before Albertson's was asked by the County to prepare a traffic study. Darnell & Associates, Inc. believes that the trip distributions set forth in the marketing survey should be used in analyzing the traffic impacts based upon the following:

1. The marketing survey is a document which looks at market forces and is based upon a study of current information and population distribution. Further, and most importantly, the marketing survey considers competition and presently established shopping patterns.

2. The SANDAG Year 2020 select zone forecast is based upon buildout conditions allowed under the adopted General Plan. However, traffic study criteria of the County are based upon near term impacts of a project, which would be existing plus project conditions. Accordingly, the trip generation road network assumptions of the select zone forecast would need to be adjusted to account for the difference between existing traffic conditions, plus project, on the one hand, and future Year 2020 buildout on the other. To the extent there may be intervening changes to the assumed buildout over the next twenty (20) years, using the select zone assumptions for trip distribution would be guesswork to a certain extent. For example, if Alpine Boulevard is downgraded to a two-lane or three-lane road, or if the intensity of land use along Alpine Boulevard, which gives rise in part to the distribution of traffic under the select zone is changed or if the future interchange at Alpine Boulevard/East Victoria were to come to fruition, it could significantly change the distribution of traffic by Year 2020.

3. The County is in the process of reviewing the SANDAG 2020 Series 9 to fully calibrate its traffic model to track current and projected buildout use intensities. The County expects that changes may be made due to further calibration of the model, and coding of TAZ boundaries and land uses which were not fully reflected at the time of the select zone forecast. Some land uses between West Victoria and East Victoria along Alpine Boulevard may not be appropriately assigned at this time. Because the technical work has not yet been completed, and because the select zone is based upon assumptions, it would seem more appropriate to rely upon more specific distribution information which is available today in the marketing survey.

4. By its nature, a projection of the way traffic conditions will be in 20 years based upon general plan buildout does not consider competitive factors, established shopping patterns, nor the tenant mix of goods and services at competing locations. For example, the Vons supermarket at Los Coches Road and I-8 is located in a much bigger center than the proposed project, which includes a Wal-Mart store and more shops than the proposed project. The variety of goods and services at a competing location is a significant feature in how much market share a location will achieve. Because the Vons center has been in place for years, and it is on the way home for commuters to and from San Diego, it will continue to be a significant competitive force. Further, Ralphs is in the planning stages for a supermarket at the Lake Jennings offramp of I-8. Ralphs would likewise be expected to be a further competitive influence. While these factors were considered in the marketing survey of Albertson's, the nature of the select zone forecast would not have focused to near the same degree on such competition.

5. The customer base of Albertson's is not expected to be the traditional population within two to three miles of the location. The Albertson's store will represent the nearest major supermarket for those people living to the east, the southeast and northeast, some of whom are many miles from the proposed Albertson's store, yet the Albertson's store will be much closer than the comparable alternative competing supermarket. In other words, what the marketing survey reflects is the competitive reality that all the competition (Vons, the anticipated Ralphs, and Daniels Market in Alpine) is to the west, and therefore the population base in the more remote areas east will represent a significant part of the Albertson's sales volume because it will be the closest supermarket.

Based upon the above, we believe that the trip distribution shown by the marketing survey is a reasonable and better basis upon which to evaluate traffic impacts from the project.

TRIP ASSIGNMENT

Marketing Survey

The assignment of project related traffic was developed by examining the existing road system and determining which facilities serve the trade areas aggregated generally by direction, i.e. North/East, South/West. Figure 5A shows a graphic representation of portion of project trips assigned to and from the aggregated trade areas over the current road system.

Darnell & Associates, Inc. (D&A) has gathered information on the number of households on Willows Road between the East Willows and West Willows Ramps to Interstate 8 and in the Viejas Reservation from SANDAG. D&A conducted a field check on August 2, 2001 and found that there were 84 single-family households between the Interstate 8/West Willow Road interchange and the Viejas Reservation. Between the Viejas Reservation and the Interstate 8/East Willows Road interchange there were 36 single-family households and an RV Park with 85 mobile homes. Based on the 2000 Census, there are 135 households in the Viejas Reservation.

Using a trip generation rate of 12 trips per household and 5 trips per mobile home, the residential

development along Willows Road between the two I-8 interchanges generates 3,485 average daily trips (ADT). From the SANDAG 1986 Travel Behavior Study, 15.3% of the total daily trips (or 533 ADT) are home-to-shopping and shopping-to-home related trips. Of these trips a portion will be made to specialty retailers (i.e. Home Depot, Costco, The Gap, Old Navy, Viejas Outlet Mall, etc.), a portion will be made to uses which will not be available in the Albertsons Center (i.e. department store, mall uses, auto parts, book store, etc.), a portion will be made to competitors of the Albertsons Center (i.e. Daniels Market, Vons at Los Coches, etc.), and a portion will be made to the Albertsons Center. SANDAG maintains no statistics on what percentage of home-to-shopping trips are to a supermarket versus other types of shopping opportunities.

The Albertsons Center will not be creating any new residences and the current residents living in the Willows Road region already currently utilize Willows Road to reach their shopping destinations. The Albertsons Center, however, will make shopping more convenient so residents may choose to go shopping more often (i.e. instead of going shopping one time per week they may go shopping two or three times per week). If it is assumed that due to the added convenience of the Albertsons Center, residents living along Willows Road will make three one-way trips to the grocery store rather than just one, the Albertsons Center will add an additional four (4) two-way trips per week per household to Willows Road. This equates to an increase in traffic on Willows Road, due to the proposed Albertsons Center, of approximately 194 trips per day (i.e. 4 trips/week per household X 340 households ÷ 7 days/week = 194 trips/day).

Additionally, a percentage of those living along Willows Road between the I-8 interchange ramps could also be employed at the Albertsons Center. D&A has been informed by Albertsons and Grant Tucker Properties that a worst case estimate of the number of employees at the Albertsons Center would be 160 employees. Based on the 2000 Census, the population of the greater Alpine Area including the Viejas Reservation is 13,537 and the average household size is between 2.72 and 2.92 people. Assuming there are three people per household, it is estimated that 1,020 people (3 people per household X 340 households = 1,020 people) who live along Willows Road between the I-8 ramps. Therefore, it can be concluded that approximately 7.5% (1,020 ÷ 13,537 = 0.075) of the total population in the greater Alpine Area live along Willows Road between the I-8 ramps. Assuming the employees will be equally distributed throughout the Alpine area based on population, approximately 12 employees (or 7.5% of 160 total Albertsons Center employees) for the Albertsons Center would be living between the I-8 interchange ramps on Willows Road.

Combining the customer and employee trips, a total of 218 ADT (194 customer ADT + 12 employees X 2 trips/employee = 218 ADT) of the total Albertsons Center project traffic (or 1.9%) will have an origin along Willows Road.

After review of the Census information and the inventory of residential units in the area, the five percent (5%) allocation to Willows Road east of the I-8/West Willows Road interchange previously analyzed is clearly not correct. Utilizing the information on the number of households along Willows Road between the two I-8 interchanges, D&A believes that the percentage of project traffic assigned to Willows Road northeast of the I-8 westbound Ramps should be reduced from the 5% previously analyzed to 2%. The remaining 3% of the project traffic would then be assigned to Interstate 8 east of Willows, increasing the total percentage of project traffic assigned to Interstate 8 east of Willows Road from 31% to 34%.

The project related daily and peak hour trips are shown in Figure 6A. Project trips were added to existing traffic volumes and are shown in Figure 7. The impacts associated with the addition of project traffic are discussed in the following section, Section III.

Select Zone

The trips generated by the proposed project were also assigned to the local roadway network using the trip distribution percentages estimated from the select zone assignment, Figure 5B. The project related daily and peak hour trips are shown in Figure 6B. Section III discusses the impacts of cumulative traffic when the proposed project trips were distributed according to the select zone assignment.

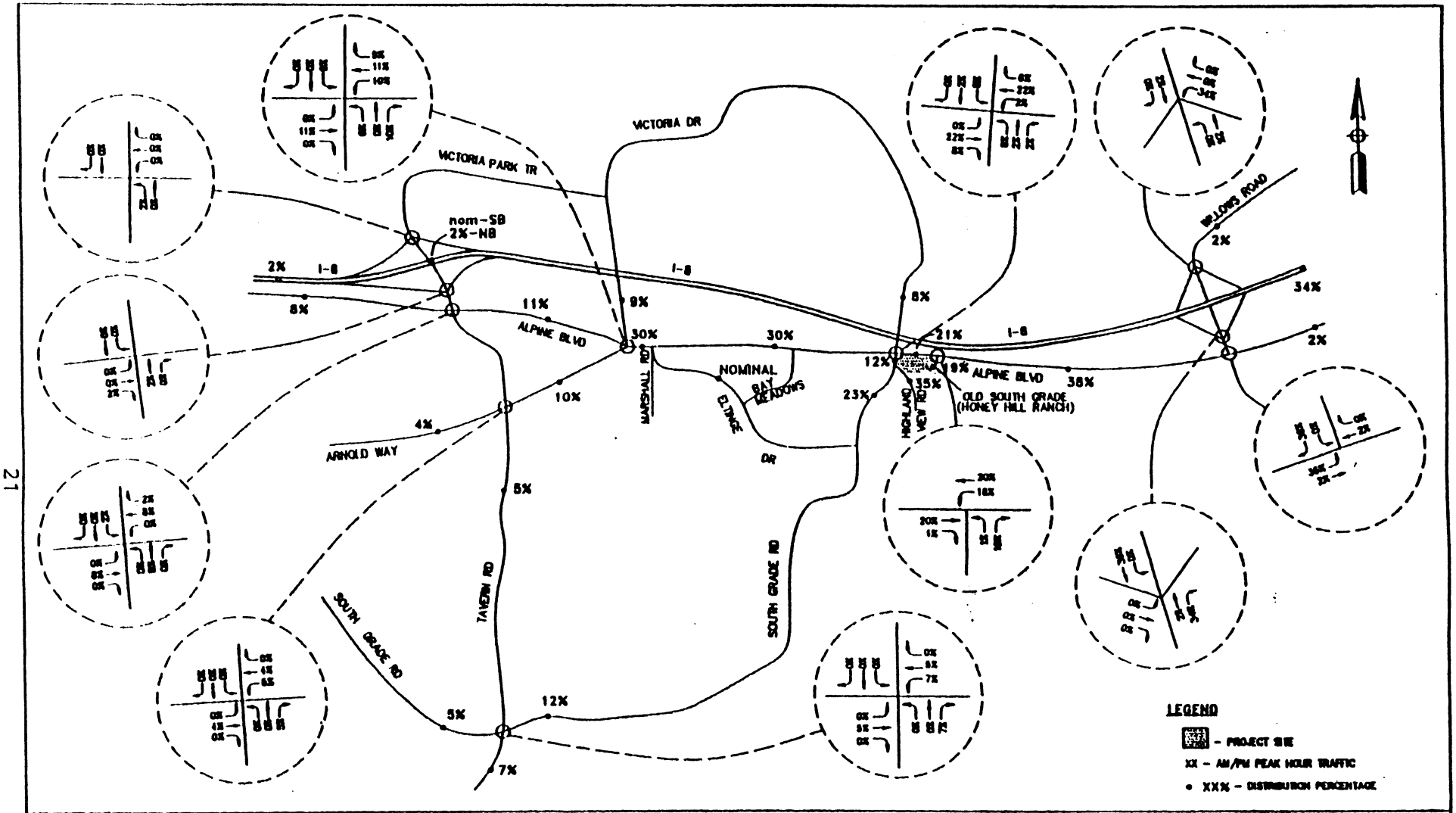

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FIGURE 5A

DISTRIBUTION OF PROJECT RELATED TRAFFIC (BASED ON MARKETING SURVEY)

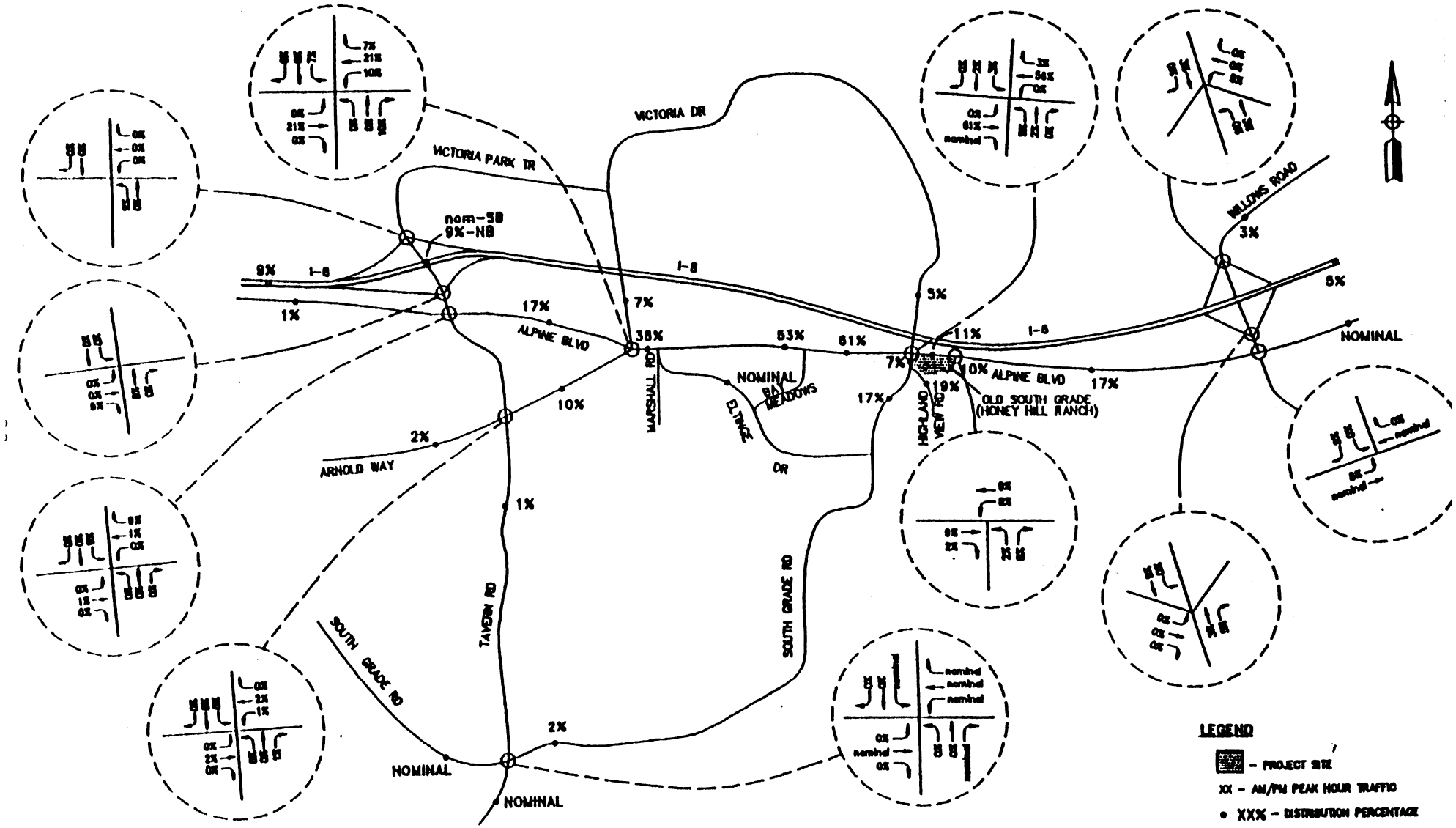

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FIGURE 5B

DISTRIBUTION OF PROJECT RELATED TRAFFIC (BASED ON SELECT ZONE ASSIGNMENT)

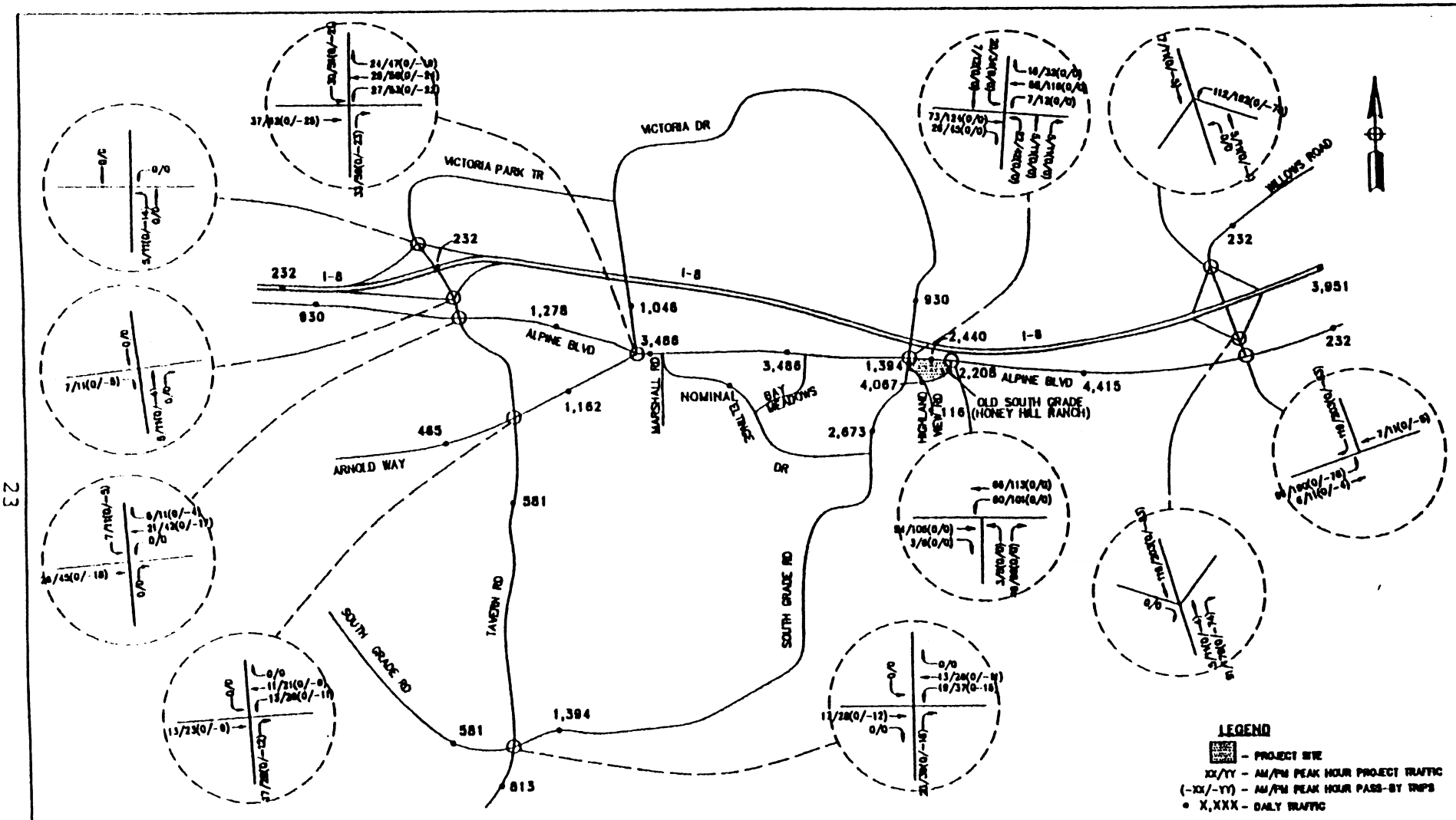

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FIGURE 6A

PROJECT RELATED TRAFFIC (BASED ON MARKETING SURVEY)

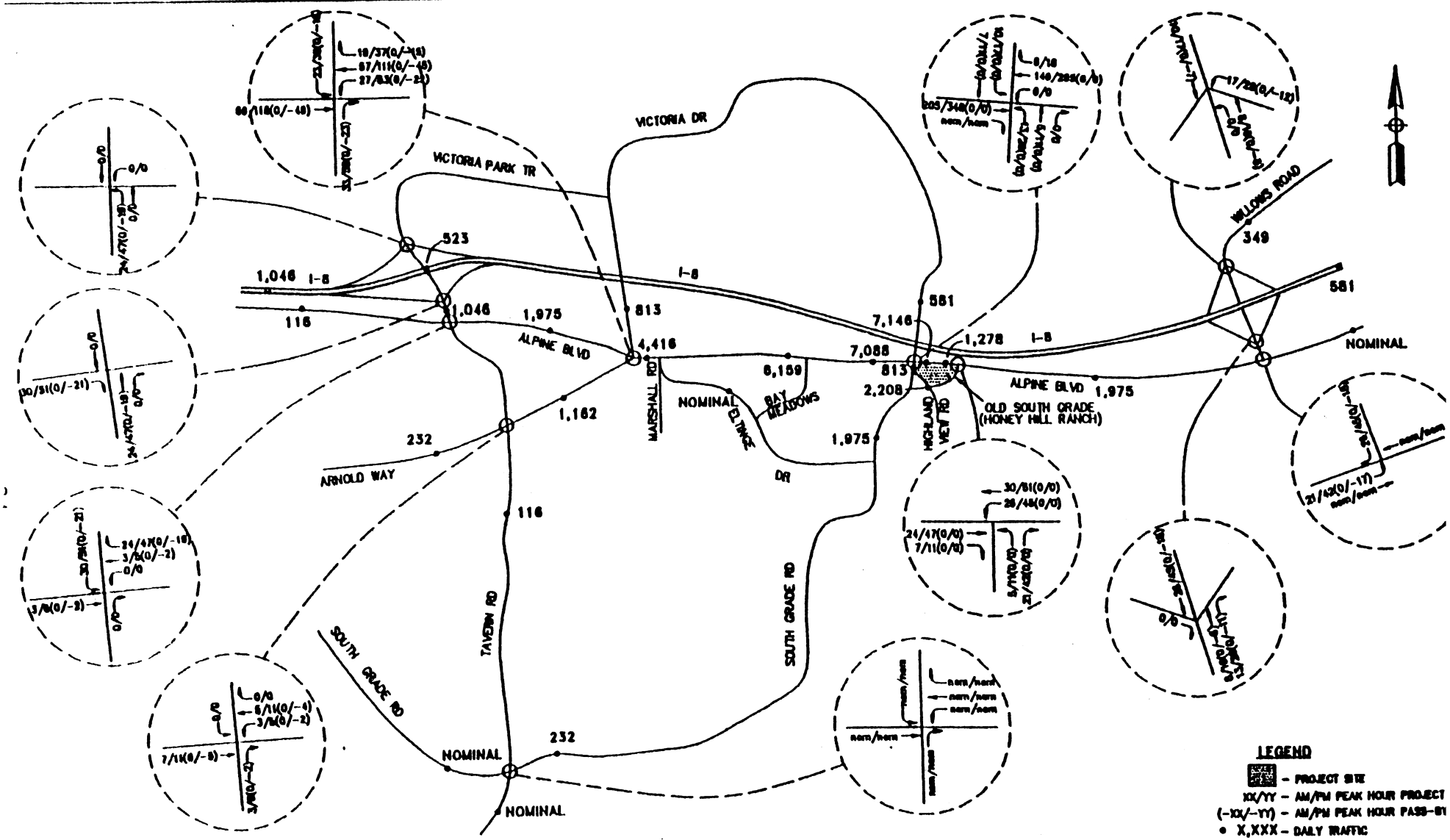

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FIGURE 6B

PROJECT RELATED TRAFFIC (BASED ON SELECT ZONE ASSIGNMENT)

SECTION III

IMPACTS

LEVEL OF SERVICE

Level of Service (LOS) is a professional industry standard by which the operating conditions of a given roadway segment or intersection are measured. Level of Service is defined on a scale of A to F; where LOS A represents the best operating conditions and LOS F represents the worst operating conditions. LOS A facilities are characterized as having free flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having forced flow with many stoppages and low operating speeds. Table 4 shows the volume to capacity (v/c) ratio and delay ranges that are equivalent to each Level of Service.

Table 4
Level of Service Ranges

Level of Service	Signalized Intersections - Delay (Seconds/Vehicle)[1]	Unsignalized Intersections - Delay (Seconds/Vehicle)[2]	Roadway Segments - Volume to Capacity (v/c) Ratio[3]
A	Less Than or Equal to 10.0	Less Than or Equal to 10.0	Less Than or Equal to 0.12
B	10.1 to 20.0	10.1 to 15.0	0.13 to 0.25
C	20.1 to 35.0	15.1 to 25.0	0.26 to 0.44
D	35.1 to 55.0	25.1 to 35.0	0.45 to 0.67
E	55.1 to 80.0	35.1 to 50.0	0.68 to 1.00
F	Greater Than or Equal to 80.1	Greater Than or Equal to 50.1	Greater Than 1.00

[1] The delay ranges shown are based on the Highway Capacity Software version 4.1 for signalized intersections.

[2] The delay ranges shown are based on the Highway Capacity Software version 4.1 for unsignalized intersections.

[3] The volume to capacity ratios are based on the County of San Diego Circulation Element of a 2-Lane Rural Collector, actual Levels of Service are determined by average daily vehicle trips (ADT) and not v/c ratio.

The County of San Diego encourages operation of LOS C or better at planned intersections and roadway segments. In developed areas, LOS D is an acceptable Level of Service for existing intersections and roadway segments. The project site is located in a developed area with existing access routes; therefore, LOS D is an acceptable LOS at the existing intersections and roadway segments.

CONGESTION MANAGEMENT PROGRAM

Based on the approval of Proposition 111 in 1990, regulations require the preparation, implementation and annual updating of a Congestion Management Program (CMP) in each of California's urbanized counties.

In 1991, San Diego County adopted their initial CMP statutes. One required element of the CMP is a process to evaluate the transportation and traffic impacts of large projects on the regional transportation system. That process is undertaken by local agencies, project applicants and traffic consultants through a transportation impact report usually conducted as part of the CEQA project review process. Authority for local land use decisions including project approvals and any required mitigation remains the responsibility of local jurisdictions.

The criteria for which a project is subject to the regulations as set forth in the CMP are determined by the trip generation potential for the project. Currently, the average daily traffic (ADT) threshold is 2,400 vehicles. The proposed project will generate approximately 11,620 daily trips (see Section II) and is therefore subject to CMP guidelines for traffic impact studies.

PUBLIC FACILITIES ELEMENT IN COUNTY

According to the Public Facilities Element for San Diego County, a discretionary project will only be approved if the existing Level of Service on off-site and on-site abutting Circulation Element roads are not reduced below LOS D. If the proposed project would significantly impact congestion on the roads that either currently or as the result of the project operate at LOS E or F, appropriate mitigation measures must be provided. Appropriate mitigation would include a fair share contribution in the form of road improvements or a fair share contribution to an established fee program or projects.

LEVELS OF SIGNIFICANCE STANDARDS

The County of San Diego refers to the *San Diego Traffic Engineers' Council (SANTEC) and the Institute of Transportation Engineers (ITE) Guidelines for Traffic Impact Studies (TIS) in the San Diego Region,* February 29, 2000 Draft to determine the significance of impact. Consistent with the City of San Diego's Traffic Impact Manual, the SANTEC/ITE TIS Guidelines considers an increase in volume to capacity (v/c) ratio of two percent (0.02) or less or an increase in delay time of two (2) seconds or less on roadways and intersections operating at LOS D, E, or F to be insignificant. At this time the significance of impact in the County of San Diego, the criteria is only applied to segments and intersections at LOS E or LOS F. (A copy of the SANTEC/ITE TIS Guidelines can be found in Appendix A.)

ANALYSIS METHODOLOGY

The Levels of Service for the roadway segments and intersections in the vicinity of the project were analyzed under existing plus project, existing plus other approved/pending projects plus project (near term cumulative) conditions. Cumulative conditions were analyzed using the Marketing Survey distribution for the proposed project. In addition, at the request of the County, the cumulative conditions were also analyzed using the Select Zone Assignment. This analysis was provided for informational purposes only.

The roadway segment LOS was determined by comparing the traffic volumes under all traffic conditions to the capacity of the roadway according to its Circulation Element classification. The daily capacities and levels of service are defined in Table 1 of the County Public Road Standards. A copy of this table can be found in Appendix A.

The Highway Capacity Software (HCS), version 4.1 (which is based on the most recent Highway Capacity Manual procedures) was utilized to analyze the morning and afternoon peak hour conditions of the

intersections in the project vicinity. The signalized intersection methodology defines LOS based on delay using variables such as lane configuration, traffic volumes and signal timings. The unsignalized intersection methodology defines LOS based on the longest delay experienced by any single movement.

EXISTING PLUS PROJECT CONDITIONS

Roadway Segments

Daily traffic on the roadways near the proposed project site were reanalyzed with the project trips added to the existing traffic volumes. Note that in this analysis, the project trips were distributed according to the results of the Marketing Survey. Figure 7 depicts the daily volumes and peak hour turn volumes and Tables 5A, 5B, 5C, and 5D summarize the roadway segment volumes and associated LOS for those roads serving the project.

As shown in Tables 5A and 5B two segments will operate at LOS E due to the addition of project traffic;: (1) Alpine Boulevard between W. Victoria boulevard and Marshall and, (2) Alpine Boulevard between Marshall andBay Meadows, in addition to Tavern Road on the bridge of I-8 and (3) Willows Road east of the I-8 westbound ramps which already operate at LOS E under existing conditions. All other roadway and freeway segments will operate at LOS D or better under existing plus project conditions.

Table 5A shows that, based on SANTEC/ITE guidelines, project traffic represents a significant increase in v/c ratio (that is, an increase greater than 0.02) on two of the four segments that operate at LOS E; (1) Alpine Boulevard between W. Victoria Drive and Marshall, (2) Alpine Boulevard between Marshall and Bay Meadows.

Alpine Boulevard

Between West Victoria Drive and Bay Meadows

Table 5A shows that the ± 300 foot segment of Alpine Boulevard between W. Victoria Drive and Marshall and the segment between Marshall and Bay Meadows operate at LOS D under existing conditions. The addition of project traffic increases the v/c ratio of these segments of by 0.216 and 0.215, respectively, lowering the existing level of service from LOS D to LOS E. This is considered a significant and direct impact under the County criteria. See section V of this report of a description of how the developer will mitigate the project's impact on this segment of Alpine Boulevard.

Darnell & Associates, Inc., however, has conducted a PM peak hour operational analysis using the HCS software on these two segments of Alpine Boulevard (see Table 5C) and found that the PM peak hour LOS would be D not E.

In addition, the County required that analysis of the two segments of Alpine Boulevard be analyzed, for informational purposes, using the County Traffic Census volumes from 1993 and 1996. The HCS peak hour analysis was repeated with the results showing a LOS of E during the PM peak hour on the segment between Arnold Way and Marshall, see Table 5D. However, since these older counts do not represent current conditions, there are no significant direct impacts by the project traffic on these segments of Alpine Boulevard. The worksheets for the peak hour HCS analysis can be found in Appendix D.

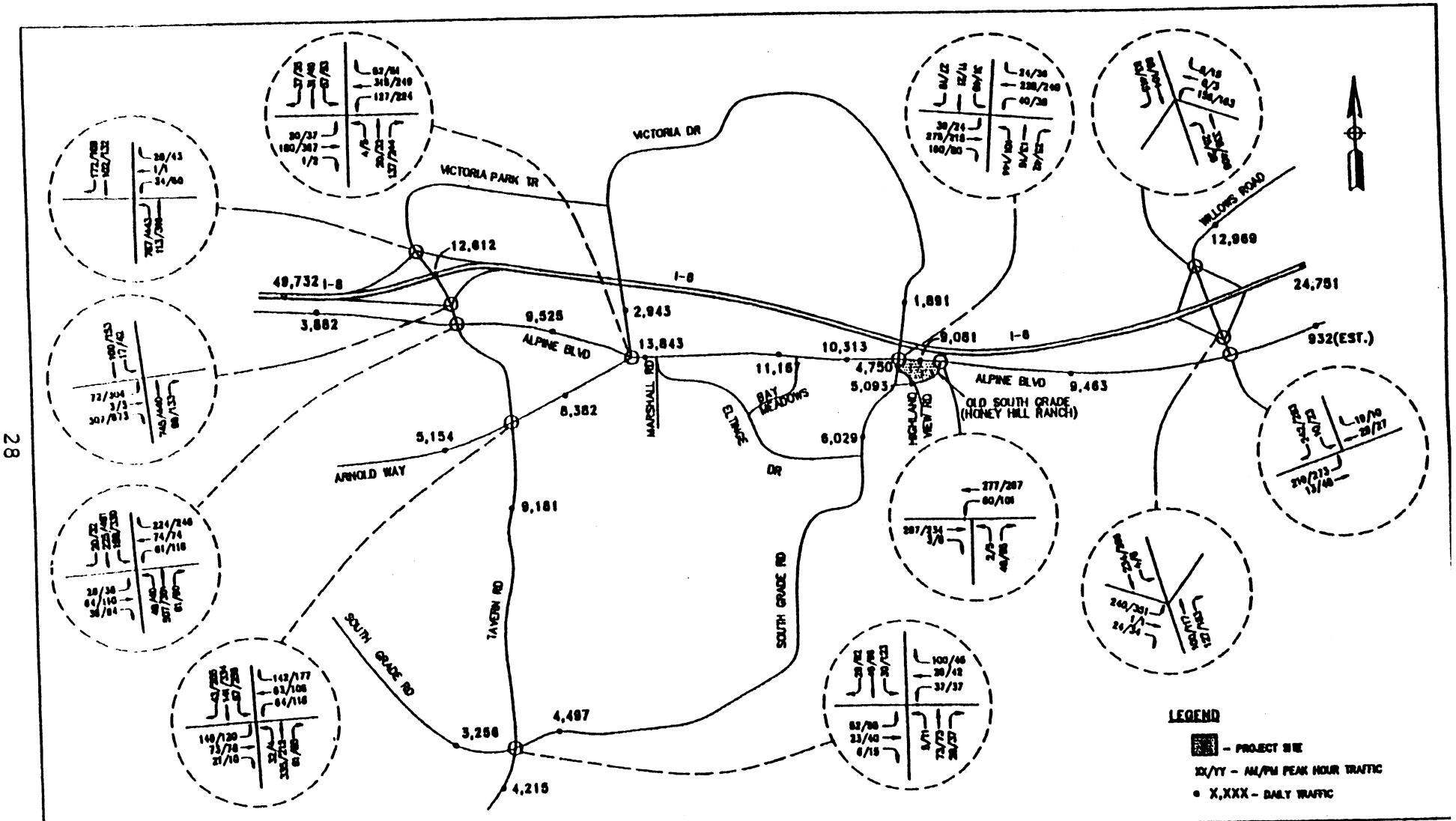

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FIGURE 7

EXISTING PLUS PROJECT DAILY/AM/PM VOLUMES (BASED ON MARKETING SURVEY)

Table 5A
Existing Plus Project Daily Volumes & Roadway Segment Level of Service Summary

Segment	Design Capacity[1]	Existing Conditions			Existing + Project					Impact (Direct/Cumulative)
		A.D.T.	v/c Ratio	LOS	A.D.T.	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard										
- West of Tavern Road	16,200	2,952	0.182	B	3,882	0.240	B	0.058	NA	NA
-Tavern Road to W. Victoria Dr.	16,200	8,247	0.509	D	9,525	0.588	D	0.079	NA	NA
- W. Victoria Dr. to Marshall	16,200	10,357	0.639	D	13,843	0.855	E	0.216	Yes	Direct[2]
- Marshall to Bay Meadows	16,200	7,681	0.474	D	11,167	0.689	E	0.215	Yes	Direct[2]
- Bay Meadows to South Grade/E. Victoria	16,200	6,827	0.421	C	10,313	0.637	D	0.216	NA	NA
-E. Victoria Dr. to Old South Grade Road	16,200	6,641	0.410	C	9,081	0.561	D	0.151	NA	NA
-Old South Grade Road to Willows Rd.	16,200	5,048	0.312	C	9,463	0.584	D	0.272	NA	NA
- East of Willows Road*	<1,500	700	NA	NA	932	0.621	NA	NA	NA	NA
Arnold Way										
- West of Tavern Road	16,200	4,689	0.289	C	5,154	0.318	C	0.029	NA	NA
- Tavern Road to Alpine Boulevard	16,200	7,220	0.446	D	8,382	0.517	D	0.071	NA	NA
South Grade Road										
- West of Tavern Road	16,200	2,675	0.165	B	3,256	0.201	B	0.036	NA	NA
-Tavern Road to Eltinge Dr.	16,200	3,103	0.192	B	4,497	0.278	C	0.086	NA	NA
-Eltinge Dr. to Alpine Boulevard	16,200	3,356	0.207	B	4,750	0.293	C	0.086	NA	NA
Tavern Road										
- North of Alpine Blvd. (on bridge)	16,200	12,380	0.764	E	12,496	0.771	E	0.007	No	NA
-Alpine Boulevard to South Grade Road	16,200	8,600	0.531	D	9,181	0.567	D	0.036	NA	NA
- South of South Grade Road	16,200	3,402	0.210	B	4,215	0.260	C	0.050	NA	NA
West Victoria Drive										
- North of Alpine Boulevard	16,200	1,897	0.117	A	2,943	0.182	B	0.065	NA	NA
East Victoria Drive										
- North of Alpine Boulevard	16,200	961	0.059	A	1,891	0.117	A	0.058	NA	NA
Willows Road										
- East of I-8 WB Ramps	16,200	12,737	0.786	E	12,969	0.801	E	0.015	No	NA
Highland View Road										
- East of South Grade Road	16,200	1,026	0.063	A	5,093	0.314	C	0.251	NA	NA

[1] These values represent the daily volume at the upper limit of LOS E for each link per County Standards.
[2] See section V of this report for a description of how the developer will mitigate the project's impacts on these segments.
* Levels of Service are not applied to non-circulation element roads.
NA = Not Applicable

Table 5B
Existing Plus Project Freeway Segment Volumes and Level of Service Summary

Route	Limits	# Lanes	Capacity	Peak Hour %	Direction Split	Truck Factor	Existing Conditions			Existing Plus Project				
							ADT	v/c Ratio	LOS	ADT	v/c Ratio	LOS	v/c Ratio Increase	Significant Increase
Interstate 8	Dunbar Ln/ Harbison Cyn to Tavern Rd	2	4,400	8.60%	60.0%	12.0%	49,500	0.650	C	49,732	0.653	C	0.003	NA
	East of Willows Rd.	2	4,400	8.60%	60.0%	12.0%	20,800	0.273	A	24,751	0.325	A	0.052	NA

Lanes - Number of lanes in one direction: HOV-High Occupancy Lanes
Capacity - Capacity in one direction
ADT - Average Daily Traffic
Peak Hour % - Percentage of average daily traffic occurring during the peak hour
Direction Split - Percentage of peak hour traffic traveling in peak direction.
Truck Factor - Truck/terrain factor to represent influence of heavy vehicles and/or grades.
Peak Hour Volume - Peak hour traffic in peak direction of travel/ For facilities with HOV lanes, ten percent is assumed to use HOV lanes.
v/c Ratio - Volume to Capacity Ratio
LOS - Caltrans District 11 procedure was used to estimate the freeway level of service. Designations vary from A to F, with four level of LOS F from F(0) to F(3).
NA - Not Applicable

Table 5C
Existing Plus Project PM Peak Hour Operational Level of Service Summary Using HCS

Two-Lane Roadway Segment	Existing Conditions		Existing Plus Project				Impact (Direct/Cumulative)
	v/c Ratio	LOS	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard							
- West of Marshall	0.416	D	0.495	D	0.079	NA	NA
- West of Bay Meadows	0.316	D	0.392	D	0.076	NA	NA
Willows Road							
- East of I-8 Westbound Ramp	0.353	D	0.358	D	0.005	NA	NA

NA - Not Applicable

Table 5D
Existing Plus Project Daily Volumes & Roadway Segment Level of Service Summary Using the County of San Diego Traffic Census Data

Levels of Service Using Look-Up Table from the County Public Road Standards

Segment	Design Capacity[1]	Existing Conditions			Existing Plus Project					Impact (Direct/Cumulative)
		A.D.T. (Year)	v/c Ratio	LOS	A.D.T.	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard										
- Arnold Way to Marshall/Eltinge	16,200	12,401 (96)	0.765	E	15,887	0.981	E	0.216	Yes	Cumulative
- East of Marshall/Eltinge Dr.	16,200	11,871 (93)	0.733	E	15,357	0.948	E	0.215	Yes	Cumulative

PM Peak Hour Operational Levels of Service Using HCS

Two-Lane Roadway Segment	Existing Conditions		Existing Plus Project				Impact (Direct/Cumulative)
	v/c Ratio	LOS	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard							
- Arnold Way to Marshall/Eltinge	0.502	D	0.577	E	0.075	Yes	Direct
- East of Marshall/Eltinge Dr.	0.486	D	0.561	D	0.075	NA	NA

[1] These values represent the daily volume at the upper limit of LOS E for each link per County Standards.
NA – Not Applicable

Willows Road East of I-8

Table 5A shows that Willows Road east of the I-8 westbound ramps operates at LOS E under existing conditions. The addition of project traffic increases the v/c ratio by 0.015. This increase is considered insignificant.

Tavern Road on the Bridge over I-8

Table 5A shows that the segment of Tavern Road on the bridge over I-8 operates at LOS E under existing and existing plus project conditions. The addition of project traffic increases the existing v/c ratio by 0.007. This increase is considered insignificant.

Intersections

The intersections were reanalyzed with the addition of project traffic to existing traffic volumes. Table 6 summarizes this analysis. A copy of the HCS worksheets for existing plus project conditions can be found in Appendix D.

Tavern Road at Interstate 8 and Arnold Way

The project adds traffic to the three intersections that have critical movements that operate at LOS F under existing conditions: (1) Tavern Road/I-8 westbound ramp, (2) Tavern Road/I-8 eastbound ramp, and (3) Tavern Road/Arnold Way.

At the Tavern Road and Interstate 8 interchange, the project traffic adds 12 AM peak hour trips and 13 PM peak hour trips resulting in an increase in delay up to 9.6 second. This increase is significant and is considered a cumulative impact. Since signalization is warranted at both the east and westbound ramps under existing conditions (see Appendix O), the project will contribute to the future signalization of these intersections on a "fair share" basis in order to help alleviate the existing low LOS.

At the Tavern Road/Arnold Way intersection, the proposed project adds 54 AM peak hour trips and 57 PM peak hour trips resulting in an increase in delay of up to 33.36 seconds. This increase is significant and is considered a cumulative impact. The intersection warrants signalization under existing conditions (see Appendix O). Therefore, as mitigation the project will contribute a "fair share" to the future signalization of this intersection as well.

When signalized, the Tavern Road/I-8 westbound ramp, Tavern Road/I-8 eastbound ramp, and Tavern Road/Arnold Way intersections will all operate at an acceptable LOS C. (A copy of the mitigated intersection HCS analysis can be found in Appendix J.)

Alpine Boulevard at West Victoria Drive

The results of the intersection analysis of existing plus project conditions, depicted in Table 6, shows that the addition of project traffic lowers the level of service during the PM peak hour from LOS C to LOS F. This is considered a significant and direct impact. However, such intersection impacts are mitigable.

Existing traffic volumes at the intersection of Alpine Boulevard with West Victoria Drive/Arnold Way

Existing traffic volumes at the intersection of Alpine Boulevard with West Victoria Drive/Arnold Way warrant signalization, even though the all-way stop is functioning at an acceptable level of service. (See Table 11 for the signal warrant summary and Appendix O for the signal warrant worksheets.) Signalization would allow this intersection to operate at an acceptable LOS B with the existing lane configuration. As mitigation of project impacts, the proposed project will design and install a traffic signal at this intersection.

Table 6
Existing Plus Project Intersection Level of Service Summary

Intersection	Critical Movement	Existing Conditions				Existing Plus Project								Impact (D/C)[2]
		AM Peak		PM Peak		AM Peak				PM Peak				
		Delay	LOS	Delay	LOS	Delay	LOS	Inc. in Delay	Sig. Inc.	Delay	LOS	Inc. in Delay	Sig. Inc.	
Tavern Rd @ I-8 WB Ramps (One-Way Stop-Controlled)	NB	12.7	B	9.1	A	12.8	B	0.1	NA	9.2	A	0.1	NA	C
	WB	*	F	87.9	F	*	F	-	Yes	97.5	F	9.6	Yes	
Tavern Rd @ I-8 EB Ramps (One-Way Stop-Controlled)	SB	9.6	A	8.8	A	9.6	A	0.0	NA	8.8	A	0.0	NA	C
	EBLT	22.6	C	89.2	F	22.8	C	0.2	NA	95.5	F	6.3	Yes	
Tavern Rd @ Alpine Blvd. (Signalized)	Intersection	18.9	B	18.7	B	19.2	B	0.3	NA	19.4	B	0.7	NA	NA
Tavern Rd @ Arnold Way[1] (Four-Way Stop-Controlled)	NB	23.09	C	21.11	C	27.21	D	4.12	NA	23.74	C	2.63	NA	
	SB	12.42	B	139.93	F	12.86	B	0.44	NA	173.29	F	33.36	Yes	
	EB	14.65	B	16.64	C	15.70	C	1.05	NA	17.92	C	1.28	NA	
	WB	11.86	B	15.66	B	12.37	B	0.51	NA	16.54	C	0.88	NA	
	Intersection	16.65	C	78.32	F	18.54	C	1.89	NA	93.04	F	14.72	Yes	C
Tavern Rd @ South Grade Rd (Four-Way Stop-Controlled)	NB	7.98	A	8.42	A	8.18	A	0.20	NA	8.77	A	0.35	NA	
	SB	8.02	A	10.34	B	8.25	A	0.23	NA	10.93	B	0.59	NA	
	EB	8.04	A	8.85	A	8.28	A	0.24	NA	9.25	A	0.40	NA	
	WB	7.71	A	8.41	A	8.24	A	0.53	NA	9.11	A	0.70	NA	
	Intersection	7.91	A	9.50	A	8.23	A	0.32	NA	9.92	A	0.42	NA	NA
Alpine Blvd @ West Victoria Dr. (Four-Way Stop-Controlled)	NB	9.36	A	14.07	B	10.72	B	1.36	NA	19.83	C	5.76	NA	
	SB	9.48	A	11.71	B	10.93	B	1.45	NA	14.83	B	3.12	NA	
	EB	9.87	A	19.87	C	11.47	B	1.60	NA	38.87	E	19.00	Yes	
	WB	14.46	B	25.90	D	22.85	C	8.39	NA	141.91	F	116.01	Yes	
	Intersection	12.12	B	20.20	C	17.01	C	4.89	NA	72.99	F	52.79	Yes	D

[1] Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than the three that currently exist.
[2] D = Direct Impact, C = Cumulative Impact
Delay is expressed in seconds/vehicle
* Delay Exceeds 999.9 seconds
NA = Not Applicable
NB = Northbound Approach,, SB = Southbound Approach, EB = Eastbound Approach, WB = Westbound Approach,
EBL = Eastbound Left Lane, EBLT = Eastbound Left-Thru Lane, NBL = Northbound Left Lane, SBLT = Southbound Left-Thru Lane

Table 6 (Continued)
Existing Plus Project Intersection Level of Service Summary

Intersection	Critical Movement	Existing Conditions				Existing Plus Project								Impact (D/C)[2]
		AM Peak		PM Peak		AM Peak				PM Peak				
		Delay	LOS	Delay	LOS	Delay	LOS	Inc. in Delay	Sig. Inc.	Delay	LOS	Inc. in Delay	Sig. Inc.	
Alpine Blvd @ E Victoria Dr/South Grade (Two-Way Stop-Controlled)	NBL	14.8	B	12.0	B	19.7	C	4.9	NA	18.9	C	6.9	NA	NA
	SBLT	16.1	C	11.9	B	22.8	C	6.7	NA	20.1	C	8.2	NA	
	EB	7.7	A	7.5	A	7.9	A	0.2	NA	7.9	A	0.4	NA	
	WB	8.1	A	7.5	A	8.4	A	0.3	NA	8.0	A	0.5	NA	
Alpine Blvd @ Old South Grade Rd (One-Way Stop-Controlled)	NB	-	-	-	-	10.5	B	-	NA	10.6	B	-	NA	NA
	WB	-	-	-	-	8.0	A	-	NA	8.0	A	-	NA	
Alpine Blvd @ Willows (One-Way Stop-Controlled)	SB	9.2	A	9.9	A	10.0	A	0.8	NA	11.1	B	1.2	NA	NA
	EB	7.5	A	7.6	A	7.7	A	0.2	NA	7.8	A	0.2	NA	
Willows @ I-8 EB Ramps (One-Way Stop-Controlled)	SB	7.5	A	7.6	A	7.7	A	0.2	NA	7.9	A	0.3	NA	NA
	EBL	12.3	B	16.8	C	14.8	B	2.5	NA	27.6	D	10.8	NA	
Willows @ I-8 WB Ramps (One-Way Stop-Controlled)	NB	7.5	A	8.6	A	7.6	A	0.1	NA	8.6	A	0.0	NA	NA
	WB	12.4	B	16.8	C	15.4	C	3.0	NA	27.2	D	10.4	NA	

[1] Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than the three that currently exist.
[2] D = Direct Impact, C = Cumulative Impact
Delay is expressed in seconds/vehicle
* Delay Exceeds 999.9 seconds
NA = Not Applicable
NB = Northbound Approach,, SB = Southbound Approach, EB = Eastbound Approach, WB = Westbound Approach,
EBL = Eastbound Left Lane, EBLT = Eastbound Left-Thru Lane, NBL = Northbound Left Lane, SBLT = Southbound Left-Thru Lane

Other Intersections

As shown in Table 6, the remaining six intersections continue to operate at an acceptable LOS D or better with the addition of project traffic to existing traffic volumes. Note that the existing traffic on Old South Grade Road was assumed to be nominal because the road will only serve the proposed Albertsons Market and the 14-lot subdivision which has recently been developed on a cul-de-sac at the end of Old South Grade Road.

OTHER APPROVED/PENDING PROJECTS

From research at the County Department of Planning and Land Use, it was determined that several other projects would be directly impacting the same road segments and intersections as this project. Table 7 lists the projects that were included in the near term cumulative (existing plus other approved/pending projects) plus project) conditions. Figures have been included in Appendix B identifying the location and trip distribution for each of the other approved/pending projects.

EXISTING PLUS OTHER APPROVED/PENDING PROJECTS PLUS PROJECT

At the County's request the near term cumulative (existing plus other approved/pending projects plus project) conditions was analyzed with two separate distribution patterns for the proposed Albertsons Market. The first is the marketing study prepared by Albertsons, the second is the Year 2020 SANDAG Buildout Select Zone Assignment. The specifics of these two approaches to trip distribution were discussed in Section II.

Marketing Survey

The other approved/pending projects traffic was added to the existing (current counts) plus project traffic volumes. In this analysis, the trips generated by the proposed project were distributed according to the results of the Marketing Survey. The resulting near term cumulative traffic volumes are illustrated in Figure 8A.

Roadway Segments

Traffic on the roadways serving the proposed project site were analyzed under near term cumulative traffic conditions. The results of the analysis are summarized in Tables 8A, 8B, 8C, and 8D. As shown in Table 8A, four roadway segments will operate at LOS E under near term cumulative conditions. These are the same roadway segments of Alpine Boulevard, Willows Road, and Tavern Road which are impacted under existing plus project conditions.

Alpine Boulevard

Table 8A shows that based on average daily conditions Alpine Boulevard between W. Victoria drive and Bay Meadows operates at LOS E under near term cumulative conditions. The addition of project traffic increases the existing plus other approved/ pending projects v/c ratio by 0.215. This increase is considered significant and will require mitigation. Se section V of this report for a description of how the developer will mitigate the project's impacts on this segment of Alpine Boulevard.

Darnell & Associates, Inc., conducted a PM peak hour operational analysis using the HCS software on the segments of Alpine Boulevard between W. Victoria Dr. and Marshall and the segment between Marshall and

Bay Meadows, see Table 8C. That analysis shows the operational LOS to be D during the PM peak hour on these two segment of Alpine Boulevard. (A copy of the HCS worksheets can be found in Appendices E and F.)

Willows Road East of I-8

Table 8A shows that Willows Road east of the I-8 westbound ramps operates at LOS E under near term cumulative conditions with or without the proposed project. The addition of project traffic increases the existing plus other approved/ pending projects v/c ratio by 0.015. This increase is considered insignificant.

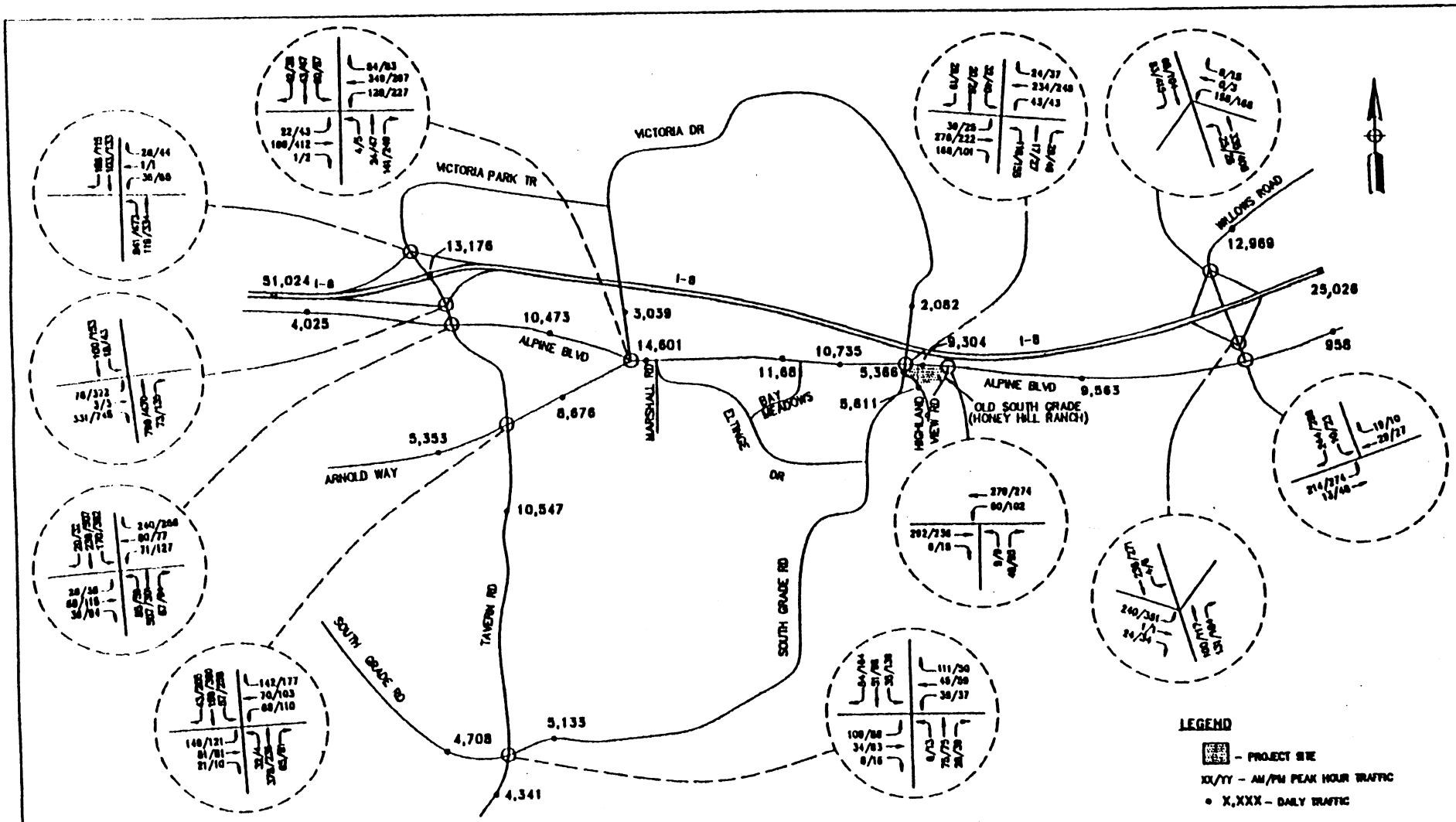
Tavern Road on the Bridge over I-8

Table 8A shows that the segment of Tavern Road on the bridge over I-8 operates at LOS E under near term cumulative conditions with or without the proposed project. The addition of project traffic increases the existing plus other approved/pending projects v/c ratio by 0.007. This increase is considered insignificant.

Table7
Other Approved/Pending Projects

Project ID Number	Project Name	Land Use	Trip Generation
TM 5144	Chocolate Mountain Ranch	96 Residential Dwelling Units	1,152
P99-016	Alpine Christian Fellowship	Church & Daycare	(a)
R 98-007	Morton Convenience Center	4,270 SF Convenience Store & 1,830 SF Restaurant	3,282
TM 5082	Crest Lake	69 Residential Dwelling Units	828
TPM 20552	Bulfer	3 Residential Dwelling Units	36
TM 5078	Sky Mesa Estates	47 Residential Dwelling Units	564
TPM 20422	Kniffing	2 Residential Dwelling Units	24
TM 5063	Alpine Ranch Estates	64 Residential Dwelling Units	768
TM 4893	Dolores Hill	14 Residential Dwelling Units	168
ZAP-00-111	Davis	1 Residential Dwelling Unit	10
TM 5210	Peterson	25 Residential Dwelling Units	300
TM 5160	Rancho Judith	4 Residential Dwelling Units	48
TM 5143	Afton Estates	Application Was Withdrawn	0
TPM 20342	Roger Miller	4 Residential Dwelling Units	48
TM 5044	REI-NC Dartmouth II	39 Residential Dwelling Units	468
TPM 20325	Stroud	2 Residential Dwelling Units	24
P 73109W2	Alpine Mobile Home Estates	13 Mobile Home Spaces	65
TM 5142RP1	Stewart/Priest	30 Residential Dwelling Units	300
TPM 20436	Conway TPM	5 Residential Dwelling Units	60
S00-048	Tysma	4,561 SF Office	91
TM 4978	Kibee	25 Residential Dwelling Units	300
-	Pacific Scene	53 Residential Dwelling Units	530
-	Sun River	35 Residential Dwelling Units	350
TM 4939	14-Lot Subdivision	14 Residential Dwelling Units	168
-	Rite Aid at Tavern Road	In Operation When Counts Were Taken	0
		Total Trips Generated By Other Approved/Pending Projects:	9,584

(a) Project will distribute a nominal amount of traffic to the study area and was therefore not included
Note: Trip Generation was based on SANDAG trip generation rates



Darnell & ASSOCIATES, INC.

FIGURE 8A

EXISTING PLUS PROJECT PLUS OTHER PROJECTS DAILY/AM/PM VOLUMES (BASED ON MARKETING SURVEY)

Table 8A
Existing Plus Other Approved/Pending Projects Plus Project Daily Volumes & Roadway Segment Level of Service Summary
(Based on Marketing Surveys)

Segment	Design Capacity	Existing + Other Projects			Existing + Other Projects + Project					Impact (Direct/Cumulative)
		A.D.T.	v/c Ratio	LOS	A.D.T.	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard										
- West of Tavern Road	16,200	3,095	0.191	B	4,025	0.248	B	0.057	NA	NA
- Tavern Road to W. Victoria Dr.	16,200	9,195	0.568	D	10,473	0.646	D	0.078	NA	NA
- W. Victoria Dr. to Marshall	16,200	11,115	0.686	E	14,601	0.901	E	0.215	Yes	Direct & Cumulative
- Marshall to Bay Meadows	16,200	8,195	0.506	D	11,681	0.721	E	0.215	Yes	Direct & Cumulative
- Bay Meadows to South Grade/E. Victoria	16,200	7,294	0.447	D	10,735	0.663	D	0.216	NA	NA
- E. Victoria Dr. to Old South Grade Road	16,200	6,864	0.424	C	9,304	0.574	D	0.150	NA	NA
- Old South Grade Road to Willows Rd.	16,200	5,148	0.318	C	9,563	0.590	D	0.272	NA	NA
- East of Willows Road*	<1,500	726	NA	NA	958	NA	NA	NA	NA	NA
Arnold Way										
- West of Tavern Road	16,200	4,888	0.302	C	5,353	0.330	C	0.028	NA	NA
- Tavern Road to Alpine Boulevard	16,200	7,514	0.464	D	8,676	0.536	D	0.072	NA	NA
South Grade Road										
- West of Tavern Road	16,200	4,127	0.255	C	4,708	0.291	C	0.036	NA	NA
- Tavern Road to Eltinge Dr.	16,200	3,739	0.231	B	5,133	0.317	C	0.086	NA	NA
- Eltinge Dr. to Alpine Boulevard	16,200	3,972	0.245	B	5,366	0.331	C	0.086	NA	NA
Tavern Road										
- North of Alpine Blvd. (on bridge)	16,200	13,060	0.806	E	13,176	0.813	E	0.007	No	NA
- Alpine Boulevard to South Grade Road	16,200	9,966	0.615	D	10,547	0.651	D	0.036	NA	NA
- South of South Grade Road	16,200	3,528	0.218	B	4,341	0.268	C	0.050	NA	NA
West Victoria Drive										
- North of Alpine Boulevard	16,200	1,993	0.123	B	3,039	0.188	B	0.065	NA	NA
East Victoria Drive										
- North of Alpine Boulevard	16,200	1,152	0.071	A	2,082	0.129	B	0.058	NA	NA
Willows Road										
- East of I-8 WB Ramps	16,200	12,737	0.786	E	12,969	0.801	E	0.015	No	NA
Highland View Road										
- East of South Grade Road	16,200	1,544	0.095	A	5,611	0.346	C	0.251	NA	NA

[1] These values represent the daily volume at the upper limit of LOS E for each link per County Standards.
* Levels of Service are not applied to non-circulation element roads.
NA = Not Applicable

Table 8B
Existing Plus Other Approved/Pending Projects Plus Project Freeway Segment Volumes and Level of Service Summary (Based on Marketing Surveys)

Route	Limits	# Lanes	Capacity	Peak Hour %	Direction Split	Truck Factor	Existing + Other Projects			Existing + Other Projects + Project				
							ADT	v/c Ratio	LOS	ADT	v/c Ratio	LOS	v/c Ratio Increase	Significant Increase
Interstate 8	Dunbar Ln/ Harbison Cyn to Tavern Rd	2	4,400	8.60%	60.0%	12.0%	50,792	0.667	C	51,024	0.670	C	0.003	NA
	East of Willows Rd.	2	4,400	8.60%	60.0%	12.0%	21,075	0.277	A	25,026	0.329	A	0.052	NA

Lanes - Number of lanes in one direction: HOV-High Occupancy Lanes
Capacity - Capacity in one direction
ADT - Average Daily Traffic
Peak Hour % - Percentage of average daily traffic occurring during the peak hour
Direction Split - Percentage of peak hour traffic traveling in peak direction.
Truck Factor - Truck/terrain factor to represent influence of heavy vehicles and/or grades.
Peak Hour Volume - Peak hour traffic in peak direction of travel/ For facilities with HOV lanes, ten percent is assumed to use HOV lanes.
v/c Ratio - Volume to Capacity Ratio
LOS - Caltrans District 11 procedure was used to estimate the freeway level of service. Designations vary from A to F, with four level of LOS F from F(0) to F(3).
NA - Not Applicable

Table 8C
Existing Plus Other Approved/Pending Projects Plus Project PM Peak Hour Operational Level of Service Summary Using HCS (Based on Marketing Surveys)

Two-Lane Roadway Segment	Existing + Other Projects		Existing + Other Projects+ Project				Impact (Direct/Cumulative)
	v/c Ratio	LOS	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard							
- W. Victoria Dr. to Marshall	0.449	D	0.527	D	0.078	NA	NA
- Marshall to Bay Meadows	0.343	D	0.424	D	0.081	NA	NA
Willows Road							
- East of I-8 Westbound Ramp	0.353	D	0.358	D	0.005	NA	NA

NA – Not Applicable

Table 8D
Existing Plus Other Approved/Pending Projects Plus Project Volumes & Roadway Segment Level of Service Summary Using the County of San Diego Traffic Census Data (Based on Marketing Surveys)

Levels of Service Using Look-Up Table from the County Public Road Standards

Segment	Design Capacity[1]	Existing+ Other Projects			Existing + Other Projects + Project					Impact (Direct/Cumulative)
		A.D.T. (Year)	v/c Ratio	LOS	A.D.T.	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard										
- Arnold Way to Marshall/Eltinge	16,200	13,159	0.812	E	16,645	1.027	F	0.215	Yes	Cumulative
- East of Marshall/Eltinge Dr.	16,200	12,385	0.765	E	15,871	0.980	E	0.215	Yes	Cumulative

PM Peak Hour Operational Levels of Service Using HCS

Two-Lane Roadway Segment	Existing+ Other Projects		Existing + Other Projects + Project				Impact (Direct/Cumulative)
	v/c Ratio	LOS	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard							
- Arnold Way to Marshall/Eltinge	0.527	D	0.608	E	0.081	Yes	Direct &Cumulative
- East of Marshall/Eltinge Dr.	0.511	D	0.591	E	0.080	NA	Cumulative

[1] These values represent the daily volume at the upper limit of LOS E for each link per County Standards.
NA = Not Applicable

Intersections

The intersections were analyzed under near term cumulative conditions. Table 9 summarizes this analysis. A copy of the HCS worksheets for near term cumulative conditions can be found in Appendices E and F.

As shown in Table 9 four intersections have critical movements which operate at LOS E or F during at least one peak hour. These are the same four intersections that were found to have low levels of service under existing plus project conditions: (1) Tavern Road/I-8 westbound ramp, (2) Tavern Road/I-8 eastbound ramp, (3) Tavern Road/Arnold Way, and (4) Alpine Boulevard/West Victoria Drive. As in the Existing Plus Project scenario, the mitigation for the low levels of service at these four intersections is signalization.

The remaining intersections will operate at LOS D or better under near term cumulative conditions.

Select Zone

In this section, the roadway segments and intersections are analyzed under near term cumulative (existing plus other approved/pending projects plus project) conditions in which the Select Zone Assignment, for informational purposes, is used to distribute the traffic generated by the proposed project. Figure 8B presents the near term cumulative traffic volumes for this condition.

Roadway Segments

Tables 10A, 10B, 10C, and 10D summarize the levels of service for the roadway and freeway segments for near term cumulative conditions when the proposed project traffic is distributed based on the Select Zone Assignment.

Tables 10A and 10B shows that when project traffic is distributed according to the Select Zone Assignment, cumulative project traffic impacts the segments of Alpine Boulevard between Tavern Road and South Grade Road/East Victoria Drive, the segment of Tavern Road on the bridge over I-8, and the segment of Willows Road east of the I-8 westbound ramps. Project traffic increases the v/c ratio on these segments by 0.022 to 0.438. These increases are considered to be significant.

Darnell & Associates, Inc. also conducted a PM peak hour level of service analysis using the HCS software and the counts made in 1999 and 2000, see Table 10C. That analysis shows the operational LOS to be D during the PM peak hour on Alpine Boulevard between West Victoria Drive and South Grade Road. A copy of the HCS analysis can be found in Appendix G.

Table 10D shows that using the County's 1993 and 1996 Census Data, Alpine Boulevard (assuming it is a Light Collector) between Arnold Way and Marshall/Eltinge Drive will operate at LOS F under near term cumulative conditions according to the look-up table from the County's Public Road LOS Standards. The HCS PM peak hour analysis shows an operation LOS E on this short segment of Alpine Boulevard.

Table 9
Existing Plus Other Approved/Pending Projects Plus Project Intersection Level of Service Summary (Based on Marketing Surveys)

Intersection	Critical Movement	Existing + Other Projects				Existing + Other Projects + Project								Impact (D/C)[2]
		AM Peak		PM Peak		AM Peak				PM Peak				
		Delay	LOS	Delay	LOS	Delay	LOS	Inc. in Delay	Sig. Inc.	Delay	LOS	Inc. in Delay	Sig. Inc.	
Tavern Rd @ I-8 WB Ramps (One-Way Stop-Controlled)	NB	14.2	B	9.4	A	14.3	B	0.1	NA	9.4	A	0.0	NA	C
	WB	*	F	185.5	F	*	F	-	Yes	212.5	F	27.0	Yes	
Tavern Rd @ I-8 EB Ramps (One-Way Stop-Controlled)	SB	9.9	A	8.9	A	9.9	A	0.0	NA	8.9	A	0.0	NA	C
	EBLT	25.7	D	169.6	F	26.0	D	0.3	NA	183.9	F	14.3	Yes	
Tavern Rd @ Alpine Blvd. (Signalized)	Intersection	19.7	B	19.8	B	19.9	B	0.2	NA	20.2	C	0.4	NA	NA
Tavern Rd @ Arnold Way[1] (Four-Way Stop-Controlled)	NB	34.70	D	25.80	D	45.52	E	10.82	Yes	30.16	D	4.36	NA	
	SB	13.55	B	310.23	F	14.12	B	0.57	NA	356.24	F	46.01	Yes	
	EB	15.94	C	17.90	C	17.29	C	1.35	NA	19.43	C	1.53	NA	
	WB	12.59	B	16.33	C	13.17	B	0.58	NA	17.31	C	0.98	NA	
	Intersection	21.82	C	164.16	F	26.33	D	4.51	NA	182.89	F	18.73	Yes	C
Tavern Rd @ South Grade Rd (Four-Way Stop-Controlled)	NB	8.43	A	9.08	A	8.69	A	0.26	NA	9.58	A	0.50	NA	
	SB	8.58	A	13.08	B	8.87	A	0.29	NA	14.29	B	1.21	NA	
	EB	8.89	A	10.14	B	9.25	A	0.36	NA	10.78	B	0.64	NA	
	WB	8.33	A	9.25	A	8.95	A	0.62	NA	10.16	B	0.91	NA	
	Intersection	8.56	A	11.42	B	8.96	A	0.40	NA	12.18	B	0.76	NA	NA
Alpine Blvd @ West Victoria Dr. (Four-Way Stop-Controlled)	NB	9.89	A	17.01	C	11.55	B	1.66	NA	24.96	C	7.95	NA	
	SB	10.13	B	13.17	B	11.91	B	1.78	NA	16.70	C	3.53	NA	
	EB	10.60	B	32.34	D	12.68	B	2.08	NA	99.47	F	67.13	Yes	
	WB	17.32	C	41.68	E	33.73	D	16.41	NA	334.82	F	293.14	Yes	
	Intersection	13.85	B	30.75	D	22.87	C	9.02	NA	164.88	F	134.13	Yes	D

[1] Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than the three that currently exist.
[2] D = Direct Impact, C = Cumulative Impact
Delay is expressed in seconds/vehicle
* Delay Exceeds 999.9 seconds
NA = Not Applicable
NB = Northbound Approach,, SB = Southbound Approach, EB = Eastbound Approach, WB = Westbound Approach,
EBL = Eastbound Left Lane, EBLT = Eastbound Left-Thru Lane, NBL = Northbound Left Lane, SBLT = Southbound Left-Thru Lane

Table 9 (Continued)
Existing Plus Other Approved/Pending Projects Plus Project Intersection Level of Service Summary (based on Marketing Surveys)

Intersection	Critical Movement	Existing + Other Projects				Existing + Other Projects + Project								Impact (D/C)[2]
		AM Peak		PM Peak		AM Peak				PM Peak				
		Delay	LOS	Delay	LOS	Delay	LOS	Inc. in Delay	Sig. Inc.	Delay	LOS	Inc. in Delay	Sig. Inc.	
Alpine Blvd @ E Victoria Dr/South Grade (Two-Way Stop-Controlled)	NBL	16.0	C	12.6	B	22.5	C	6.5	NA	21.5	C	8.9	NA	NA
	SBLT	17.0	C	12.6	B	24.8	C	7.8	NA	22.5	C	9.9	NA	
	EB	7.7	A	7.5	A	7.9	A	0.2	NA	7.9	A	0.4	NA	
	WB	8.1	A	7.6	A	8.4	A	0.3	NA	8.1	A	0.5	NA	
Alpine Blvd @ Old South Grade Rd (One-Way Stop-Controlled)	NB	11.7	B	10.3	B	11.7	B	0.0	NA	11.0	B	0.7	NA	NA
	WB	7.7	A	7.5	A	8.0	A	0.3	NA	8.0	A	0.5	NA	
Alpine Blvd @ Willows (One-Way Stop-Controlled)	SB	9.2	A	9.9	A	10.0	B	0.8	NA	11.2	B	1.3	NA	NA
	EB	7.5	A	7.6	A	7.7	A	0.2	NA	7.8	A	0.2	NA	
Willows @ I-8 EB Ramps (One-Way Stop-Controlled)	SB	7.5	A	7.6	A	7.7	A	0.2	NA	7.9	A	0.3	NA	NA
	EBL	12.4	B	16.9	C	15.9	C	3.5	NA	28.5	D	11.6	NA	
Willows @ I-8 WB Ramps (One-Way Stop-Controlled)	NB	7.5	A	8.6	A	7.6	A	0.1	NA	8.6	A	0.0	NA	NA
	WB	12.5	B	17.0	C	15.5	C	3.0	NA	27.6	D	10.6	NA	

[1] Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than the three that currently exist.
[2] D = Direct Impact, C = Cumulative Impact
Delay is expressed in seconds/vehicle
* Delay Exceeds 999.9 seconds
NA = Not Applicable
NB = Northbound Approach,, SB = Southbound Approach, EB = Eastbound Approach, WB = Westbound Approach,
EBL = Eastbound Left Lane, EBLT = Eastbound Left-Thru Lane, NBL = Northbound Left Lane, SBLT = Southbound Left-Thru Lane

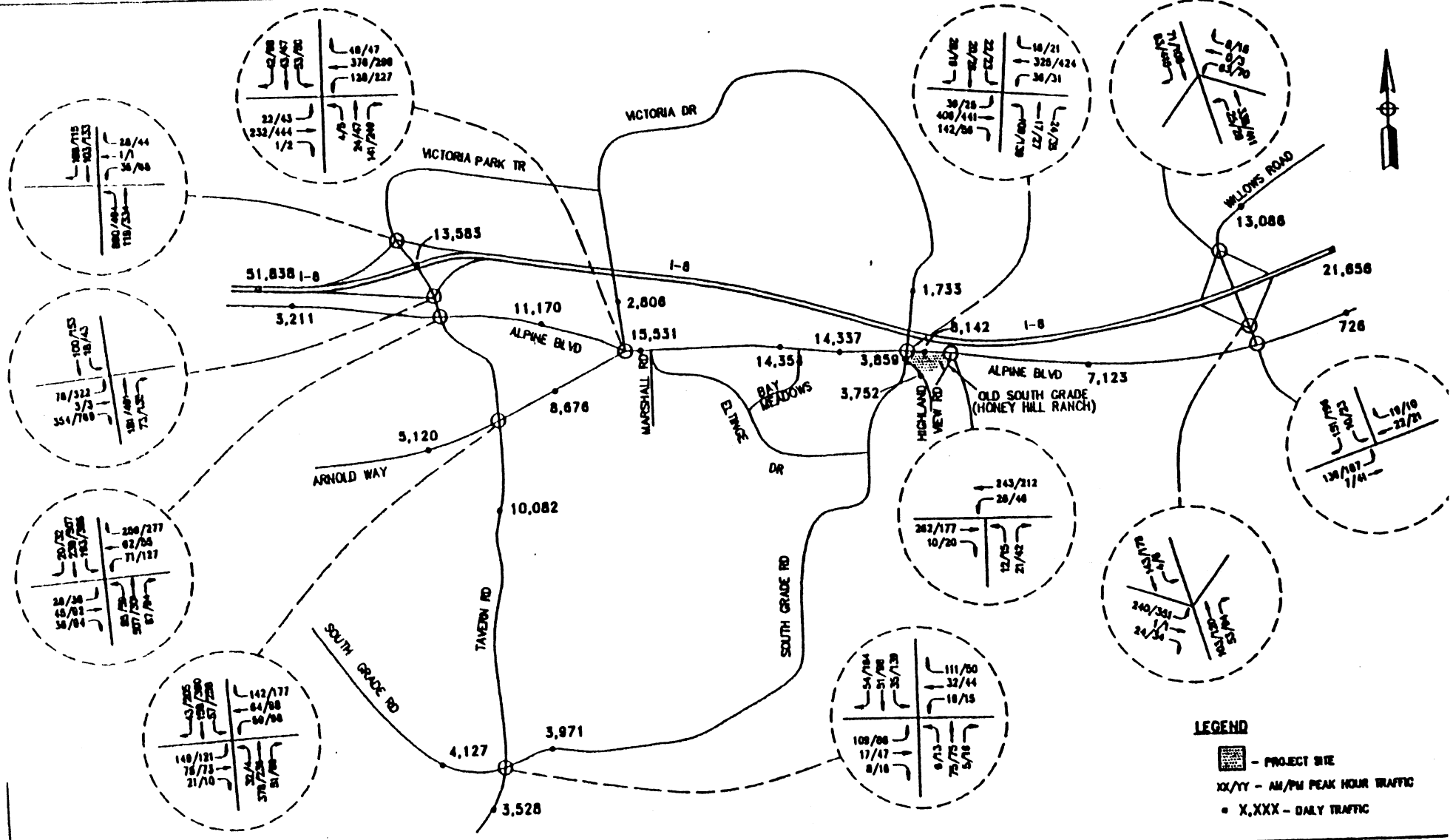


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FIGURE 8B

EXISTING PLUS PROJECT PLUS OTHER PROJECTS DAILY/AM/PM VOLUMES (BASED ON SELECT ZONE ASSIGNMENT

Table 10A
Existing Plus Other Approved/Pending Projects Plus Project Daily Volumes & Roadway Segment Level of Service Summary (Based on Select Zone)

Segment	Design Capacity	Existing + Other Projects			Existing + Other Projects + Project					Impact (Direct/Cumulative)
		A.D.T.	v/c Ratio	LOS	A.D.T.	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard										
- West of Tavern Road	16,200	3,095	0.191	B	3,211	0.198	B	0.007	NA	NA
- Tavern Road to W. Victoria Dr.	16,200	9,195	0.568	D	11,170	0.690	E	0.122	NA	Cumulative
- W. Victoria Dr. to Marshall	16,200	11,115	0.686	E	15,531	0.959	E	0.273	Yes	Direct & Cumulative
- Marshall to Bay Meadows	16,200	8,195	0.506	D	14,354	0.886	E	0.380	Yes	Direct & Cumulative
- Bay Meadows to South Grade/E.Victoria	16,200	7,294	0.447	D	14,337	0.885	E	0.438	Yes	Cumulative
- E. Victoria Dr. to Old South Grade Road	16,200	6,864	0.424	C	8,142	0.503	D	0.079	NA	NA
- Old South Grade Road to Willows Rd.	16,200	5,148	0.318	C	7,123	0.440	D	0.122	NA	NA
- East of Willows Road*	<1,500	726	NA	NA	726	NA	NA	NA	NA	NA
Arnold Way										
- West of Tavern Road	16,200	4,888	0.302	C	5,120	0.316	C	0.014	NA	NA
- Tavern Road to Alpine Boulevard	16,200	7,514	0.464	D	8,676	0.536	D	0.072	NA	NA
South Grade Road										
- West of Tavern Road	16,200	4,127	0.255	C	4,127	0.255	C	0.000	NA	NA
- Tavern Road to Eltinge Dr.	16,200	3,739	0.231	B	3,971	0.245	B	0.014	NA	NA
- Eltinge Dr. to Alpine Boulevard	16,200	3,972	0.245	B	4,785	0.295	C	0.050	NA	NA
Tavern Road										
- North of Alpine Blvd. (on bridge)	16,200	13,060	0.806	E	13,583	0.838	E	0.032	Yes	Cumulative
- Alpine Boulevard toSouth Grade Road	16,200	9,966	0.615	D	10,082	0.622	D	0.007	NA	NA
- South of South Grade Road	16,200	3,528	0.218	B	3,528	0.218	B	0.000	NA	NA
West Victoria Drive										
- North of Alpine Boulevard	16,200	1,993	0.123	B	2,806	0.173	B	0.050	NA	NA
East Victoria Drive										
- North of Alpine Boulevard	16,200	1,152	0.071	A	1,733	0.107	A	0.036	NA	NA
Willows Road										
- East of I-8 WB Ramps	16,200	12,737	0.786	E	13,086	0.808	E	0.022	Yes	Cumulative
Highland View Road										
- East of South Grade Road	16,200	1,544	0.095	A	3,752	0.232	B	0.137	NA	NA

[1] These values represent the daily volume at the upper limit of LOS E for each link per County Standards.
* Levels of Service are not applied to non-circulation element roads.
NA = Not Applicable

Table 10B
Existing Plus Other Approved/Pending Projects Plus Project Freeway Segment Volumes and Level of Service Summary (Based on Select Zone)

Route	Limits	# Lanes	Capacity	Peak Hour %	Direction Split	Truck Factor	Existing + Other Projects			Existing + Other Projects + Project				
							ADT	v/c Ratio	LOS	ADT	v/c Ratio	LOS	v/c Ratio Increase	Significant Increase
Interstate 8	Dunbar Ln/ Harbison Cyn to Tavern Rd	2	4,400	8.60%	60.0%	12.0%	50,792	0.667	C	51,838	0.681	C	0.014	NA
	East of Willows Rd.	2	4,400	8.60%	60.0%	12.0%	21,075	0.277	A	21,656	0.284	A	0.008	NA

Lanes - Number of lanes in one direction: HOV-High Occupancy Lanes
Capacity - Capacity in one direction
ADT - Average Daily Traffic
Peak Hour % - Percentage of average daily traffic occurring during the peak hour
Direction Split - Percentage of peak hour traffic traveling in peak direction.
Truck Factor - Truck/terrain factor to represent influence of heavy vehicles and/or grades.
Peak Hour Volume - Peak hour traffic in peak direction of travel/ For facilities with HOV lanes, ten percent is assumed to use HOV lanes.
v/c Ratio - Volume to Capacity Ratio
LOS - Caltrans District 11 procedure was used to estimate the freeway level of service. Designations vary from A to F, with four level of LOS F from F(0) to F(3).
NA - Not Applicable

Table 10C
Existing Plus Other Approved/Pending Projects Plus Project PM Peak Hour Operational Level of Service Summary Using HCS (Based on Select Zone)

Two-Lane Roadway Segment	Existing + Other Projects		Existing + Other Projects + Project				Impact (Direct/Cumulative)
	v/c Ratio	LOS	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard							
- W. Victoria Dr. to Marshall	0.449	D	0.551	D	0.102	NA	NA
- Marshall to Bay Meadows	0.343	D	0.445	D	0.102	NA	NA
- Bay Meadows to South Grade/E. Victoria	0.274	C	0.531	D	0.257	NA	
Willows Road							
- East of I-8 Westbound Ramp	0.378	D	0.386	D	0.008	NA	NA

NA = Not Applicable

Table 10D
Existing Plus Other Approved/Pending Projects Plus Project Volumes & Roadway Segment Level of Service Summary Using the County of San Diego Traffic Census Data (Based on Select Zone)

Levels of Service Using Look-Up Table from the County Public Road Standards

Segment	Design Capacity[1]	Existing+ Other Projects			Existing + Other Projects + Project					Impact (Direct/Cumulative)
		A.D.T. (Year)	v/c Ratio	LOS	A.D.T.	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard										
- Arnold Way to Marshall/Eltinge	16,200	13,159	0.812	E	17,575	1.085	F	0.273	Yes	Cumulative
- East of Marshall/Eltinge Dr.	16,200	12,385	0.765	E	18,544	1.145	F	0.380	Yes	Cumulative

PM Peak Hour Operational Levels of Service Using HCS

Two-Lane Roadway Segment	Existing+ Other Projects		Existing + Other Projects + Project				Impact (Direct/Cumulative)
	v/c Ratio	LOS	v/c Ratio	LOS	Increase in v/c	Significant Increase	
Alpine Boulevard							
- Arnold Way to Marshall/Eltinge	0.527	D	0.590	E	0.063	Yes	Direct &Cumulative
- East of Marshall/Eltinge Dr.	0.511	D	0.575	E	0.064	Yes	Cumulative

[1] These values represent the daily volume at the upper limit of LOS E for each link per County Standards.
NA = Not Applicable

Intersections

Table 11 summarizes the intersections Levels of Service for the near term cumulative conditions when the proposed project traffic is distributed based on the Select Zone Assignment. The HCS worksheets for this analysis can be found in Appendix G.

As can be seen from Table 11, five intersections have critical movements that operate at LOS E or F: (1) Tavern Road/I-8 westbound ramp, (2) Tavern Road/I-8 eastbound ramp, (3) Tavern Road/Arnold Way, (4) Alpine Boulevard/West Victoria Drive, and (5) Alpine Boulevard/East Victoria Drive/South Grade Road. The remaining intersections will operate at LOS C or better under near term cumulative conditions.

The Tavern Road/I-8 interchange ramps, the Tavern Road/Arnold Way, and the Alpine Boulevard/West Victoria Drive intersections warrant signalization under existing conditions. Signalization would allow these intersections to operate at LOS D or better with the existing lane configurations (see Appendix L for a copy of the HCS worksheets for the mitigated intersection analysis).

At the intersection of Alpine Boulevard with East Victoria Drive/South Grade Road, near term cumulative traffic volumes, using the Select Zone Assignment, would warrant signalization. Signalization would allow this intersection to operate at LOS C with the existing lane configurations. Appendix O contains the signal warrant worksheets and Appendix L contains the HCS worksheets for the mitigated intersection analysis.

Table 11
Existing Plus Other Approved/Pending Projects Plus Project Intersection Level of Service Summary (Based on Select Zone)

Intersection	Critical Movement	Existing + Other Projects				Existing + Other Projects + Project								Impact (D/C)[2]
		AM Peak		PM Peak		AM Peak				PM Peak				
		Delay	LOS	Delay	LOS	Delay	LOS	Inc. in Delay	Sig. Inc.	Delay	LOS	Inc. in Delay	Sig. Inc.	
Tavern Rd @ I-8 WB Ramps (One-Way Stop-Controlled)	NB	14.2	B	9.4	A	14.8	B	0.6	NA	9.5	A	0.1	NA	C
	WB	*	F	185.5	F	*	F	-	Yes	306.2	F	120.7	Yes	
Tavern Rd @ I-8 EB Ramps (One-Way Stop-Controlled)	SB	9.9	A	8.9	A	10.0	A	0.1	NA	9.0	A	0.1	NA	C
	EBLT	25.7	D	169.6	F	26.9	D	1.2	NA	224.6	F	55.0	Yes	
Tavern Rd @ Alpine Blvd. (Signalized)	Intersection	19.7	B	19.8	B	19.8	B	0.1	NA	20.1	C	0.3	NA	NA
Tavern Rd @ Arnold Way[1] (Four-Way Stop-Controlled)	NB	34.70	D	25.80	D	37.10	E	2.40	Yes	26.93	D	1.13	NA	
	SB	13.55	B	310.23	F	13.75	B	0.20	NA	326.14	F	15.91	Yes	
	EB	15.94	C	17.90	C	16.47	C	0.53	NA	18.44	C	0.54	NA	
	WB	12.59	B	16.33	C	12.78	B	0.19	NA	16.68	C	0.35	NA	
	Intersection	21.82	C	164.16	F	22.84	C	1.02	NA	170.72	F	6.56	Yes	C
Tavern Rd @ South Grade Rd (Four-Way Stop-Controlled)	NB	8.43	A	9.08	A	8.43	A	0.00	NA	9.08	A	0.00	NA	
	SB	8.58	A	13.08	B	8.58	A	0.00	NA	13.08	B	0.00	NA	
	EB	8.89	A	10.14	B	8.89	A	0.00	NA	10.14	B	0.00	NA	
	WB	8.33	A	9.25	A	8.33	A	0.00	NA	9.25	A	0.00	NA	
	Intersection	8.56	A	11.42	B	8.56	A	0.00	NA	11.42	B	0.00	NA	NA
Alpine Blvd @ West Victoria Dr. (Four-Way Stop-Controlled)	NB	9.89	A	17.01	C	11.93	B	2.04	NA	25.08	D	8.07	NA	
	SB	10.13	B	13.17	B	12.11	B	1.98	NA	16.46	C	3.29	NA	
	EB	10.60	B	32.34	D	13.87	B	3.27	NA	160.94	F	128.60	Yes	
	WB	17.32	C	41.68	E	44.12	E	26.80	Yes	429.04	F	387.36	Yes	
	Intersection	13.85	B	30.75	D	28.37	D	14.52	NA	223.17	F	192.42	Yes	D

[1] Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than the three that currently exist.
[2] D – Direct Impact, C – Cumulative Impact
Delay is expressed in seconds/vehicle
* Delay Exceeds 999.9 seconds
NA – Not Applicable
NB – Northbound Approach,, SB = Southbound Approach, EB = Eastbound Approach, WB = Westbound Approach,
EBL – Eastbound Left Lane, EBLT = Eastbound Left-Thru Lane, NBL = Northbound Left Lane, SBLT = Southbound Left-Thru Lane

Table 11 (Continued)
Existing Plus Other Approved/Pending Projects Plus Project Intersection Level of Service Summary (Based on Select Zone)

Intersection	Critical Movement	Existing + Other Projects				Existing + Other Projects + Project								Impact (D/C)[2]
		AM Peak		PM Peak		AM Peak				PM Peak				
		Delay	LOS	Delay	LOS	Delay	LOS	Inc. in Delay	Sig. Inc.	Delay	LOS	Inc. in Delay	Sig. Inc.	
Alpine Blvd @ E Victoria Dr/South Grade (Two-Way Stop-Controlled)	NBL	16.0	C	12.6	B	32.1	D	16.1	NA	51.5	F	38.9	Yes	D
	SBLT	17.0	C	12.6	B	31.8	D	14.8	NA	37.9	E	25.3	Yes	
	EB	7.7	A	7.5	A	8.1	A	0.4	NA	8.4	A	0.9	NA	
	WB	8.1	A	7.6	A	8.8	A	0.7	NA	8.6	A	1.0	NA	
Alpine Blvd @ Old South Grade Rd (One-Way Stop-Controlled)	NB	11.7	B	10.3	B	11.2	B	0.5	NA	10.5	B	0.2	NA	NA
	WB	7.7	A	7.5	A	7.9	A	0.2	NA	7.7	A	0.2	NA	
Alpine Blvd @ Willows (One-Way Stop-Controlled)	SB	9.2	A	9.9	A	9.3	A	0.1	NA	10.1	B	0.2	NA	NA
	EB	7.5	A	7.6	A	7.5	A	0.0	NA	7.6	A	0.0	NA	
Willows @ I-8 EB Ramps (One-Way Stop-Controlled)	SB	7.5	A	7.6	A	7.5	A	0.0	NA	7.7	A	0.1	NA	NA
	EBL	12.4	B	16.9	C	13.0	B	0.6	NA	18.7	C	1.8	NA	
Willows @ I-8 WB Ramps (One-Way Stop-Controlled)	NB	7.5	A	8.6	A	7.6	A	0.1	NA	8.6	A	0.0	NA	NA
	WB	12.5	B	17.0	C	13.0	B	0.5	NA	18.5	C	1.5	NA	

[1] Due to the limitations of the software, the southbound approach was analyzed with only two approach lanes rather than the three that currently exist.
[2] D = Direct Impact, C = Cumulative Impact
Delay is expressed in seconds/vehicle
* Delay Exceeds 999.9 seconds
NA – Not Applicable
NB = Northbound Approach,, SB = Southbound Approach, EB = Eastbound Approach, WB = Westbound Approach,
EBL – Eastbound Left Lane, EBLT = Eastbound Left-Thru Lane, NBL = Northbound Left Lane, SBLT = Southbound Left-Thru Lane

SECTION IV

PROJECT ACCESS AND ON-SITE CIRCULATION

PROJECT ACCESS

The project proposes one access off Old South Grade Road (Old South Grade Road was recently renamed Honey Hill Ranch Road), two access points off Alpine Boulevard, and one access point off Highlands View Road, all of which would allow full turning movements. The access point off Old South Grade Road will primarily serve truck traffic. The possibility of eliminating the project's access to/from Highlands View Road was examined and it was found that the elimination of this access would adversely affect on-site circulation and would concentrate all project traffic on Alpine Boulevard. Accordingly, the elimination of this access was not recommended.

Figures 9A and 9B show the distribution of morning and afternoon peak hour trips through each driveway for the Marketing Survey distribution and Select Zone assignment, respectively. All four access points were analyzed using the HCS version 4.1 for unsignalized intersections. The results of the analysis are summarized in Table 12. As shown in Table 12, all access points will operate at an acceptable LOS D or better with or without the addition of turn lanes or acceleration/deceleration lanes for both project distribution alternatives. (The HCS worksheets for the driveway analysis can be found in Appendices M and N.)

Table 12
Project Access Level of Service Summary

Marketing Survey Distribution					
Intersection	Critical Approach	AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Alpine Blvd/West Driveway	NB	14.1	B	16.9	C
Alpine Blvd/East Driveway	NB	12.6	B	12.5	B
Old South Grade Road/Project Access	EB	9.0	A	9.4	A
Highlands Valley Rd/Project Access	SB	8.9	A	9.5	A
Highlands Valley Rd/South Grade Road	WB	12.1	B	15.4	C
Select Zone Assignment					
Intersection	Critical Movement	AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Alpine Blvd/West Driveway	NB	18.1	C	32.8	D
Alpine Blvd/East Driveway	NB	13.2	B	13.0	B
Old South Grade Road/Project Access	EB	8.8	A	9.0	A
Highlands Valley Rd/Project Access	SB	8.7	A	9.0	A
Highlands Valley Rd/South Grade Road	WB	11.1	B	12.1	B

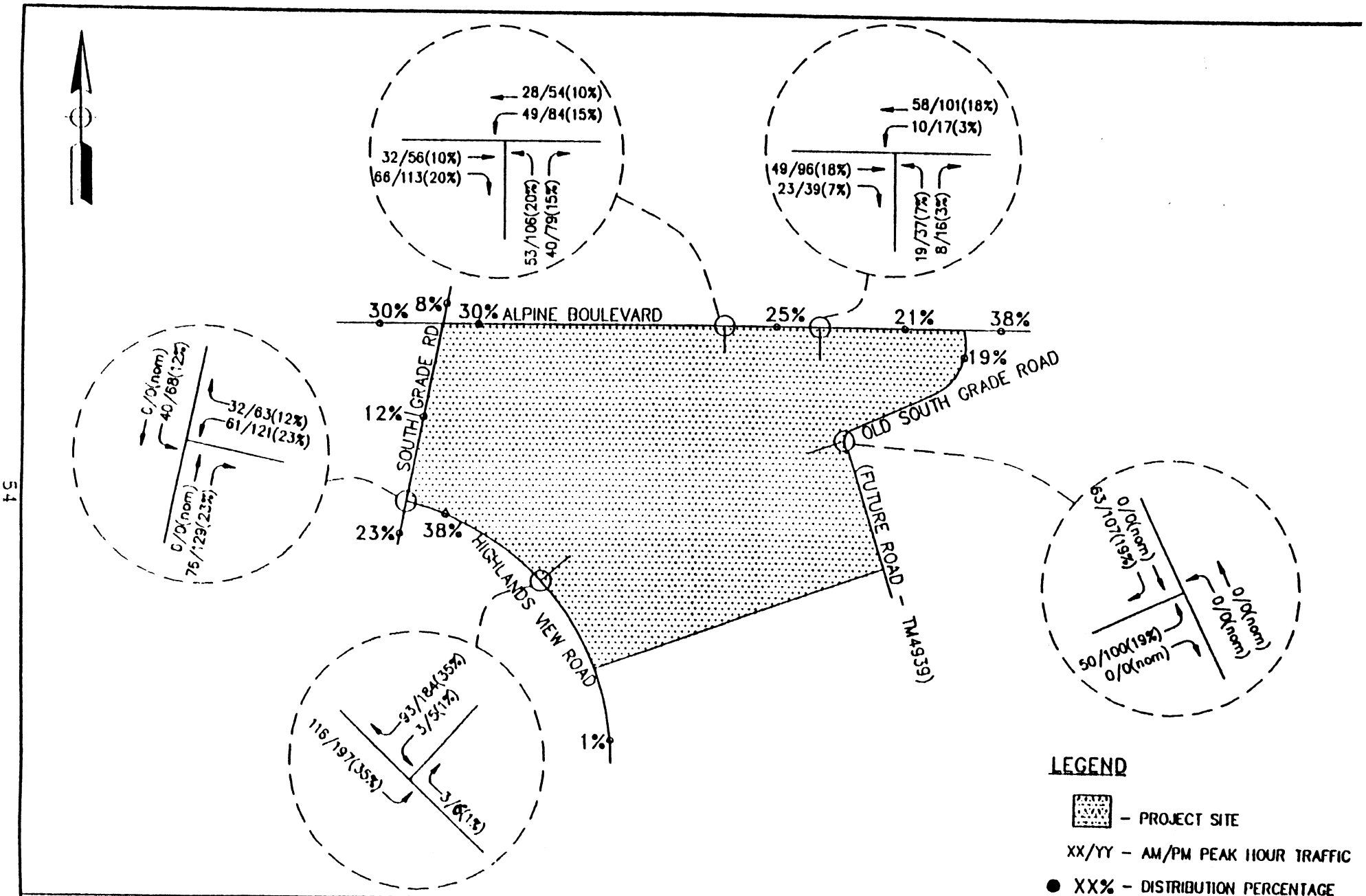

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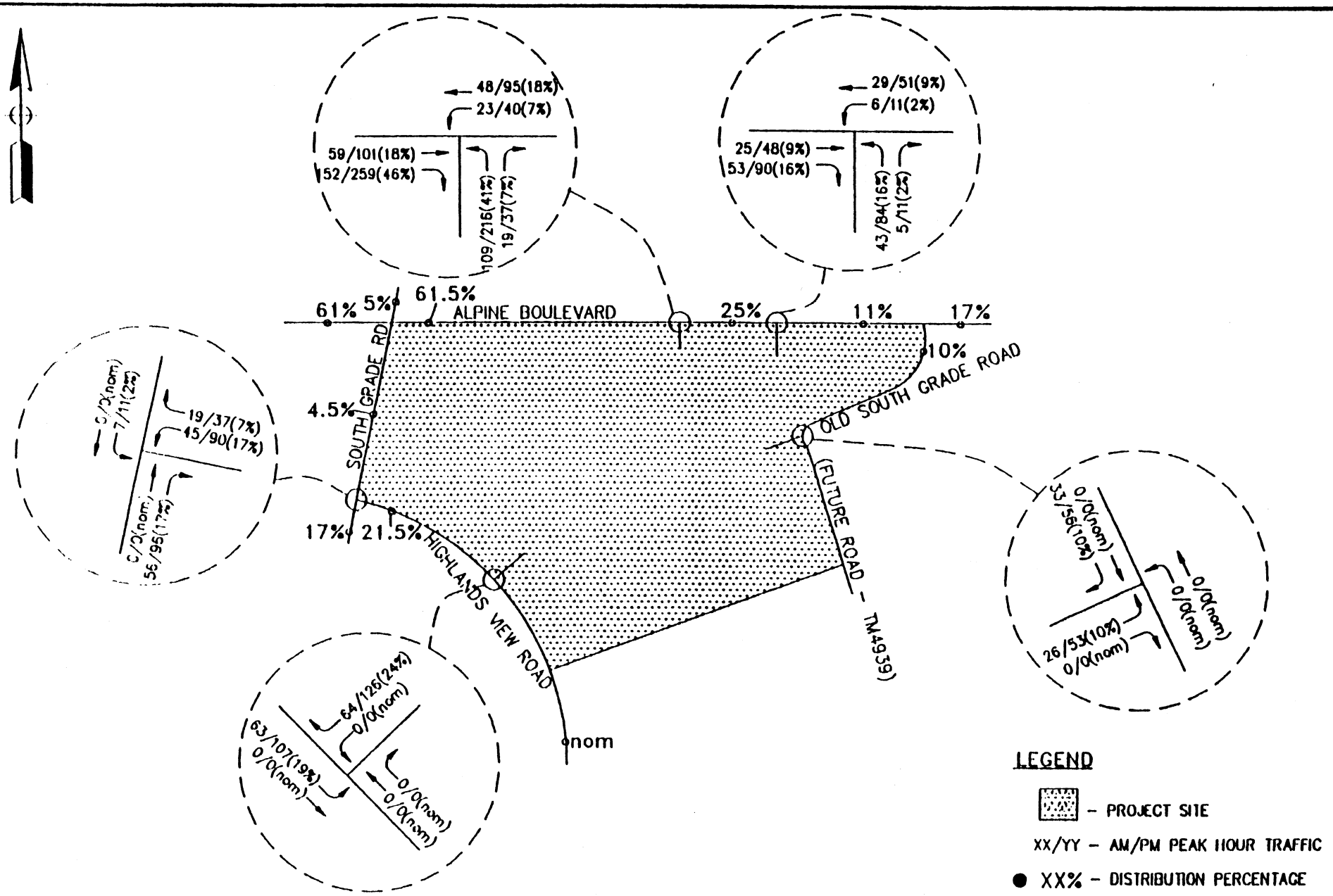
FIGURE 9A

PROJECT DRIVEWAY TRAFFIC (BASED ON MARKETING SURVEY



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990509AA 3-26-01 RMC

FIGURE 9B

PROJECT DRIVEWAY TRAFFIC (BASED ON SELECT ZONE ASSIGNMENT)

ON-SITE CIRCULATION

Circulation for the site consists of two main drive aisles, one extends east/west from Highlands View Road to Old South Grade Road and the other extends south from Alpine Road. The dimensions of both drive aisles and all parking spaces are consistent with County standards.

The fast food restaurant includes a drive-through with stacking capability of approximately 11 vehicles. The orientation of the drive-through window for the fast food restaurant is such that vehicles in the queue will not adversely affect travel through the parking lot.

The loading dock for large trucks is proposed on the east side of the Albertsons Market along Old South Grade Road. Large trucks have adequate turning radii to safely navigate in and out of this location.

The proposed circulation will adequately accommodate project traffic.

NEIGHBORHOOD TRAFFIC

Darnell & Associates, Inc. also reviewed the possible impacts on northbound traffic on South Grade Road cutting through the Sun Dance development at Manzanita View Terrace as a short cut to Highlands View Road, and thereafter into the project. It is the opinion of Darnell & Associates that such cut-through traffic will be insignificant because customers would have to drive approximately 0.36 miles at 25 miles per hour, or 52 seconds, to travel along Manzanita View Terrace to get to the project access on Highlands View Road; while they would have to drive only 0.28 miles at 45 miles per hour, or approximately 22 seconds , to reach the project access on Highlands View Road via South Grade Road.

PARKING

In connection with the Alpine Boulevard improvements shown on Figure 10, four (4) on-street parking spaces on the south side of Alpine Boulevard, west of Marshall, will be eliminated, and three (3) on-street parking spaces on the south side of Alpine Boulevard, east of Marshall, will be eliminated. Additionally, to correct the existing condition of vehicles backing into Alpine Boulevard traffic lanes, up to five (5) additional diagonal parking spaces on the south side of Alpine Boulevard, east of the new Texaco, and ten (10) perpendicular parking spaces on the north side of Alpine Boulevard, just east of West Victoria may be converted to parallel parking spaces (a probable net loss of two (2) spaces east of the Texaco and six (6) spaces west of West Victoria). The design of the improvements shown on Figure 10 are consistent with the existing circulation element classification of Alpine Boulevard, as well as with the proposed reclassification of Alpine Boulevard to a three lane Town Collector which is presently being evaluated by the County. It should be noted that the design of the three lane Town Collector alternative will also result in the elimination of the same on-street parking spaces because the ultimate functioning of the Alpine Boulevard segment between West Victoria Drive/Arnold Way and 100 feet east of Marshall will need to be improved from what presently exists in order to accommodate future traffic demands in Alpine with or without the project. This elimination of parking is not believed to be significant because there is adequate off street parking for the Alpine Inn, the liquor store west of the Alpine Inn, and the Texaco station just east of Marshall, which will accommodate the reasonable parking needs of those businesses. Refer to Figure 10 for an illustration of the existing on-street parking that will be impacted by the proposed improvements along Alpine Boulevard.

SECTION V

RECOMMENDED TRAFFIC MITIGATION MEASURES

ROADWAY SEGMENTS

Tavern Road

Project traffic will increase the v/c ratio on the segment of Tavern Road on the bridge over Interstate 8 by 0.007 which is less than the allowable 0.02 increase according to the SANTEC/ITE Significance Criteria. Mitigation by the proposed project is not recommended.

Alpine Boulevard

The trips generated by the proposed Albertsons Market and associated commercial uses, when added to current counts, lowers the Level of Service on the segments of Alpine Boulevard between West Victoria Drive/Arnold Way and Bay Meadows to LOS E using the County's Public Road Level of Service Standards look-up table based upon Alpine Boulevard being classified as a Light Collector. This impact is considered to be a significant direct impact. Using the HCS PM Peak Hour analysis, however, these segments of Alpine Boulevard were found to have an operational LOS D under near term cumulative conditions.

In addition, since the segment of Alpine Boulevard between West Victoria Drive and Bay Meadows operates as an arterial system with considerable cross traffic and closely spaced intersections roadway segment LOS is dependent on intersection LOS. Thus, the actual operation of the roadway segments is more a function of the operation of the intersections along the corridor (Alpine Boulevard/West Victoria Drive and Alpine Boulevard/South Grade Road) rather than on the estimated daily capacity of the roadway. Therefore, as long as the Alpine Boulevard/West Victoria Drive and Alpine Boulevard/South Grade Road intersections operate at acceptable levels of service, the traffic flow along the segments of Alpine Boulevard between West Victoria Drive and Bay Meadows will operate at acceptable levels of service.

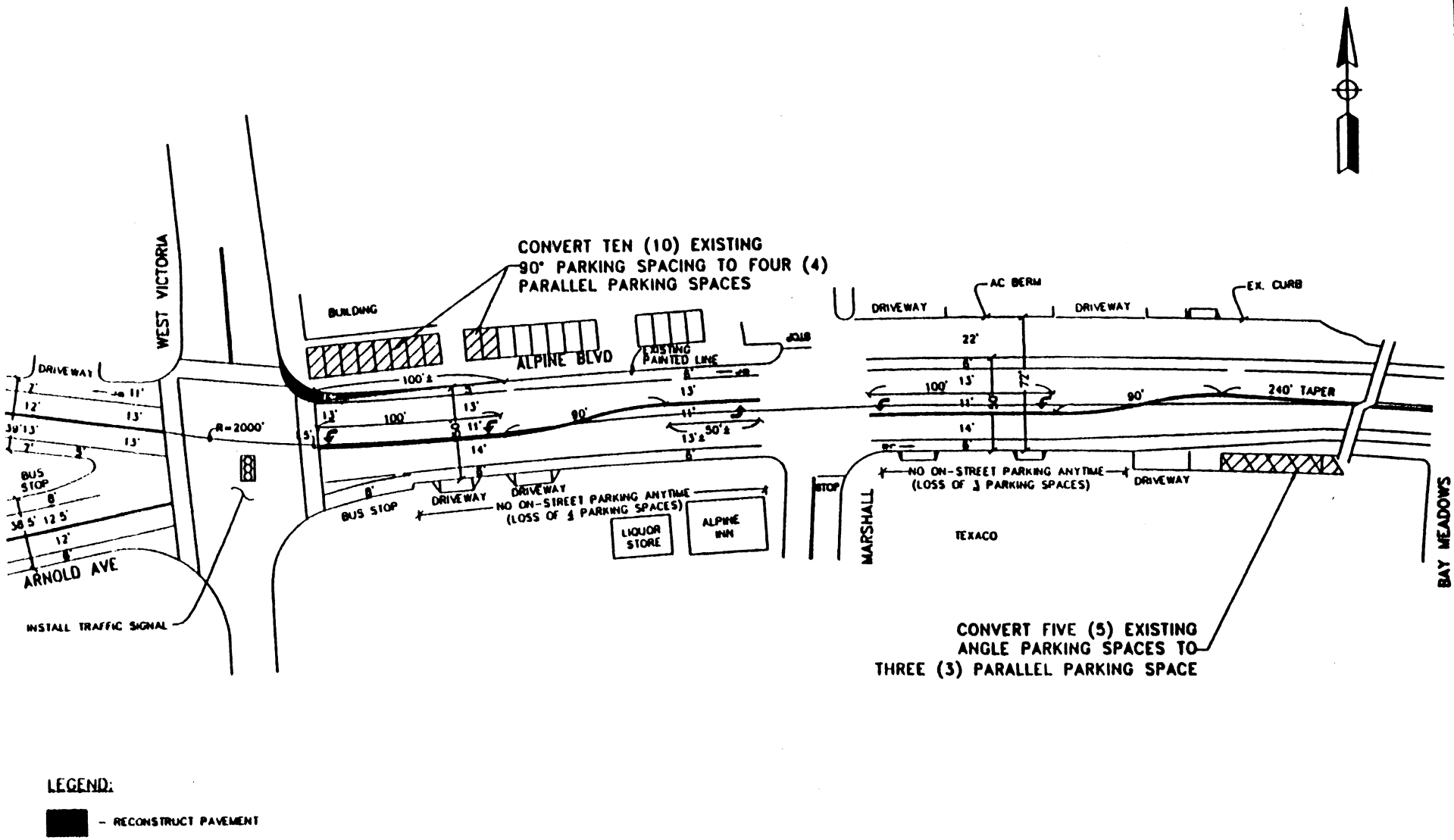
As mitigation of the project impacts, the proposed project will provide funds, design, improve and re-stripe Alpine Boulevard to three-lane Town Collector Road standards from West Victoria Drive to a point approximately 100 feet east of Marshall Road. Figure 10 shows the proposed improvement. This in combination with the signalization of the Alpine Boulevard/ West Victoria Drive intersection will improve the level of service at the Alpine Boulevard/West Victoria Drive intersection to LOS B and, due to additional turn lanes, will increase the capacity of Alpine Boulevard east of West Victoria Drive. Thereby, the traffic flow along the segment of Alpine Boulevard between West Victoria Drive and Bay Meadows will be improved to an acceptable level of service.

If Alpine Boulevard were constructed to its adopted Circulation Element classification of a four-lane Collector, the road, including the segment of Alpine Boulevard between Arnold Way/West Victoria Drive and Marshall Road, would operate at LOS B.

Willows Road

Willows Road east of Interstate 8 operates at LOS E under existing conditions. Project traffic increases the v/c ratio by 0.015 which is considered insignificant. Therefore, mitigation by the proposed project is not recommended.

Using the look-up table all other roadway segments continue to operate at an acceptable LOS D or better; therefore, no mitigation by the proposed project is recommended.



Darnell & ASSOCIATES, INC.

990509AC 10-15-01 SRN/RMG/RH/JLM

FIGURE 10
ALPINE BOULEVARD IMPROVEMENTS
WEST VICTORIA RD TO E/O MARSHALL

INTERSECTIONS

Tavern Road/I-8 Ramps and Tavern Road/Arnold Way

The proposed Albertsons Market adds a cumulatively significant amount of traffic to the currently failing intersections of Tavern Road/Interstate 8 westbound ramps, Tavern Road/Interstate 8 eastbound ramps, and Tavern Road/Arnold Way. Existing traffic volumes at these three intersections warrant signalization. (The traffic signal warrant analysis can be found in Appendix O.) As shown in Table 14, when signalized these intersections will operate at Level of Service D or better under all conditions. Caltrans currently has plans to widen the I-8 eastbound off ramp and provide signals at both the I-8 eastbound and westbound ramps at Tavern Road. As mitigation of cumulative project impacts, the proposed project will contribute a "fair share" to the future signalization of both the eastbound and westbound ramps.

Alpine Boulevard/West Victoria Drive

The proposed project has a significant and direct impact at the intersection of Alpine Boulevard with West Victoria Drive/Arnold Way, lowering an existing LOS C to LOS F during the PM peak hour. Existing traffic volumes at this intersection warrant signalization, see Appendix O for signal warrant analysis. When signalized, the intersection of Alpine Boulevard with West Victoria Drive/Arnold Way will operate at LOS B with the existing lane configuration. As mitigation of project impacts, the proposed project will design and construct a signal at this intersection.

Alpine Boulevard/East Victoria Drive

The intersection of Alpine Boulevard with East Victoria Drive/South Grade Road operates at LOS C or better under all conditions when stop-controlled on the northbound and southbound approaches. Near term cumulative traffic volumes are not high enough to warrant signalization, see Appendix O. The County, however, has indicated that this intersection is planned to be signalized in the future. Although it is not recommended that this intersection be signalized at this time, the proposed project will contribute a "fair share" to the future signalization of this intersection when traffic volumes warrant such action.

Other Intersections

All other intersections continue to operate at LOS D or better; therefore, no mitigation by the proposed project is required.

Table 13
Summary of Traffic Signal Warrant Analysis and Mitigation Selected

Marketing Survey Distribution		
Intersection	**Warrants Satisfied**	**Mitigation by Proposed Project**
Tavern Road @ I-8 WB Ramps	Existing Conditions Warrant Signalization	"Fair Share" Contribution to Future Signalization
Tavern Road @ I-8 EB Ramps	Existing Conditions Warrant Signalization	"Fair Share" Contribution to Future Signalization and to Future Widening of Off Ramp
Tavern Road @ Arnold Way	Existing Conditions Warrant Signalization	"Fair Share" Contribution to Future Signalization
Alpine Blvd. @ West Victoria Dr.	Existing Conditions Warrant Signalization	Install Traffic Signal
Alpine Blvd. @ East Victoria Dr.	Signalization is Not Warranted	"Fair Share" Contribution to Future Signalization When Volumes Warrant

Table 14
Mitigated Intersection Level of Service Summary

Intersection	Mitigation Measure	Existing Conditions				Existing + Project				Existing + Project + Other Approved/Pending Projects			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Tavern Road @ I-8 WB Ramps	Signalization	33.9	C	29.6	C	3.45	C	30.0	C	49.8	D	33.9	C
Tavern Road @ I-8 EB Ramps	Signalization	22.5	C	33.8	C	22.8	C	34.8	C	26.6	C	50.3	D
Tavern Road @ Arnold Way	Signalization	25.7	C	29.6	C	27.4	C	30.7	C	30.6	C	34.6	C
Alpine Blvd. @ West Victoria Dr.	Signalization	-	-	-	-	12.9	B	15.1	B	13.6	B	17.8	B
		See Appendix H for HCS worksheets				See Appendix I for HCS worksheets				See Appendix K for HCS worksheets			

SECTION VI

SUMMARY OF FINDINGS AND CONCLUSIONS

- The traffic study was based upon Alpine Boulevard being a two-lane Light Collector, although the Circulation Element contemplates Alpine Boulevard as a four-lane Collector.

- The applicant proposes to construct a neighborhood shopping center (Albertsons Market and shops), fast food restaurant with a drive thru, and a gas station with a food mart on approximately 10 acres in the County of San Diego Alpine Community.

- The project is estimated to generate a total of 11,620 average daily trips (ADTs) with 596 trips being generated during the morning peak hour and 1,090 trips (which consist of 643 new trips and 447 pass-by trips) being generated during the afternoon peak hour.

- Under existing conditions, with the exception of the segment of Tavern Road on the bridge over Interstate 8 and Willows Road east of I-8, all roadway segments operate at Level of Service D or better. These segments of Tavern Road and Willows Road currently operates at LOS E. The PM peak hour HCS analysis, however, found that the segment of Willows Road east of I-8 to operate at LOS D during the PM peak hour under all conditions.

- The project increases the existing v/c ratio on the failing segment (bridge) of Tavern Road by 0.007 and is less than significant as a project impact.

- The project increases the existing v/c ratio on Willows Road east of I-8 by 0.015 and is considered to be insignificant.

- Under existing conditions the intersections of Tavern Road/Interstate 8 Westbound Ramps, Tavern Road/Interstate 8 Eastbound Ramps, and Tavern Road/Arnold Way have critical movements that operate at Level of Service F, during one or both peak hours. All other intersections have critical movements that operate at Level of Service D or better.

- The addition of project traffic lowers the Level of Service on the segment of Alpine Boulevard between W. Victoria Drive and Marshall/Eltinge and between Marshall and Bay Meadows to LOS E using the Public Road Standards look-up table, based upon Alpine Boulevard as a Light Collector. If Alpine Boulevard were expanded to its existing General Plan classification, Alpine Boulevard east of West Victoria would perform at an acceptable level of service (LOS D or better) in all events. Further, a traffic signal at West Victoria Drive would allow traffic to flow more smoothly through that intersection and along the road segments east of West Victoria Drive.

- Impacts at the intersections of Tavern Road/I-8 Westbound Ramps, Tavern Road/I-8 Eastbound Ramps, and Tavern Road/Arnold Way, with the addition of project traffic are cumulatively significant according to the SANTEC/ITE Guidelines.

- The addition of project trips has direct impacts of significance at the intersection of Alpine Boulevard with West Victoria Drive/Arnold Way.

- All other intersections continue to operate at LOS D or better.

- The proposed project will dedicate and improve Alpine Boulevard and is obligated to reimburse others for costs incurred to improve other project roadways along the property frontage to their Circulation Element classifications.

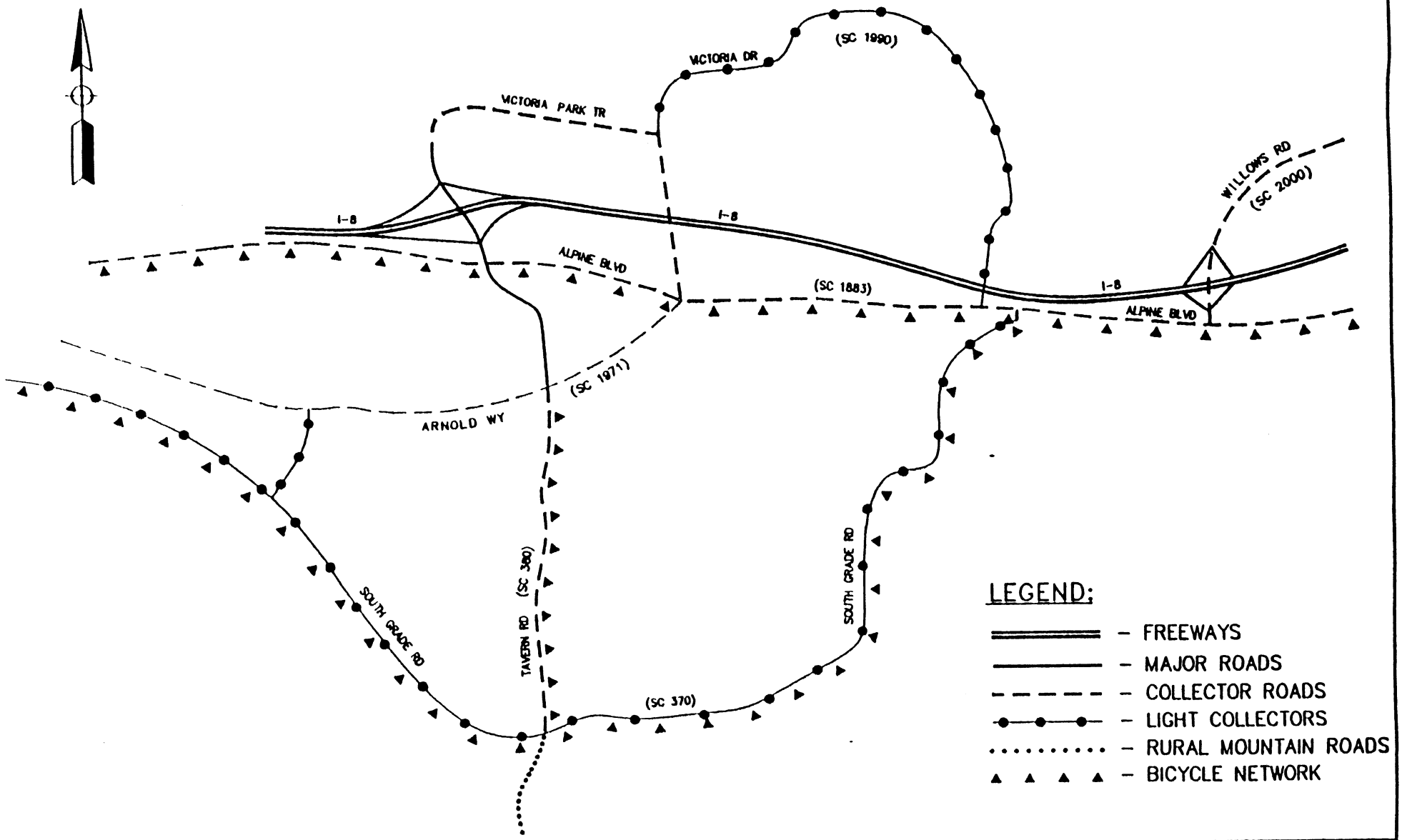
- After mitigation, all affected intersections would perform at level of service D or better.

- Access and internal circulation were reviewed and found to be satisfactory.

- The project trip generation rates used in this report assumed a separate trip for each patron of the neighborhood shopping center, fast food restaurant, and gas station. However, some customers will visit more than one portion of the project on the same shopping trip.

APPENDIX A

- County of San Diego Circulation Element
- Daily Traffic Counts
- Peak Hour Turn Counts
- Summary of County of San Diego Public Road Standards
- Marketing Survey Data



Darnell & ASSOCIATES, INC.

CIRCULATION ELEMENT

Location:Alpine Blvd. w/o Tavern Rd. Alpine Volumes for Thurs. 5/27/99 03570003

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	1		0			12:00-12:15	26		19		
12:15-12:30	0		0			12:15-12:30	26		18		
12:30-12:45	0		2			12:30-12:45	28		14		
12:45-1:00	3	4	2	4	8	12:45-1:00	31	111	13	64	175
1:00-1:15	2		4			1:00-1:15	26		14		
1:15-1:30	0		2			1:15-1:30	24		12		
1:30-1:45	1		1			1:30-1:45	22		13		
1:45-2:00	6	9	1	8	17	1:45-2:00	26	98	19	58	156
2:00-2:15	2		2			2:00-2:15	26		23		
2:15-2:30	1		0			2:15-2:30	29		15		
2:30-2:45	4		0			2:30-2:45	20		17		
2:45-3:00	0	7	0	2	9	2:45-3:00	22	97	18	73	170
3:00-3:15	0		0			3:00-3:15	41		18		
3:15-3:30	1		1			3:15-3:30	25		26		
3:30-3:45	1		0			3:30-3:45	32		23		
3:45-4:00	1	3	2	3	6	3:45-4:00	29	127	24	91	218
4:00-4:15	0		1			4:00-4:15	41		29		
4:15-4:30	0		1			4:15-4:30	54		36		
4:30-4:45	1		0			4:30-4:45	45		38		
4:45-5:00	2	3	1	3	6	4:45-5:00	39	179	33	136	315
5:00-5:15	1		2			5:00-5:15	58		25		
5:15-5:30	4		3			5:15-5:30	60		24		
5:30-5:45	1		9			5:30-5:45	57		25		
5:45-6:00	5	11	4	18	29	5:45-6:00	50	225	30	104	329
6:00-6:15	4		7			6:00-6:15	29		20		
6:15-6:30	4		8			6:15-6:30	33		15		
6:30-6:45	6		14			6:30-6:45	32		14		
6:45-7:00	12	26	15	44	70	6:45-7:00	29	123	18	67	190
7:00-7:15	30		29			7:00-7:15	22		21		
7:15-7:30	25		34			7:15-7:30	17		17		
7:30-7:45	22		26			7:30-7:45	21		15		
7:45-8:00	22	99	24	113	212	7:45-8:00	24	84	19	72	156
8:00-8:15	23		29			8:00-8:15	20		12		
8:15-8:30	25		31			8:15-8:30	17		10		
8:30-8:45	32		26			8:30-8:45	16		14		
8:45-9:00	37	117	22	108	225	8:45-9:00	7	60	11	47	107
9:00-9:15	20		13			9:00-9:15	13		9		
9:15-9:30	15		16			9:15-9:30	13		10		
9:30-9:45	17		15			9:30-9:45	12		10		
9:45-10:00	22	74	11	55	129	9:45-10:00	9	47	7	36	83
10:00-10:15	21		20			10:00-10:15	7		2		
10:15-10:30	17		14			10:15-10:30	6		3		
10:30-10:45	20		13			10:30-10:45	4		7		
10:45-11:00	20	78	16	63	141	10:45-11:00	7	24	2	14	38
11:00-11:15	20		17			11:00-11:15	4		2		
11:15-11:30	20		7			11:15-11:30	6		1		
11:30-11:45	22		10			11:30-11:45	3		3		
11:45-12:00	30	92	15	49	141	11:45-12:00	2	15	1	7	22
Total Volumes	523		470		993		1190		769		1959
Daily Totals							1713		1239		2952

Location:Alpine e/o Tavern			Alpine			Volumes for Tue. 4/13/99			01960003		
AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	4		2			12:00-12:15	25		33		
12:15-12:30	3		6			12:15-12:30	33		44		
12:30-12:45	4		2			12:30-12:45	40		40		
12:45-1:00	4	15	5	15	30	12:45-1:00	35	133	35	152	285
1:00-1:15	3		2			1:00-1:15	33		40		
1:15-1:30	3		3			1:15-1:30	40		55		
1:30-1:45	3		4			1:30-1:45	46		53		
1:45-2:00	5	14	2	11	25	1:45-2:00	58	177	54	202	379
2:00-2:15	3		3			2:00-2:15	77		59		
2:15-2:30	4		3			2:15-2:30	62		65		
2:30-2:45	2		1			2:30-2:45	75		57		
2:45-3:00	2	11	2	9	20	2:45-3:00	81	295	66	247	542
3:00-3:15	1		3			3:00-3:15	90		80		
3:15-3:30	4		0			3:15-3:30	128		71		
3:30-3:45	1		8			3:30-3:45	98		69		
3:45-4:00	2	8	1	12	20	3:45-4:00	123	439	73	293	732
4:00-4:15	0		4			4:00-4:15	80		60		
4:15-4:30	3		4			4:15-4:30	97		68		
4:30-4:45	3		6			4:30-4:45	88		88		
4:45-5:00	5	11	18	32	43	4:45-5:00	86	351	52	268	619
5:00-5:15	4		31			5:00-5:15	97		79		
5:15-5:30	4		28			5:15-5:30	109		64		
5:30-5:45	8		37			5:30-5:45	106		64		
5:45-6:00	11	27	42	138	165	5:45-6:00	118	430	54	261	691
6:00-6:15	15		53			6:00-6:15	97		47		
6:15-6:30	12		55			6:15-6:30	94		44		
6:30-6:45	21		77			6:30-6:45	83		48		
6:45-7:00	29	77	78	263	340	6:45-7:00	99	373	54	193	566
7:00-7:15	22		97			7:00-7:15	73		60		
7:15-7:30	24		98			7:15-7:30	79		52		
7:30-7:45	41		85			7:30-7:45	69		38		
7:45-8:00	60	147	65	345	492	7:45-8:00	64	285	35	185	470
8:00-8:15	52		61			8:00-8:15	54		32		
8:15-8:30	38		65			8:15-8:30	43		27		
8:30-8:45	49		76			8:30-8:45	44		33		
8:45-9:00	61	200	105	307	507	8:45-9:00	32	173	38	130	303
9:00-9:15	96		149			9:00-9:15	43		23		
9:15-9:30	70		74			9:15-9:30	37		30		
9:30-9:45	54		77			9:30-9:45	33		22		
9:45-10:00	61	281	73	373	654	9:45-10:00	31	144	10	85	229
10:00-10:15	66		68			10:00-10:15	33		4		
10:15-10:30	50		66			10:15-10:30	27		13		
10:30-10:45	63		79			10:30-10:45	18		10		
10:45-11:00	41	220	82	295	515	10:45-11:00	13	91	6	33	124
11:00-11:15	65		68			11:00-11:15	5		1		
11:15-11:30	60		66			11:15-11:30	7		9		
11:30-11:45	55		50			11:30-11:45	9		8		
11:45-12:00	40	220	40	224	444	11:45-12:00	9	30	4	22	52
Total Volumes	1231		2024		3255		2921		2071		4992
Daily Totals							4152		4095		8247

Location:Alpine w/o South Grade | Alpine | Volumes for Tue. 4/13/99 | 01960004

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	4		8			12:00-12:15	50		33		
12:15-12:30	4		7			12:15-12:30	45		50		
12:30-12:45	7		2			12:30-12:45	40		45		
12:45-1:00	4	19	7	24	43	12:45-1:00	35	170	40	168	338
1:00-1:15	2		2			1:00-1:15	50		35		
1:15-1:30	3		8			1:15-1:30	45		33		
1:30-1:45	2		9			1:30-1:45	47		38		
1:45-2:00	3	10	0	19	29	1:45-2:00	57	199	27	133	332
2:00-2:15	4		3			2:00-2:15	50		43		
2:15-2:30	1		4			2:15-2:30	51		52		
2:30-2:45	2		1			2:30-2:45	71		40		
2:45-3:00	2	9	2	10	19	2:45-3:00	53	225	38	173	398
3:00-3:15	1		3			3:00-3:15	56		76		
3:15-3:30	1		1			3:15-3:30	78		55		
3:30-3:45	2		2			3:30-3:45	94		59		
3:45-4:00	3	7	4	10	17	3:45-4:00	76	304	53	243	547
4:00-4:15	0		0			4:00-4:15	95		76		
4:15-4:30	2		5			4:15-4:30	81		90		
4:30-4:45	2		2			4:30-4:45	88		80		
4:45-5:00	3	7	14	21	28	4:45-5:00	89	353	66	312	665
5:00-5:15	5		19			5:00-5:15	95		72		
5:15-5:30	3		25			5:15-5:30	101		74		
5:30-5:45	6		20			5:30-5:45	105		63		
5:45-6:00	8	22	14	78	100	5:45-6:00	116	417	72	281	698
6:00-6:15	7		26			6:00-6:15	75		45		
6:15-6:30	17		43			6:15-6:30	86		50		
6:30-6:45	19		45			6:30-6:45	58		37		
6:45-7:00	39	82	59	173	255	6:45-7:00	58	277	38	170	447
7:00-7:15	23		54			7:00-7:15	59		36		
7:15-7:30	26		61			7:15-7:30	59		28		
7:30-7:45	32		56			7:30-7:45	40		24		
7:45-8:00	47	128	41	212	340	7:45-8:00	49	207	27	115	322
8:00-8:15	32		46			8:00-8:15	37		29		
8:15-8:30	32		42			8:15-8:30	34		26		
8:30-8:45	41		51			8:30-8:45	43		21		
8:45-9:00	42	147	62	201	348	8:45-9:00	30	144	20	96	240
9:00-9:15	50		73			9:00-9:15	41		17		
9:15-9:30	48		65			9:15-9:30	26		18		
9:30-9:45	37		57			9:30-9:45	14		19		
9:45-10:00	46	181	52	247	428	9:45-10:00	22	103	8	62	165
10:00-10:15	53		47			10:00-10:15	19		6		
10:15-10:30	32		36			10:15-10:30	22		12		
10:30-10:45	49		38			10:30-10:45	14		7		
10:45-11:00	28	162	65	186	348	10:45-11:00	16	71	7	32	103
11:00-11:15	41		51			11:00-11:15	9		11		
11:15-11:30	33		55			11:15-11:30	9		11		
11:30-11:45	35		56			11:30-11:45	8		5		
11:45-12:00	40	149	60	222	371	11:45-12:00	6	32	1	28	60
Total Volumes	923		1403		2326		2502		1813		4315
Daily Totals							3425		3216		6641

Location:Alpine Blvd. e/o South Grade Rd. Alpine — Volumes for Thurs. 5/27/99 — 03570002

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	1		7			12:00-12:15	38		38		
12:15-12:30	8		2			12:15-12:30	51		49		
12:30-12:45	3		11			12:30-12:45	44		34		
12:45-1:00	2	14	2	22	36	12:45-1:00	34	167	26	147	314
1:00-1:15	4		4			1:00-1:15	34		27		
1:15-1:30	2		5			1:15-1:30	40		41		
1:30-1:45	1		2			1:30-1:45	34		39		
1:45-2:00	1	8	7	18	26	1:45-2:00	35	143	27	134	277
2:00-2:15	6		7			2:00-2:15	38		30		
2:15-2:30	4		6			2:15-2:30	52		29		
2:30-2:45	1		5			2:30-2:45	32		31		
2:45-3:00	1	12	1	19	31	2:45-3:00	29	151	33	123	274
3:00-3:15	1		4			3:00-3:15	42		35		
3:15-3:30	0		6			3:15-3:30	45		40		
3:30-3:45	2		4			3:30-3:45	61		42		
3:45-4:00	0	3	1	15	18	3:45-4:00	47	195	29	146	341
4:00-4:15	3		1			4:00-4:15	85		59		
4:15-4:30	2		2			4:15-4:30	74		63		
4:30-4:45	4		6			4:30-4:45	74		66		
4:45-5:00	9	18	4	13	31	4:45-5:00	66	299	78	266	565
5:00-5:15	2		9			5:00-5:15	75		73		
5:15-5:30	5		9			5:15-5:30	75		76		
5:30-5:45	5		8			5:30-5:45	68		50		
5:45-6:00	13	25	5	31	56	5:45-6:00	69	287	44	243	530
6:00-6:15	12		10			6:00-6:15	49		42		
6:15-6:30	17		17			6:15-6:30	32		38		
6:30-6:45	17		18			6:30-6:45	35		32		
6:45-7:00	28	74	26	71	145	6:45-7:00	47	163	24	136	299
7:00-7:15	20		25			7:00-7:15	31		31		
7:15-7:30	19		24			7:15-7:30	32		22		
7:30-7:45	34		25			7:30-7:45	24		20		
7:45-8:00	37	110	43	117	227	7:45-8:00	36	123	15	88	211
8:00-8:15	33		35			8:00-8:15	27		17		
8:15-8:30	27		41			8:15-8:30	24		17		
8:30-8:45	35		37			8:30-8:45	29		25		
8:45-9:00	41	136	55	168	304	8:45-9:00	24	104	18	77	181
9:00-9:15	44		41			9:00-9:15	24		7		
9:15-9:30	52		39			9:15-9:30	17		22		
9:30-9:45	33		20			9:30-9:45	18		24		
9:45-10:00	35	164	41	141	305	9:45-10:00	14	73	16	69	142
10:00-10:15	44		46			10:00-10:15	14		18		
10:15-10:30	33		37			10:15-10:30	11		19		
10:30-10:45	31		22			10:30-10:45	5		11		
10:45-11:00	35	143	39	144	287	10:45-11:00	12	42	6	54	96
11:00-11:15	36		43			11:00-11:15	8		7		
11:15-11:30	44		37			11:15-11:30	12		7		
11:30-11:45	39		23			11:30-11:45	10		7		
11.45-12:00	32	151	34	137	288	11:45-12:00	6	36	7	28	64
Total Volumes	858		896		1754		1783		1511		3294
Daily Totals							2641		2407		5048

Location:Arnold Wy. w/o Tavern Rd. Alpine Volumes for Thurs. 5/27/99 03570004

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	1		3			12:00-12:15	31		41		
12:15-12:30	5		4			12:15-12:30	39		49		
12:30-12:45	2		2			12:30-12:45	23		37		
12:45-1:00	0	8	3	12	20	12:45-1:00	37	130	41	168	298
1:00-1:15	1		2			1:00-1:15	34		43		
1:15-1:30	1		1			1:15-1:30	36		34		
1:30-1:45	1		2			1:30-1:45	32		36		
1:45-2:00	2	5	5	10	15	1:45-2:00	33	135	35	148	283
2:00-2:15	1		1			2:00-2:15	31		37		
2:15-2:30	0		1			2:15-2:30	33		32		
2:30-2:45	3		1			2:30-2:45	30		32		
2:45-3:00	0	4	2	5	9	2:45-3:00	34	128	28	129	257
3:00-3:15	0		0			3:00-3:15	59		30		
3:15-3:30	1		0			3:15-3:30	50		51		
3:30-3:45	2		3			3:30-3:45	50		40		
3:45-4:00	6	9	1	4	13	3:45-4:00	51	210	49	170	380
4:00-4:15	1		1			4:00-4:15	63		55		
4:15-4:30	2		1			4:15-4:30	50		58		
4:30-4:45	3		0			4:30-4:45	48		46		
4:45-5:00	0	6	0	2	8	4:45-5:00	41	202	58	217	419
5:00-5:15	6		2			5:00-5:15	31		60		
5:15-5:30	8		2			5:15-5:30	28		62		
5:30-5:45	15		3			5:30-5:45	43		66		
5:45-6:00	7	36	8	15	51	5:45-6:00	39	141	53	241	382
6:00-6:15	16		3			6:00-6:15	31		40		
6:15-6:30	20		12			6:15-6:30	32		37		
6:30-6:45	22		20			6:30-6:45	44		39		
6:45-7:00	37	95	23	58	153	6:45-7:00	30	137	33	149	286
7:00-7:15	45		49			7:00-7:15	22		42		
7:15-7:30	66		73			7:15-7:30	35		31		
7:30-7:45	55		38			7:30-7:45	42		36		
7:45-8:00	46	212	21	181	393	7:45-8:00	48	147	31	140	287
8:00-8:15	41		38			8:00-8:15	18		19		
8:15-8:30	48		25			8:15-8:30	12		24		
8:30-8:45	48		48			8:30-8:45	11		34		
8:45-9:00	52	189	35	146	335	8:45-9:00	11	52	17	94	146
9:00-9:15	79		38			9:00-9:15	12		24		
9:15-9:30	43		38			9:15-9:30	11		27		
9:30-9:45	29		27			9:30-9:45	5		15		
9:45-10:00	32	183	22	125	308	9:45-10:00	8	36	21	87	123
10:00-10:15	30		24			10:00-10:15	6		11		
10:15-10:30	35		22			10:15-10:30	1		8		
10:30-10:45	16		37			10:30-10:45	4		6		
10:45-11:00	26	107	34	117	224	10:45-11:00	6	17	2	27	44
11:00-11:15	32		33			11:00-11:15	1		3		
11:15-11:30	31		24			11:15-11:30	3		2		
11:30-11:45	27		28			11:30-11:45	1		4		
11:45-12:00	27	117	29	114	231	11:45-12:00	3	8	7	16	24
Total Volumes	971		789		1760		1343		1586		2929
Daily Totals							2314		2375		4689

Location:Arnold Wy. e/o Tavern Rd. Alpine Volumes for Thurs. 5/27/99 03570005

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	4		4			12:00-12:15	62		46		
12:15-12:30	9		6			12:15-12:30	62		43		
12:30-12:45	2		1			12:30-12:45	66		62		
12:45-1:00	1	16	1	12	28	12:45-1:00	64	254	59	210	464
1:00-1:15	4		2			1:00-1:15	54		53		
1:15-1:30	2		1			1:15-1:30	63		49		
1:30-1:45	3		1			1:30-1:45	59		51		
1:45-2:00	4	13	3	7	20	1:45-2:00	66	242	57	210	452
2:00-2:15	2		5			2:00-2:15	44		47		
2:15-2:30	4		0			2:15-2:30	61		51		
2:30-2:45	2		0			2:30-2:45	53		61		
2:45-3:00	0	8	3	8	16	2:45-3:00	70	228	65	224	452
3:00-3:15	2		1			3:00-3:15	110		66		
3:15-3:30	2		3			3:15-3:30	90		84		
3:30-3:45	4		1			3:30-3:45	96		67		
3:45-4:00	0	8	1	6	14	3:45-4:00	89	385	68	285	670
4:00-4:15	2		1			4:00-4:15	83		71		
4:15-4:30	6		3			4:15-4:30	89		68		
4:30-4:45	1		8			4:30-4:45	87		71		
4:45-5:00	8	17	8	20	37	4:45-5:00	58	317	80	290	607
5:00-5:15	7		14			5:00-5:15	97		59		
5:15-5:30	11		17			5:15-5:30	72		57		
5:30-5:45	7		24			5:30-5:45	85		56		
5:45-6:00	10	35	28	83	118	5:45-6:00	73	327	70	242	569
6:00-6:15	9		27			6:00-6:15	76		57		
6:15-6:30	15		48			6:15-6:30	74		55		
6:30-6:45	28		39			6:30-6:45	58		56		
6:45-7:00	23	75	40	154	229	6:45-7:00	61	269	57	225	494
7:00-7:15	23		56			7:00-7:15	47		41		
7:15-7:30	38		75			7:15-7:30	72		38		
7:30-7:45	39		62			7:30-7:45	60		43		
7:45-8:00	42	142	74	267	409	7:45-8:00	61	240	40	162	402
8:00-8:15	34		49			8:00-8:15	47		24		
8:15-8:30	33		63			8:15-8:30	46		42		
8:30-8:45	42		71			8:30-8:45	44		38		
8:45-9:00	76	185	79	262	447	8:45-9:00	37	174	26	130	304
9:00-9:15	69		61			9:00-9:15	47		46		
9:15-9:30	44		49			9:15-9:30	31		30		
9:30-9:45	41		33			9:30-9:45	18		42		
9:45-10:00	34	188	47	190	378	9:45-10:00	20	116	12	130	246
10:00-10:15	50		48			10:00-10:15	14		10		
10:15-10:30	32		42			10:15-10:30	13		9		
10:30-10:45	31		47			10:30-10:45	15		9		
10:45-11:00	42	155	52	189	344	10:45-11:00	7	49	5	33	82
11:00-11:15	42		60			11:00-11:15	6		6		
11:15-11:30	45		51			11:15-11:30	6		4		
11:30-11:45	48		42			11:30-11:45	5		0		
11:45-12:00	58	193	50	203	396	11:45-12:00	6	23	9	19	42
Total Volumes	1035		1401		2436		2624		2160		4784
Daily Totals							3659		3561		7220

Location:South Grade w/o Tavern Alpine Volumes for Tue. 4/13/99 01960001

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	0		2			12:00-12:15	15		22		
12:15-12:30	2		2			12:15-12:30	11		25		
12:30-12:45	2		3			12:30-12:45	16		18		
12:45-1:00	0	4	2	9	13	12:45-1:00	18	60	24	89	149
1:00-1:15	1		1			1:00-1:15	15		25		
1:15-1:30	0		2			1:15-1:30	13		22		
1:30-1:45	0		1			1:30-1:45	15		25		
1:45-2:00	0	1	0	4	5	1:45-2:00	12	55	26	98	153
2:00-2:15	0		2			2:00-2:15	22		18		
2:15-2:30	0		0			2:15-2:30	25		19		
2:30-2:45	0		1			2:30-2:45	20		21		
2:45-3:00	1	1	1	4	5	2:45-3:00	26	93	21	79	172
3:00-3:15	0		1			3:00-3:15	30		46		
3:15-3:30	0		0			3:15-3:30	27		33		
3:30-3:45	1		0			3:30-3:45	33		22		
3:45-4:00	0	1	0	1	2	3:45-4:00	21	111	26	127	238
4:00-4:15	0		1			4:00-4:15	21		27		
4:15-4:30	2		0			4:15-4:30	29		34		
4:30-4:45	4		0			4:30-4:45	21		41		
4:45-5:00	5	11	0	1	12	4:45-5:00	19	90	44	146	236
5:00-5:15	7		1			5:00-5:15	22		36		
5:15-5:30	6		0			5:15-5:30	26		31		
5:30-5:45	13		0			5:30-5:45	14		25		
5:45-6:00	22	48	0	1	49	5:45-6:00	15	77	37	129	206
6:00-6:15	9		3			6:00-6:15	23		39		
6:15-6:30	18		1			6:15-6:30	15		30		
6:30-6:45	20		7			6:30-6:45	23		38		
6:45-7:00	17	64	20	31	95	6:45-7:00	28	89	25	132	221
7:00-7:15	32		11			7:00-7:15	28		18		
7:15-7:30	25		18			7:15-7:30	22		27		
7:30-7:45	23		10			7:30-7:45	12		24		
7:45-8:00	19	99	10	49	148	7:45-8:00	16	78	22	91	169
8:00-8:15	16		11			8:00-8:15	12		18		
8:15-8:30	23		16			8:15-8:30	10		15		
8:30-8:45	22		11			8:30-8:45	5		7		
8:45-9:00	38	99	23	61	160	8:45-9:00	7	34	11	51	85
9:00-9:15	33		22			9:00-9:15	6		16		
9:15-9:30	21		17			9:15-9:30	6		23		
9:30-9:45	13		16			9:30-9:45	7		11		
9:45-10:00	16	83	16	71	154	9:45-10:00	6	25	6	56	81
10:00-10:15	22		16			10:00-10:15	5		7		
10:15-10:30	15		14			10:15-10:30	1		10		
10:30-10:45	23		14			10:30-10:45	0		5		
10:45-11:00	15	75	19	63	138	10:45-11:00	2	8	2	24	32
11:00-11:15	15		15			11:00-11:15	1		10		
11:15-11:30	18		16			11:15-11:30	2		2		
11:30-11:45	16		18			11:30-11:45	0		1		
11:45-12:00	17	66	15	64	130	11:45-12:00	1	4	5	18	22
Total Volumes	552		359		911		724		1040		1764
Daily Totals							1276		1399		2675

Location:South Grade e/o Tavern Alpine Volumes for Tue. 4/13/99 01960002

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	0		3			12:00-12:15	11		15		
12:15-12:30	4		2			12:15-12:30	16		13		
12:30-12:45	7		2			12:30-12:45	15		15		
12:45-1:00	3	14	1	8	22	12:45-1:00	12	54	12	55	109
1:00-1:15	0		1			1:00-1:15	15		18		
1:15-1:30	3		2			1:15-1:30	11		20		
1:30-1:45	0		2			1:30-1:45	10		25		
1:45-2:00	0	3	0	5	8	1:45-2:00	9	45	23	86	131
2:00-2:15	1		3			2:00-2:15	19		20		
2:15-2:30	0		1			2:15-2:30	25		22		
2:30-2:45	0		1			2:30-2:45	21		34		
2:45-3:00	1	2	1	6	8	2:45-3:00	36	101	28	104	205
3:00-3:15	1		2			3:00-3:15	58		35		
3:15-3:30	0		0			3:15-3:30	41		25		
3:30-3:45	0		1			3:30-3:45	22		42		
3:45-4:00	0	1	1	4	5	3:45-4:00	32	153	24	126	279
4:00-4:15	0		3			4:00-4:15	39		32		
4:15-4:30	0		2			4:15-4:30	38		24		
4:30-4:45	3		2			4:30-4:45	36		25		
4:45-5:00	2	5	6	13	18	4:45-5:00	29	142	26	107	249
5:00-5:15	2		9			5:00-5:15	29		28		
5:15-5:30	1		5			5:15-5:30	49		14		
5:30-5:45	0		13			5:30-5:45	45		23		
5:45-6:00	1	4	10	37	41	5:45-6:00	34	157	22	87	244
6:00-6:15	2		25			6:00-6:15	33		24		
6:15-6:30	5		21			6:15-6:30	38		30		
6:30-6:45	11		38			6:30-6:45	45		22		
6:45-7:00	21	39	40	124	163	6:45-7:00	46	162	21	97	259
7:00-7:15	20		46			7:00-7:15	33		13		
7:15-7:30	15		36			7:15-7:30	33		20		
7:30-7:45	17		35			7:30-7:45	27		13		
7:45-8:00	20	72	25	142	214	7:45-8:00	28	121	17	63	184
8:00-8:15	16		27			8:00-8:15	15		12		
8:15-8:30	14		34			8:15-8:30	14		12		
8:30-8:45	22		38			8:30-8:45	19		10		
8:45-9:00	22	74	49	148	222	8:45-9:00	21	69	5	39	108
9:00-9:15	39		35			9:00-9:15	13		11		
9:15-9:30	11		27			9:15-9:30	21		11		
9:30-9:45	15		23			9:30-9:45	13		6		
9:45-10:00	17	82	29	114	196	9:45-10:00	18	65	2	30	95
10:00-10:15	23		20			10:00-10:15	11		3		
10:15-10:30	13		28			10:15-10:30	10		5		
10:30-10:45	13		16			10:30-10:45	9		10		
10:45-11:00	18	67	15	79	146	10:45-11:00	6	36	7	25	61
11:00-11:15	15		11			11:00-11:15	8		5		
11:15-11:30	16		14			11:15-11:30	7		1		
11:30-11:45	11		13			11:30-11:45	2		1		
11:45-12:00	17	59	10	48	107	11:45-12:00	3	20	2	9	29
Total Volumes	422		728		1150		1125		828		1953
Daily Totals							1547		1556		3103

Location:South Grade s/o Alpine Alpine Volumes for Tue. 4/13/99 01960005

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:15	0		2			12:00-12:15	10		15		
12:15-12:30	2		1			12:15-12:30	15		10		
12:30-12:45	4		0			12:30-12:45	13		30		
12:45-1:00	3	9	0	3	12	12:45-1:00	15	53	40	95	148
1:00-1:15	2		2			1:00-1:15	20		25		
1:15-1:30	0		1			1:15-1:30	24		40		
1:30-1:45	1		0			1:30-1:45	20		35		
1:45-2:00	0	3	3	6	9	1:45-2:00	22	86	30	130	216
2:00-2:15	0		4			2:00-2:15	20		25		
2:15-2:30	1		2			2:15-2:30	18		18		
2:30-2:45	0		6			2:30-2:45	20		10		
2:45-3:00	0	1	7	19	20	2:45-3:00	25	83	30	83	166
3:00-3:15	0		4			3:00-3:15	18		28		
3:15-3:30	1		6			3:15-3:30	20		22		
3:30-3:45	0		5			3:30-3:45	25		40		
3:45-4:00	0	1	3	18	19	3:45-4:00	30	93	45	135	228
4:00-4:15	2		5			4:00-4:15	35		40		
4:15-4:30	0		6			4:15-4:30	40		48		
4:30-4:45	2		1			4:30-4:45	35		60		
4:45-5:00	3	7	2	14	21	4:45-5:00	40	150	45	193	343
5:00-5:15	0		1			5:00-5:15	35		55		
5:15-5:30	0		10			5:15-5:30	40		45		
5:30-5:45	2		9			5:30-5:45	35		38		
5:45-6:00	4	6	8	28	34	5:45-6:00	28	138	30	168	306
6:00-6:15	3		10			6:00-6:15	18		55		
6:15-6:30	2		12			6:15-6:30	28		41		
6:30-6:45	10		11			6:30-6:45	30		35		
6:45-7:00	11	26	15	48	74	6:45-7:00	35	111	30	161	272
7:00-7:15	15		20			7:00-7:15	40		25		
7:15-7:30	20		25			7:15-7:30	22		15		
7:30-7:45	25		30			7:30-7:45	10		10		
7:45-8:00	30	90	24	99	189	7:45-8:00	15	87	20	70	157
8:00-8:15	22		25			8:00-8:15	25		22		
8:15-8:30	25		30			8:15-8:30	30		20		
8:30-8:45	30		22			8:30-8:45	22		15		
8:45-9:00	35	112	23	100	212	8:45-9:00	10	87	11	68	155
9:00-9:15	40		20			9:00-9:15	18		10		
9:15-9:30	22		18			9:15-9:30	20		7		
9:30-9:45	28		25			9:30-9:45	10		6		
9:45-10:00	30	120	22	85	205	9:45-10:00	11	59	7	30	89
10:00-10:15	22		25			10:00-10:15	18		5		
10:15-10:30	25		30			10:15-10:30	10		3		
10:30-10:45	30		24			10:30-10:45	12		4		
10:45-11:00	22	99	22	101	200	10:45-11:00	18	58	5	17	75
11:00-11:15	25		20			11:00-11:15	12		3		
11:15-11:30	30		15			11:15-11:30	13		6		
11:30-11:45	22		11			11:30-11:45	10		2		
11:45-12:00	15	92	10	56	148	11:45-12:00	8	43	4	15	58
Total Volumes	566		577		1143		1048		1165		2213
Daily Totals							1614		1742		3356

Location: Tavern Rd. on bridge over I-8 Alpine Volumes for Thurs. 5/27/99 03570008

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:15	13		5			12:00-12:15	128		45		
12:15-12:30	14		2			12:15-12:30	146		44		
12:30-12:45	12		10			12:30-12:45	144		38		
12:45-1:00	7	46	5	22	68	12:45-1:00	146	564	43	170	734
1:00-1:15	8		3			1:00-1:15	134		32		
1:15-1:30	8		3			1:15-1:30	129		43		
1:30-1:45	7		4			1:30-1:45	136		39		
1:45-2:00	8	31	1	11	42	1:45-2:00	143	542	49	163	705
2:00-2:15	6		5			2:00-2:15	131		29		
2:15-2:30	5		2			2:15-2:30	128		30		
2:30-2:45	3		0			2:30-2:45	146		33		
2:45-3:00	4	18	2	9	27	2:45-3:00	140	545	36	128	673
3:00-3:15	8		1			3:00-3:15	152		31		
3:15-3:30	6		2			3:15-3:30	170		36		
3:30-3:45	3		1			3:30-3:45	167		38		
3:45-4:00	14	31	5	9	40	3:45-4:00	145	634	41	146	780
4:00-4:15	14		6			4:00-4:15	188		32		
4:15-4:30	19		3			4:15-4:30	178		38		
4:30-4:45	33		0			4:30-4:45	184		48		
4:45-5:00	35	101	2	11	112	4:45-5:00	198	748	40	158	906
5:00-5:15	73		4			5:00-5:15	181		53		
5:15-5:30	91		9			5:15-5:30	177		58		
5:30-5:45	124		7			5:30-5:45	169		42		
5:45-6:00	117	405	11	31	436	5:45-6:00	190	717	40	193	910
6:00-6:15	142		21			6:00-6:15	172		45		
6:15-6:30	182		20			6:15-6:30	141		40		
6:30-6:45	195		18			6:30-6:45	124		41		
6:45-7:00	225	744	26	85	829	6:45-7:00	129	566	39	165	731
7:00-7:15	193		18			7:00-7:15	119		35		
7:15-7:30	219		22			7:15-7:30	108		26		
7:30-7:45	237		24			7:30-7:45	102		22		
7:45-8:00	149	798	21	85	883	7:45-8:00	92	421	23	106	527
8:00-8:15	177		32			8:00-8:15	95		26		
8:15-8:30	179		41			8:15-8:30	86		27		
8:30-8:45	191		41			8:30-8:45	69		16		
8:45-9:00	151	698	51	165	863	8:45-9:00	82	332	20	89	421
9:00-9:15	178		42			9:00-9:15	80		19		
9:15-9:30	171		44			9:15-9:30	76		19		
9:30-9:45	152		24			9:30-9:45	74		18		
9:45-10:00	127	628	18	128	756	9:45-10:00	67	297	10	66	363
10:00-10:15	131		30			10:00-10:15	40		3		
10:15-10:30	137		28			10:15-10:30	34		17		
10:30-10:45	124		25			10:30-10:45	30		7		
10:45-11:00	131	523	32	115	638	10:45-11:00	27	131	7	34	165
11:00-11:15	128		28			11:00-11:15	31		14		
11:15-11:30	135		29			11:15-11:30	20		2		
11:30-11:45	136		28			11:30-11:45	26		3		
11:45-12:00	133	532	38	123	655	11:45-12:00	14	91	6	25	116
Total Volumes	4555		794		5349		5588		1443		7031
Daily Totals							10143		2237		12380

Location: Tavern Rd. s/o South Grade Rd. Alpine — Volumes for Thurs. 5/27/99 — 03570009

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:15	0		6			12:00-12:15	25		26		
12:15-12:30	2		2			12:15-12:30	20		13		
12:30-12:45	3		1			12:30-12:45	21		21		
12:45-1:00	3	8	1	10	18	12:45-1:00	19	85	16	76	161
1:00-1:15	1		1			1:00-1:15	14		14		
1:15-1:30	9		0			1:15-1:30	16		19		
1:30-1:45	0		1			1:30-1:45	12		23		
1:45-2:00	2	12	4	6	18	1:45-2:00	16	58	28	84	142
2:00-2:15	1		2			2:00-2:15	29		28		
2:15-2:30	3		1			2:15-2:30	21		34		
2:30-2:45	1		0			2:30-2:45	19		20		
2:45-3:00	3	8	1	4	12	2:45-3:00	26	95	32	114	209
3:00-3:15	1		2			3:00-3:15	30		32		
3:15-3:30	0		0			3:15-3:30	37		37		
3:30-3:45	3		0			3:30-3:45	34		28		
3:45-4:00	1	5	2	4	9	3:45-4:00	24	125	46	143	268
4:00-4:15	1		1			4:00-4:15	33		28		
4:15-4:30	5		0			4:15-4:30	32		35		
4:30-4:45	8		3			4:30-4:45	31		21		
4:45-5:00	11	25	1	5	30	4:45-5:00	29	125	39	123	248
5:00-5:15	13		1			5:00-5:15	17		27		
5:15-5:30	9		1			5:15-5:30	27		56		
5:30-5:45	19		5			5:30-5:45	34		36		
5:45-6:00	21	62	10	17	79	5:45-6:00	27	105	39	158	263
6:00-6:15	21		13			6:00-6:15	24		43		
6:15-6:30	25		10			6:15-6:30	20		62		
6:30-6:45	38		16			6:30-6:45	28		30		
6:45-7:00	45	129	22	61	190	6:45-7:00	23	95	25	160	255
7:00-7:15	34		32			7:00-7:15	14		25		
7:15-7:30	39		24			7:15-7:30	22		28		
7:30-7:45	35		21			7:30-7:45	18		25		
7:45-8:00	28	136	26	103	239	7:45-8:00	20	74	20	98	172
8:00-8:15	33		23			8:00-8:15	12		12		
8:15-8:30	29		29			8:15-8:30	15		16		
8:30-8:45	33		17			8:30-8:45	10		18		
8:45-9:00	42	137	27	96	233	8:45-9:00	17	54	26	72	126
9:00-9:15	40		23			9:00-9:15	10		15		
9:15-9:30	28		26			9:15-9:30	4		22		
9:30-9:45	22		19			9:30-9:45	12		13		
9:45-10:00	15	105	19	87	192	9:45-10:00	7	33	19	69	102
10:00-10:15	26		19			10:00-10:15	7		14		
10:15-10:30	14		27			10:15-10:30	3		11		
10:30-10:45	21		10			10:30-10:45	8		7		
10:45-11:00	20	81	29	85	166	10:45-11:00	0	18	10	42	60
11:00-11:15	17		25			11:00-11:15	2		5		
11:15-11:30	16		23			11:15-11:30	7		4		
11:30-11:45	28		18			11:30-11:45	10		8		
11:45-12:00	23	84	15	81	165	11:45-12:00	4	23	5	22	45
Total Volumes	792		559		1351		890		1161		2051
Daily Totals							1682		1720		3402

Location: W. Victoria n/o Alpine Blvd. Alpine Volumes for Thurs. 5/27/99 03570007

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:15	0		1			12:00-12:15	9		12		
12:15-12:30	1		1			12:15-12:30	9		10		
12:30-12:45	0		2			12:30-12:45	8		8		
12:45-1:00	0	1	0	4	5	12:45-1:00	10	36	7	37	73
1:00-1:15	0		0			1:00-1:15	12		10		
1:15-1:30	2		0			1:15-1:30	10		18		
1:30-1:45	1		0			1:30-1:45	18		12		
1:45-2:00	1	4	1	1	5	1:45-2:00	12	52	15	55	107
2:00-2:15	1		1			2:00-2:15	15		9		
2:15-2:30	1		1			2:15-2:30	16		10		
2:30-2:45	1		2			2:30-2:45	17		12		
2:45-3:00	1	4	0	4	8	2:45-3:00	19	67	18	49	116
3:00-3:15	0		1			3:00-3:15	18		17		
3:15-3:30	0		1			3:15-3:30	22		17		
3:30-3:45	0		2			3:30-3:45	21		16		
3:45-4:00	0	0	2	6	6	3:45-4:00	20	81	15	65	146
4:00-4:15	2		0			4:00-4:15	22		14		
4:15-4:30	1		0			4:15-4:30	26		18		
4:30-4:45	3		2			4:30-4:45	28		25		
4:45-5:00	1	7	1	3	10	4:45-5:00	30	106	22	79	185
5:00-5:15	1		1			5:00-5:15	22		26		
5:15-5:30	2		3			5:15-5:30	30		22		
5:30-5:45	1		4			5:30-5:45	22		18		
5:45-6:00	0	4	2	10	14	5:45-6:00	28	102	25	91	193
6:00-6:15	2		3			6:00-6:15	20		20		
6:15-6:30	7		5			6:15-6:30	18		18		
6:30-6:45	10		6			6:30-6:45	15		10		
6:45-7:00	12	31	7	21	52	6:45-7:00	12	65	15	63	128
7:00-7:15	13		8			7:00-7:15	12		16		
7:15-7:30	12		10			7:15-7:30	10		17		
7:30-7:45	22		12			7:30-7:45	8		18		
7:45-8:00	29	76	16	46	122	7:45-8:00	7	37	19	70	107
8:00-8:15	30		15			8:00-8:15	2		5		
8:15-8:30	28		14			8:15-8:30	6		6		
8:30-8:45	20		10			8:30-8:45	6		7		
8:45-9:00	22	100	11	50	150	8:45-9:00	2	16	8	26	42
9:00-9:15	23		15			9:00-9:15	3		9		
9:15-9:30	21		12			9:15-9:30	3		10		
9:30-9:45	20		10			9:30-9:45	4		2		
9:45-10:00	26	90	8	45	135	9:45-10:00	5	15	8	29	44
10:00-10:15	22		9			10:00-10:15	8		7		
10:15-10:30	19		10			10:15-10:30	4		6		
10:30-10:45	16		11			10:30-10:45	2		5		
10:45-11:00	15	72	12	42	114	10:45-11:00	2	16	5	23	39
11:00-11:15	8		8			11:00-11:15	6		4		
11:15-11:30	9		9			11:15-11:30	5		3		
11:30-11:45	9		9			11:30-11:45	4		2		
11:45-12:00	7	33	9	35	68	11:45-12:00	2	17	2	11	28
Total Volumes	422		267		689		610		598		1208
Daily Totals							1032		865		1897

Location:E. Victoria n/o Alpine Blvd. Alpine Volumes for Thurs. 5/27/99 03570006

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:15	1		0			12:00-12:15	3		3		
12:15-12:30	0		1			12:15-12:30	9		4		
12:30-12:45	0		0			12:30-12:45	7		7		
12:45-1:00	0	1	0	1	2	12:45-1:00	5	24	8	22	46
1:00-1:15	0		0			1:00-1:15	7		11		
1:15-1:30	0		0			1:15-1:30	5		6		
1:30-1:45	0		0			1:30-1:45	8		7		
1:45-2:00	1	1	0	0	1	1:45-2:00	5	25	9	33	58
2:00-2:15	1		0			2:00-2:15	4		10		
2:15-2:30	0		0			2:15-2:30	5		5		
2:30-2:45	0		0			2:30-2:45	7		3		
2:45-3:00	1	2	0	0	2	2:45-3:00	9	25	6	24	49
3:00-3:15	0		0			3:00-3:15	6		7		
3:15-3:30	0		0			3:15-3:30	9		5		
3:30-3:45	0		0			3:30-3:45	12		5		
3:45-4:00	1	1	0	0	1	3:45-4:00	5	32	9	26	58
4:00-4:15	0		0			4:00-4:15	17		6		
4:15-4:30	0		0			4:15-4:30	10		9		
4:30-4:45	1		2			4:30-4:45	9		10		
4:45-5:00	2	3	2	4	7	4:45-5:00	13	49	16	41	90
5:00-5:15	0		2			5:00-5:15	10		6		
5:15-5:30	1		3			5:15-5:30	11		5		
5:30-5:45	1		1			5:30-5:45	7		13		
5:45-6:00	0	2	5	11	13	5:45-6:00	11	39	12	36	75
6:00-6:15	2		3			6:00-6:15	19		4		
6:15-6:30	5		9			6:15-6:30	6		15		
6:30-6:45	4		1			6:30-6:45	7		6		
6:45-7:00	3	14	16	29	43	6:45-7:00	10	42	3	28	70
7:00-7:15	1		15			7:00-7:15	16		7		
7:15-7:30	2		12			7:15-7:30	19		5		
7:30-7:45	8		9			7:30-7:45	9		5		
7:45-8:00	3	14	6	42	56	7:45-8:00	3	47	2	19	66
8:00-8:15	10		9			8:00-8:15	5		3		
8:15-8:30	5		4			8:15-8:30	4		7		
8:30-8:45	6		13			8:30-8:45	3		4		
8:45-9:00	7	28	12	38	66	8:45-9:00	8	20	3	17	37
9:00-9:15	9		5			9:00-9:15	4		3		
9:15-9:30	4		4			9:15-9:30	3		22		
9:30-9:45	2		5			9:30-9:45	4		4		
9:45-10:00	5	20	13	27	47	9:45-10:00	4	15	3	32	47
10:00-10:15	5		6			10:00-10:15	6		4		
10:15-10:30	6		11			10:15-10:30	1		2		
10:30-10:45	3		3			10:30-10:45	6		3		
10:45-11:00	4	18	6	26	44	10:45-11:00	6	19	1	10	29
11:00-11:15	6		6			11:00-11:15	1		0		
11:15-11:30	2		8			11:15-11:30	2		4		
11:30-11:45	3		9			11:30-11:45	0		0		
11:45-12:00	3	14	9	32	46	11:45-12:00	1	4	0	4	8
Total Volumes	118		210		328		341		292		633
Daily Totals							459		502		961

Location: Willows Rd. e/o I-8 WB Ramps Alpine — Volumes for Thurs. 5/27/99 — 03570001

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	30		90			12:00-12:15	82		63		
12:15-12:30	31		75			12:15-12:30	89		84		
12:30-12:45	29		77			12:30-12:45	93		61		
12:45-1:00	26	116	50	292	408	12:45-1:00	97	361	60	268	629
1:00-1:15	21		50			1:00-1:15	89		68		
1:15-1:30	25		55			1:15-1:30	83		84		
1:30-1:45	22		40			1:30-1:45	100		69		
1:45-2:00	18	86	50	195	281	1:45-2:00	94	366	69	290	656
2:00-2:15	20		61			2:00-2:15	63		95		
2:15-2:30	22		58			2:15-2:30	89		93		
2:30-2:45	11		54			2:30-2:45	99		79		
2:45-3:00	9	62	40	213	275	2:45-3:00	102	353	76	343	696
3:00-3:15	9		40			3:00-3:15	76		113		
3:15-3:30	7		36			3:15-3:30	115		105		
3:30-3:45	7		29			3:30-3:45	132		83		
3:45-4:00	9	32	24	129	161	3:45-4:00	105	428	78	379	807
4:00-4:15	6		36			4:00-4:15	95		118		
4:15-4:30	8		29			4:15-4:30	95		151		
4:30-4:45	9		28			4:30-4:45	98		125		
4:45-5:00	16	39	20	113	152	4:45-5:00	99	387	119	513	900
5:00-5:15	11		18			5:00-5:15	106		117		
5:15-5:30	13		31			5:15-5:30	112		125		
5:30-5:45	14		30			5:30-5:45	130		117		
5:45-6:00	25	63	30	109	172	5:45-6:00	116	464	82	441	905
6:00-6:15	31		34			6:00-6:15	119		86		
6:15-6:30	23		33			6:15-6:30	132		98		
6:30-6:45	44		35			6:30-6:45	127		81		
6:45-7:00	55	153	37	139	292	6:45-7:00	109	487	70	335	822
7:00-7:15	44		47			7:00-7:15	104		71		
7:15-7:30	42		48			7:15-7:30	104		57		
7:30-7:45	58		43			7:30-7:45	87		53		
7:45-8:00	117	261	25	163	424	7:45-8:00	82	377	55	236	613
8:00-8:15	72		36			8:00-8:15	84		45		
8:15-8:30	57		54			8:15-8:30	79		64		
8:30-8:45	60		44			8:30-8:45	80		66		
8:45-9:00	107	296	40	174	470	8:45-9:00	84	327	56	231	558
9:00-9:15	92		35			9:00-9:15	71		60		
9:15-9:30	96		40			9:15-9:30	65		87		
9:30-9:45	120		42			9:30-9:45	65		121		
9:45-10:00	99	407	38	155	562	9:45-10:00	65	266	90	358	624
10:00-10:15	98		53			10:00-10:15	52		111		
10:15-10:30	96		47			10:15-10:30	53		141		
10:30-10:45	107		38			10:30-10:45	61		91		
10:45-11:00	88	389	56	194	583	10:45-11:00	65	231	73	416	647
11:00-11:15	96		54			11:00-11:15	32		81		
11:15-11:30	101		63			11:15-11:30	46		92		
11:30-11:45	98		59			11:30-11:45	45		76		
11:45-12:00	87	382	62	238	620	11:45-12:00	44	167	64	313	480
Total Volumes	2286		2114		4400		4214		4123		8337
Daily Totals							6500		6237		12737

Location: Alpine w/o Bay Meadows Alpine Volumes for Wed. 9/22/99 06630003

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:1	6		10			12:00-12:15	58		60		
12:15-12:3	6		12			12:15-12:30	55		55		
12:30-12:4	2		4			12:30-12:45	67		40		
12:45-1:00	6	20	4	30	50	12:45-1:00	60	240	38	193	433
1:00-1:15	2		9			1:00-1:15	56		40		
1:15-1:30	5		8			1:15-1:30	40		35		
1:30-1:45	5		4			1:30-1:45	65		40		
1:45-2:00	3	15	3	24	39	1:45-2:00	60	221	65	180	401
2:00-2:15	5		2			2:00-2:15	58		60		
2:15-2:30	1		9			2:15-2:30	40		58		
2:30-2:45	7		3			2:30-2:45	65		55		
2:45-3:00	0	13	6	20	33	2:45-3:00	66	229	60	233	462
3:00-3:15	5		5			3:00-3:15	80		48		
3:15-3:30	2		3			3:15-3:30	78		65		
3:30-3:45	2		1			3:30-3:45	77		60		
3:45-4:00	0	9	3	12	21	3:45-4:00	68	303	56	229	532
4:00-4:15	4		2			4:00-4:15	94		60		
4:15-4:30	1		6			4:15-4:30	97		72		
4:30-4:45	3		8			4:30-4:45	104		76		
4:45-5:00	4	12	9	25	37	4:45-5:00	106	401	81	289	690
5:00-5:15	0		21			5:00-5:15	108		70		
5:15-5:30	11		29			5:15-5:30	116		64		
5:30-5:45	6		29			5:30-5:45	132		66		
5:45-6:00	9	26	31	110	136	5:45-6:00	127	483	63	263	746
6:00-6:15	13		41			6:00-6:15	96		71		
6:15-6:30	21		50			6:15-6:30	99		70		
6:30-6:45	32		70			6:30-6:45	98		68		
6:45-7:00	50	116	71	232	348	6:45-7:00	90	383	54	263	646
7:00-7:15	32		84			7:00-7:15	71		53		
7:15-7:30	38		108			7:15-7:30	58		41		
7:30-7:45	52		61			7:30-7:45	54		42		
7:45-8:00	81	203	72	325	528	7:45-8:00	56	239	25	161	400
8:00-8:15	76		65			8:00-8:15	44		34		
8:15-8:30	67		56			8:15-8:30	49		29		
8:30-8:45	61		55			8:30-8:45	52		35		
8:45-9:00	54	258	47	223	481	8:45-9:00	45	190	26	124	314
9:00-9:15	55		43			9:00-9:15	44		32		
9:15-9:30	38		42			9:15-9:30	49		31		
9:30-9:45	36		38			9:30-9:45	32		18		
9:45-10:00	37	166	40	163	329	9:45-10:00	30	155	20	101	256
10:00-10:1	40		33			10:00-10:15	29		16		
10:15-10:3	33		35			10:15-10:30	24		14		
10:30-10:4	35		40			10:30-10:45	15		8		
10:45-11:0	40	148	38	146	294	10:45-11:00	16	84	12	50	134
11:00-11:1	50		40			11:00-11:15	12		8		
11:15-11:3	33		28			11:15-11:30	17		8		
11:30-11:4	35		30			11:30-11:45	15		8		
11:45-12:0	40	158	35	133	291	11:45-12:00	6	50	6	30	80
Total Vol	1144		1443		2587		2978		2116		5094
Daily Totals							4122		3559		7681

Location: Alpine w/o Marshall			Alpine			Volumes for Wed. 9/22/99			06630002		
AM Period	EB		W			PM Period	EB		WB		
12:00-12:1	8		11			12:00-12:15	77		88		
12:15-12:3	6		11			12:15-12:30	67		97		
12:30-12:4	10		3			12:30-12:45	60		78		
12:45-1:00	3	27	2	27	54	12:45-1:00	56	260	80	343	603
1:00-1:15	7		9			1:00-1:15	78		67		
1:15-1:30	8		8			1:15-1:30	68		77		
1:30-1:45	4		4			1:30-1:45	66		65		
1:45-2:00	2	21	4	25	46	1:45-2:00	80	292	60	269	561
2:00-2:15	7		6			2:00-2:15	78		55		
2:15-2:30	3		6			2:15-2:30	108		60		
2:30-2:45	6		6			2:30-2:45	105		77		
2:45-3:00	5	21	4	22	43	2:45-3:00	111	402	68	260	662
3:00-3:15	3		4			3:00-3:15	120		80		
3:15-3:30	2		3			3:15-3:30	105		78		
3:30-3:45	7		2			3:30-3:45	122		68		
3:45-4:00	0	12	3	12	24	3:45-4:00	130	477	66	292	769
4:00-4:15	3		4			4:00-4:15	128		83		
4:15-4:30	5		14			4:15-4:30	133		86		
4:30-4:45	7		11			4:30-4:45	139		81		
4:45-5:00	6	21	15	44	65	4:45-5:00	126	526	89	339	865
5:00-5:15	8		29			5:00-5:15	140		96		
5:15-5:30	13		27			5:15-5:30	147		95		
5:30-5:45	8		40			5:30-5:45	173		93		
5:45-6:00	17	46	50	146	192	5:45-6:00	163	623	86	370	993
6:00-6:15	25		55			6:00-6:15	132		81		
6:15-6:30	29		80			6:15-6:30	146		78		
6:30-6:45	48		84			6:30-6:45	114		82		
6:45-7:00	62	164	93	312	476	6:45-7:00	115	507	76	317	824
7:00-7:15	61		129			7:00-7:15	109		75		
7:15-7:30	63		114			7:15-7:30	75		54		
7:30-7:45	73		78			7:30-7:45	83		43		
7:45-8:00	102	299	77	398	697	7:45-8:00	63	330	39	211	541
8:00-8:15	69		79			8:00-8:15	80		45		
8:15-8:30	63		68			8:15-8:30	70		39		
8:30-8:45	58		67			8:30-8:45	71		52		
8:45-9:00	59	249	64	278	527	8:45-9:00	68	289	36	172	461
9:00-9:15	60		68			9:00-9:15	51		45		
9:15-9:30	45		60			9:15-9:30	65		37		
9:30-9:45	56		65			9:30-9:45	43		32		
9:45-10:00	60	221	70	263	484	9:45-10:00	32	191	29	143	334
10:00-10:1	65		55			10:00-10:15	44		13		
10:15-10:3	40		50			10:15-10:30	22		19		
10:30-10:4	35		66			10:30-10:45	22		8		
10:45-11:0	40	180	65	236	416	10:45-11:00	19	107	13	53	160
11:00-11:1	55		70			11:00-11:15	17		15		
11:15-11:3	35		55			11:15-11:30	29		15		
11:30-11:4	40		65			11:30-11:45	15		10		
11:45-12:0	55	185	63	253	438	11:45-12:00	9	70	12	52	122
Total Vol	1446		2016		3462		4074		2821		6895
Daily Totals							5520		4837		10357

Location:Highlands View e/o South Grade Alpine Volumes for Wed. 1/12/00 00350001

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	0		0			12:00-12:15	11		2		
12:15-12:30	0		0			12:15-12:30	8		2		
12:30-12:45	0		0			12:30-12:45	6		3		
12:45-1:00	0	0	0	0	0	12:45-1:00	9	34	5	12	46
1:00-1:15	0		0			1:00-1:15	12		6		
1:15-1:30	0		0			1:15-1:30	13		9		
1:30-1:45	0		0			1:30-1:45	8		9		
1:45-2:00	0	0	0	0	0	1:45-2:00	6	39	3	27	66
2:00-2:15	0		0			2:00-2:15	12		7		
2:15-2:30	0		0			2:15-2:30	12		11		
2:30-2:45	0		0			2:30-2:45	3		15		
2:45-3:00	0	0	0	0	0	2:45-3:00	4	31	8	41	72
3:00-3:15	0		0			3:00-3:15	9		11		
3:15-3:30	0		0			3:15-3:30	15		6		
3:30-3:45	1		0			3:30-3:45	14		11		
3:45-4:00	0	1	0	0	1	3:45-4:00	9	47	13	41	88
4:00-4:15	0		0			4:00-4:15	14		13		
4:15-4:30	0		1			4:15-4:30	12		15		
4:30-4:45	1		0			4:30-4:45	15		9		
4:45-5:00	0	1	5	6	7	4:45-5:00	11	52	10	47	99
5:00-5:15	0		3			5:00-5:15	18		4		
5:15-5:30	0		5			5:15-5:30	10		2		
5:30-5:45	1		7			5:30-5:45	9		12		
5:45-6:00	3	4	5	20	24	5:45-6:00	13	50	4	22	72
6:00-6:15	1		14			6:00-6:15	14		8		
6:15-6:30	2		8			6:15-6:30	9		9		
6:30-6:45	5		13			6:30-6:45	8		5		
6:45-7:00	6	14	26	61	75	6:45-7:00	7	38	4	26	64
7:00-7:15	5		16			7:00-7:15	8		3		
7:15-7:30	9		17			7:15-7:30	5		3		
7:30-7:45	3		20			7:30-7:45	7		1		
7:45-8:00	3	20	11	64	84	7:45-8:00	7	27	5	12	39
8:00-8:15	7		9			8:00-8:15	6		10		
8:15-8:30	3		12			8:15-8:30	0		4		
8:30-8:45	2		12			8:30-8:45	0		4		
8:45-9:00	4	16	18	51	67	8:45-9:00	6	12	4	22	34
9:00-9:15	5		14			9:00-9:15	4		0		
9:15-9:30	8		7			9:15-9:30	3		3		
9:30-9:45	5		7			9:30-9:45	1		0		
9:45-10:00	6	24	5	33	57	9:45-10:00	4	12	1	4	16
10:00-10:15	2		6			10:00-10:15	5		1		
10:15-10:30	7		4			10:15-10:30	1		0		
10:30-10:45	8		8			10:30-10:45	0		1		
10:45-11:00	9	26	3	21	47	10:45-11:00	1	7	0	2	9
11:00-11:15	11		4			11:00-11:15	0		0		
11:15-11:30	12		4			11:15-11:30	2		0		
11:30-11:45	8		7			11:30-11:45	2		0		
11:45-12:00	6	37	2	17	54	11:45-12:00	0	4	1	1	5
Total Vol	143		273		416		353		257		610
Daily Totals							496		530		1026

Location:Alpine w/o South Grade Alpine Volumes for Wed. 1/12/00 00350002

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:15	2		5			12:00-12:15	43		35		
12:15-12:30	5		7			12:15-12:30	55		38		
12:30-12:45	4		3			12:30-12:45	51		41		
12:45-1:00	5	16	4	19	35	12:45-1:00	48	197	36	150	347
1:00-1:15	2		2			1:00-1:15	61		43		
1:15-1:30	6		3			1:15-1:30	62		56		
1:30-1:45	5		2			1:30-1:45	58		59		
1:45-2:00	5	18	4	11	29	1:45-2:00	67	248	44	202	450
2:00-2:15	1		0			2:00-2:15	66		60		
2:15-2:30	0		3			2:15-2:30	73		57		
2:30-2:45	2		3			2:30-2:45	62		57		
2:45-3:00	1	4	3	9	13	2:45-3:00	66	267	57	231	498
3:00-3:15	0		2			3:00-3:15	71		66		
3:15-3:30	0		5			3:15-3:30	97		60		
3:30-3:45	4		3			3:30-3:45	111		64		
3:45-4:00	2	6	3	13	19	3:45-4:00	69	348	67	257	605
4:00-4:15	1		4			4:00-4:15	92		83		
4:15-4:30	3		5			4:15-4:30	65		73		
4:30-4:45	1		6			4:30-4:45	103		62		
4:45-5:00	3	8	9	24	32	4:45-5:00	90	350	73	291	641
5:00-5:15	2		13			5:00-5:15	97		61		
5:15-5:30	3		14			5:15-5:30	94		71		
5:30-5:45	5		19			5:30-5:45	83		49		
5:45-6:00	10	20	22	68	88	5:45-6:00	96	370	51	232	602
6:00-6:15	5		38			6:00-6:15	73		51		
6:15-6:30	12		38			6:15-6:30	65		53		
6:30-6:45	29		49			6:30-6:45	68		36		
6:45-7:00	30	76	51	176	252	6:45-7:00	59	265	34	174	439
7:00-7:15	25		57			7:00-7:15	50		28		
7:15-7:30	26		71			7:15-7:30	47		29		
7:30-7:45	41		65			7:30-7:45	45		21		
7:45-8:00	38	130	67	260	390	7:45-8:00	45	187	24	102	289
8:00-8:15	40		46			8:00-8:15	39		15		
8:15-8:30	28		57			8:15-8:30	29		24		
8:30-8:45	40		62			8:30-8:45	28		28		
8:45-9:00	43	151	74	239	390	8:45-9:00	32	128	16	83	211
9:00-9:15	66		92			9:00-9:15	27		15		
9:15-9:30	53		88			9:15-9:30	25		19		
9:30-9:45	41		76			9:30-9:45	30		25		
9:45-10:00	26	186	75	331	517	9:45-10:00	24	106	11	70	176
10:00-10:15	33		53			10:00-10:15	22		17		
10:15-10:30	21		61			10:15-10:30	15		12		
10:30-10:45	27		33			10:30-10:45	10		11		
10:45-11:00	42	123	48	195	318	10:45-11:00	8	55	10	50	105
11:00-11:15	39		59			11:00-11:15	8		4		
11:15-11:30	45		25			11:15-11:30	7		7		
11:30-11:45	44		43			11:30-11:45	10		7		
11:45-12:00	35	163	33	160	323	11:45-12:00	9	34	6	24	58
Total Vol	901		1505		2406		2555		1866		4421
Daily Totals							3456		3371		6827

Location:South Grade @ Alpine Alpine Volumes for Wed. 1/12/00 00350003

AM Period	NB		SB		WB			PM Period	NB		SB		WB		
12:00-12:15	0		0		4			12:00-12:15	24		5		71		
12:15-12:30	3		0		6			12:15-12:30	16		7		46		
12:30-12:45	2		1		3			12:30-12:45	18		11		58		
12:45-1:00	0	5	0	1	1	14	20	12:45-1:00	27	85	6	29	69	244	358
1:00-1:15	1		0		0			1:00-1:15	24		8		77		
1:15-1:30	2		0		2			1:15-1:30	29		4		64		
1:30-1:45	0		1		4			1:30-1:45	33		6		70		
1:45-2:00	0	3	0	1	1	7	11	1:45-2:00	31	117	14	32	84	295	444
2:00-2:15	2		0		1			2:00-2:15	37		8		72		
2:15-2:30	1		0		1			2:15-2:30	26		14		104		
2:30-2:45	0		0		3			2:30-2:45	27		11		102		
2:45-3:00	2	5	0	0	1	6	11	2:45-3:00	29	119	18	51	90	368	538
3:00-3:15	0		0		2			3:00-3:15	37		7		116		
3:15-3:30	2		1		5			3:15-3:30	30		12		101		
3:30-3:45	2		0		4			3:30-3:45	34		12		101		
3:45-4:00	2	6	1	2	3	14	22	3:45-4:00	26	127	12	43	87	405	575
4:00-4:15	2		1		6			4:00-4:15	98		11		75		
4:15-4:30	2		0		1			4:15-4:30	32		8		45		
4:30-4:45	3		2		5			4:30-4:45	24		6		34		
4:45-5:00	5	12	1	4	5	17	33	4:45-5:00	34	188	9	34	40	194	416
5:00-5:15	9		1		16			5:00-5:15	25		9		31		
5:15-5:30	9		0		14			5:15-5:30	22		12		32		
5:30-5:45	13		4		18			5:30-5:45	23		3		36		
5:45-6:00	15	46	3	8	27	75	129	5:45-6:00	21	91	5	29	19	118	238
6:00-6:15	23		7		54			6:00-6:15	19		3		28		
6:15-6:30	19		6		67			6:15-6:30	22		5		13		
6:30-6:45	43		2		55			6:30-6:45	13		11		16		
6:45-7:00	35	120	11	26	41	217	363	6:45-7:00	18	72	3	22	9	66	160
7:00-7:15	26		10		61			7:00-7:15	10		7		15		
7:15-7:30	25		13		58			7:15-7:30	8		7		5		
7:30-7:45	40		11		49			7:30-7:45	11		5		8		
7:45-8:00	27	118	4	38	39	207	363	7:45-8:00	7	36	6	25	7	35	96
8:00-8:15	21		7		51			8:00-8:15	9		3		7		
8:15-8:30	20		9		39			8:15-8:30	14		1		4		
8:30-8:45	34		11		53			8:30-8:45	11		9		6		
8:45-9:00	45	120	12	39	59	202	361	8:45-9:00	13	47	1	14	4	21	82
9:00-9:15	28		5		8			9:00-9:15	9		5		6		
9:15-9:30	60		7		76			9:15-9:30	7		4		7		
9:30-9:45	27		6		64			9:30-9:45	4		5		12		
9:45-10:00	14	129	4	22	51	199	350	9:45-10:00	4	24	8	22	16	41	87
10:00-10:15	19		8		43			10:00-10:15	3		1		33		
10:15-10:30	31		3		46			10:15-10:30	0		1		40		
10:30-10:45	25		5		41			10:30-10:45	1		2		66		
10:45-11:00	32	107	7	23	38	168	298	10:45-11:00	3	7	0	4	84	223	234
11:00-11:15	18		2		61			11:00-11:15	0		0		61		
11:15-11:30	24		6		29			11:15-11:30	3		0		93		
11:30-11:45	28		6		48			11:30-11:45	2		1		55		
11:45-12:00	33	103	4	18	39	177	298	11:45-12:00	2	7	0	1	49	258	266
Total Vol	774		182		1303		2259		920		306		2268		3494
Daily Totals									1694		488		3571		5753

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ALPINE DATE: 5/26/99 CITY: ALPINE

E-W STREET: WILLOWS DAY: WEDNESDAY

PROJECT# 0356004A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				0	1	0	0	1			1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM				1		18	20	1			5	6	51
15 AM				1		19	15	1			5	3	44
30 AM				2		20	25	5			2	9	63
45 AM				0		36	40	0			8	5	89
8:00 AM				3		25	23	2			5	5	63
15 AM				3		35	24	4			1	6	73
30 AM				4		27	27	1			8	3	70
45 AM				3		37	32	3			6	6	87
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 17	ST 0	SR 217	EL 206	ET 17	ER 0	WL 0	WT 40	WR 43	TOTAL 540

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	0	0	0	10	0	123	114	7	0	0	22	19	295

ADDITIONS:1-WAY STOP S/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ALPINE DATE: 5/26/99 CITY: ALPINE

E-W STREET: WILLOWS DAY: WEDNESDAY PROJECT# 0356004P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				0	1	0	0	1			1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM				6		32	35	5			11	0	89
15 PM				7		35	33	7			10	6	98
30 PM				7		45	41	11			5	1	110
45 PM				7		31	49	11			4	2	104
5:00 PM				4		51	26	10			8	6	105
15 PM				5		36	45	9			4	1	100
30 PM				7		37	36	10			6	4	100
45 PM				9		39	45	9			7	1	110
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 52	ST 0	SR 306	EL 310	ET 72	ER 0	WL 0	WT 55	WR 21	TOTAL 816

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	0	0	0	23	0	163	161	41	0	0	21	10	419

ADDITIONS: 1-WAY STOP S/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WILLOWS DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 EB RAMPS DAY: WEDNESDAY PROJECT# 0356006A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1		1	0	1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM		16	6	0	16		19	0	5				62
15 AM		14	3	1	20		36	0	2				76
30 AM		36	2	1	21		46	0	2				108
45 AM		36	9	1	34		79	0	5				164
8:00 AM		19	9	0	27		57	0	7				119
15 AM		18	10	3	29		51	0	6				117
30 AM		22	8	0	25		53	1	6				115
45 AM		30	8	1	21		69	0	6				135
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	191	55	7	193	0	410	1	39	0	0	0	896

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	0	95	36	4	115	0	240	1	24	0	0	0	515

ADDITIONS: 1-WAY STOP E/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WILLOWS DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 EB RAMPS DAY: WEDNESDAY PROJECT# 0356006P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1		1	0	1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM		17	20	0	28		60	0	8				133
15 PM		17	12	2	37		77	0	14				159
30 PM		21	28	2	39		71	0	9				170
45 PM		31	19	1	33		90	1	8				183
5:00 PM		20	18	2	38		107	0	10				195
15 PM		38	13	1	36		83	0	7				178
30 PM		20	17	1	29		86	0	16				169
45 PM		24	15	1	26		79	0	20				165
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	0	188	142	10	266	0	653	1	92	0	0	0	1352

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	0	110	78	6	146	0	351	1	34	0	0	0	726

ADDITIONS: 1-WAY STOP E/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WILLOWS DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 WB RAMPS DAY: WEDNESDAY PROJECT# 0356007A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1			1	0				0	1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	10	25			11	32				4	0	0	82
15 AM	8	42			14	29				6	0	1	100
30 AM	16	66			8	39				20	0	1	150
45 AM	7	72			17	30				18	0	1	145
8:00 AM	6	70			7	11				14	0	0	108
15 AM	8	61			21	22				11	0	5	128
30 AM	3	108			15	24				9	0	2	161
45 AM	8	91			18	26				10	0	1	154
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	66	535	0	0	111	213	0	0	0	92	0	11	1028
PEAK VOLUMES =	25	330	0	0	61	83	0	0	0	44	0	8	551

AM Peak Hr Begins at 800 AM

ADDITIONS: 1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WILLOWS DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 WB RAMPS DAY: WEDNESDAY PROJECT# 0356007P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1			1	0				0	1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	5	75			19	89				8	0	2	198
15 PM	2	92			33	111				8	0	6	252
30 PM	9	91			25	98				16	2	3	244
45 PM	7	115			22	110				11	0	7	272
5:00 PM	3	83			24	108				10	1	4	233
15 PM	9	112			27	99				12	0	1	260
30 PM	3	104			17	67				15	0	4	210
45 PM	2	129			21	81				8	0	3	244
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	40	801	0	0	188	763	0	0	0	88	3	30	1913

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	28	401	0	0	98	415	0	0	0	49	3	15	1009

ADDITIONS: 1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 WB RAMPS DAY: WEDNESDAY PROJECT# 0356002A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1			1	0				0.5	0	0.5	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	110	23			19	51				9	0	9	221
15 AM	152	31			19	48				6	0	12	268
30 AM	96	36			21	85				9	0	11	258
45 AM	233	19			30	40				6	0	6	334
8:00 AM	202	29			28	41				9	0	9	318
15 AM	196	26			19	39				8	0	8	296
30 AM	151	39			25	52				11	1	5	284
45 AM	110	28			19	31				7	1	3	199
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	NL 1250	NT 231	NR 0	SL 0	ST 180	SR 387	EL 0	ET 0	ER 0	WL 65	WT 2	WR 63	TOTAL 2178

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	782	113	0	0	102	172	0	0	0	34	1	28	1232

ADDITIONS: 1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 WB RAMPS DAY: WEDNESDAY

PROJECT# 0356002P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1			1	0				0.5	0	0.5	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	116	69			24	31				12	1	19	272
15 PM	115	76			19	15				11	0	14	250
30 PM	132	77			43	40				17	0	20	329
45 PM	95	65			29	13				12	1	8	223
5:00 PM	110	75			34	25				17	0	9	270
15 PM	99	99			26	30				14	0	6	274
30 PM	93	85			31	22				13	0	10	254
45 PM	72	79			30	19				6	0	6	212
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	832	625	0	0	236	195	0	0	0	102	2	92	2084
PEAK VOLUMES =	436	316	0	0	132	108	0	0	0	60	1	43	1096

PM Peak Hr Begins at 430 PM

ADDITIONS: 1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 EB RAMPS DAY: WEDNESDAY

PROJECT# 0356001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1		1	0	1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM		138	10	6	20		17	0	54				245
15 AM		118	13	16	27		21	0	42				237
30 AM		211	15	7	20		11	0	64				328
45 AM		215	18	2	32		23	2	81				373
8:00 AM		190	14	7	17		21	0	65				314
15 AM		160	26	5	22		17	1	53				284
30 AM		175	11	3	29		11	0	101				330
45 AM		149	8	2	32		1	0	72				264
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	1356	115	48	199	0	122	3	532	0	0	0	2375
PEAK VOLUMES =	0	740	69	17	100	0	72	3	300	0	0	0	1301

AM Peak Hr Begins at 745 AM

ADDITIONS: 1-WAY STOP E/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 5/26/99 CITY: ALPINE

E-W STREET: I-8 EB RAMPS DAY: WEDNESDAY

PROJECT# 0356001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1		1	0	1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM		142	28	6	30		55	0	167				428
15 PM		112	30	8	22		57	1	147				377
30 PM		123	24	6	54		83	0	179				469
45 PM		111	36	11	30		68	2	132				390
5:00 PM		101	34	13	38		76	0	182				444
15 PM		98	39	12	31		77	1	174				432
30 PM		84	32	12	29		93	0	153				403
45 PM		121	29	6	30		60	0	189				435
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	NL 0	NT 892	NR 252	SL 74	ST 264	SR 0	EL 569	ET 4	ER 1323	WL 0	WT 0	WR 0	TOTAL 3378

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	0	433	133	42	153	0	304	3	667	0	0	0	1735

ADDITIONS: 1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 5/26/99 CITY: ALPINE

E-W STREET: ALPINE DAY: WEDNESDAY

PROJECT# 0356005A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	1	1	1	1	1	1	1	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	12	99	11	21	36	10	6	9	13	7	15	74	313
15 AM	12	92	15	31	38	5	11	10	5	15	8	74	316
30 AM	12	107	9	40	48	7	9	10	13	6	8	90	359
45 AM	8	109	12	39	55	5	7	9	12	2	6	42	306
8:00 AM	8	115	11	31	47	3	4	6	7	7	11	58	308
15 AM	10	140	10	29	44	2	10	12	9	10	10	51	337
30 AM	14	132	18	48	68	13	8	9	10	25	18	65	428
45 AM	16	120	22	43	66	2	6	11	10	19	14	45	374
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	92	914	108	282	402	47	61	76	79	91	90	499	2741

AM Peak Hr Begins at 800 AM

PEAK VOLUMES =	48	507	61	151	225	20	28	38	36	61	53	219	1447

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 5/26/99 CITY: ALPINE

E-W STREET: ALPINE DAY: WEDNESDAY PROJECT# 0356005P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	1	1	1	1	1	1	1	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	12	93	12	75	110	11	17	13	19	27	16	60	465
15 PM	6	57	24	79	86	3	8	13	17	17	16	62	388
30 PM	10	90	37	85	135	12	9	21	32	30	17	65	543
45 PM	14	84	19	68	84	9	8	18	15	27	12	52	410
5:00 PM	9	51	14	89	127	3	6	17	20	29	12	77	454
15 PM	7	76	20	82	115	8	15	27	27	30	8	45	460
30 PM	12	58	16	58	114	9	12	14	29	27	12	46	407
45 PM	10	98	27	84	134	9	14	21	22	24	13	41	497
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	NL 80	NT 607	NR 169	SL 620	ST 905	SR 64	EL 89	ET 144	ER 181	WL 211	WT 106	WR 448	TOTAL 3624

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	40	301	90	324	461	32	38	83	94	116	49	239	1867

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 4/1/99 CITY: ALPINE

E-W STREET: SOUTH GRADE RD. DAY: THURSDAY

PROJECT# 0197002A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	0	19	1	3	5	3	10	0	0	5	2	21	69
15 AM	1	27	2	5	9	4	13	0	1	3	3	26	94
30 AM	0	20	0	4	11	13	14	0	3	7	3	26	101
45 AM	1	18	1	10	6	4	17	3	0	3	4	29	96
8:00 AM	3	18	1	7	16	7	10	1	2	6	2	20	93
15 AM	1	17	3	9	16	5	11	2	1	2	4	25	96
30 AM	0	15	2	6	8	5	14	1	0	4	7	20	82
45 AM	2	19	3	12	7	5	23	3	1	2	5	15	97
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	8	153	13	56	78	46	112	10	8	32	30	182	728
PEAK VOLUMES =	5	73	5	30	49	29	52	6	6	18	13	100	386

AM Peak Hr Begins at 730 AM

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: TAVERN DATE: 4/1/99 CITY: ALPINE

E-W STREET: SOUTH GRADE RD. DAY: THURSDAY PROJECT# 0197002P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	0	19	5	22	17	18	8	3	2	4	3	7	108
15 PM	2	9	0	18	24	17	11	4	3	3	3	14	108
30 PM	3	11	3	37	20	19	16	8	5	4	4	11	141
45 PM	4	25	7	35	25	25	13	4	5	3	8	12	166
5:00 PM	4	18	1	23	19	25	8	10	3	5	5	8	129
15 PM	0	19	3	28	32	23	18	2	2	3	10	14	154
30 PM	1	6	5	33	25	21	11	2	1	3	6	13	127
45 PM	1	7	0	18	21	20	6	8	3	2	8	19	113
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	15	114	24	214	183	168	91	41	24	27	47	98	1046

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	11	73	14	123	96	92	55	24	15	15	27	45	590

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SOUTH GRADE DATE: 1/13/2000 CITY: ALPINE

E-W STREET: ALPINE DAY: THURSDAY PROJECT# 0034001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	0	1	1	0	1	1	0	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	32	1	9	2	3	4	8	49	33	5	42	5	193
15 AM	23	2	7	2	2	6	6	46	18	8	47	1	168
30 AM	21	2	6	1	0	9	6	44	44	8	40	1	182
45 AM	26	2	5	0	0	5	10	58	31	12	38	3	190
8:00 AM	16	2	5	3	2	6	7	53	36	7	45	2	184
15 AM	16	2	4	7	2	7	16	47	23	6	47	2	179
30 AM	18	1	3	3	1	6	8	42	36	7	31	2	158
45 AM	16	0	5	2	0	2	7	38	45	12	33	1	161
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	168	12	44	20	10	45	68	377	266	65	323	17	1415

AM Peak Hr Begins at 730 AM

PEAK VOLUMES =	79	8	20	11	4	27	39	202	134	33	170	8	735

ADDITIONS: 2-WAY STOP N/S

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SOUTH GRADE DATE: 1/13/2000 CITY: ALPINE

E-W STREET: ALPINE DAY: THURSDAY PROJECT# 0034001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	0	1	1	0	1	1	0	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	25	2	5	1	1	7	2	11	11	3	24	0	92
15 PM	27	0	7	1	2	13	3	14	7	6	30	4	114
30 PM	36	1	6	0	0	8	3	30	9	6	27	0	126
45 PM	24	0	6	1	0	3	4	28	6	6	39	4	121
5:00 PM	22	0	5	1	3	4	7	24	8	5	22	0	101
15 PM	25	3	3	2	2	4	1	17	5	5	27	0	94
30 PM	22	1	12	2	4	4	5	30	10	9	38	3	140
45 PM	33	1	11	1	1	7	11	20	12	7	37	1	142
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	214	8	55	9	13	50	36	174	68	47	244	12	930

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	102	5	31	6	10	19	24	91	35	26	124	4	477

ADDITIONS: 2-WAY STOP N/S

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ARNOLD DATE: 3/13/2001 CITY: ALPINE

E-W STREET: TAVERN DAY: TUESDAY

PROJECT# 0295001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOT
LANES:	0	1	0	1	1	0	0	1	1	0	1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	13	98	12	12	39	11	32	19	6	9	21	36	30
15 AM	9	107	8	12	33	11	48	19	13	9	11	44	32
30 AM	7	77	16	19	26	9	39	14	1	20	13	31	27
45 AM	3	53	8	14	43	12	30	8	1	13	7	31	22
8:00 AM	4	48	8	16	38	12	33	11	4	12	8	26	22
15 AM	2	55	11	18	36	8	24	13	0	9	12	33	22
30 AM	4	39	6	10	29	10	29	10	3	10	7	27	18
45 AM	3	43	9	11	33	7	22	9	2	6	8	24	17
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	45	520	78	112	277	80	257	103	30	88	87	252	192

AM Peak Hr Begins at 700 AM

PEAK VOLUMES =	32	335	44	57	141	43	149	60	21	51	52	142	112

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: ARNOLD

DATE: 3/13/2001

CITY: ALPINE

E-W STREET: TAVERN

DAY: TUESDAY

PROJECT# 0295001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	1	1	0	0	1	1	0	1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	6	43	20	44	70	26	22	18	7	16	14	43	331
15 PM	5	51	16	59	81	30	26	20	8	21	11	48	377
30 PM	1	60	13	58	62	36	38	30	1	12	26	45	412
45 PM	1	41	16	60	82	53	23	10	4	22	18	44	374
5:00 PM	2	48	14	69	94	68	28	13	4	28	24	51	442
15 PM	0	43	14	72	76	48	31	12	1	30	17	37	381
30 PM	3	50	11	55	67	45	19	8	3	21	16	40	338
45 PM	2	39	9	61	60	52	26	11	1	16	18	33	328
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	20	395	115	476	612	358	213	112	29	168	144	341	2983

PM Peak Hr Begins at 430 PM

PEAK VOLUMES =	4	212	57	258	334	205	120	55	10	92	85	177	1609

ADDITIONS: 4-WAY STOP

TRAFFIC VOLUMES & PEAK HOUR CALCULATIONS

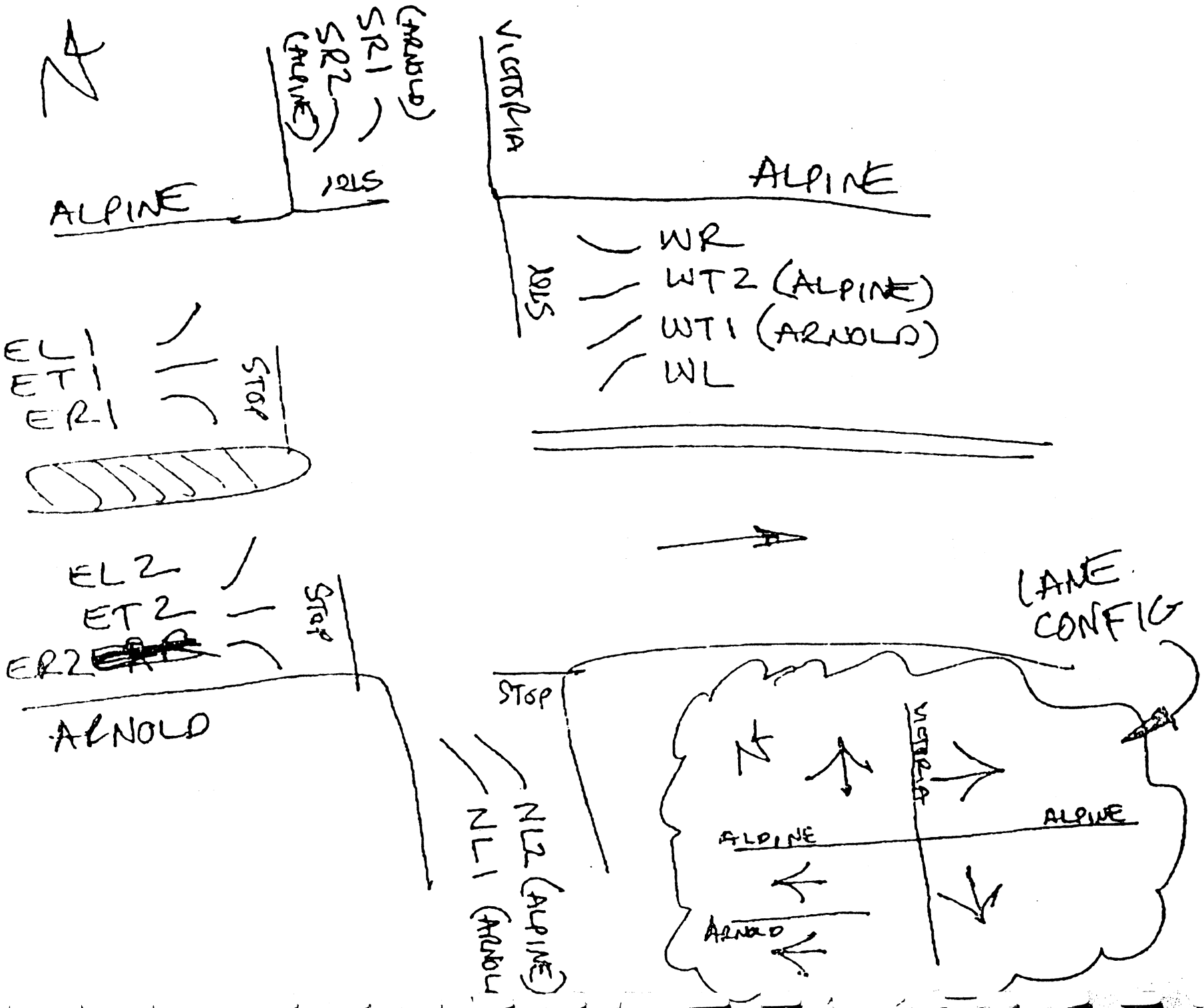
Intersection: Alpine/Arnold/Victoria
Day/Date: Tue/3-13-01
City: Alpine

	Victoria NORTHBOUND				SOUTHBOUND				Alpine/Arnold EASTBOUND						WESTBOUND				
	L1	L2	T	R	L	T	R1	R2	L1	L2	T1	T2	R1	R2	L	T1	T2	R	Total
Lanes	0	0	1	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	
7:00 AM	2	1	0	0	9	0	4	5	6	6	36	28	0	0	0	30	83	10	220
7:15 AM	1	0	0	0	5	0	6	4	5	5	34	29	0	0	0	23	67	6	185
7:30 AM	0	0	0	0	9	0	9	12	6	4	32	27	0	0	0	29	69	7	204
7:45 AM	0	0	0	1	4	0	12	16	3	5	42	19	1	0	1	17	67	5	193
8:00 AM	0	0	0	0	6	0	11	8	3	7	37	22	1	0	0	23	71	5	194
8:15 AM	0	0	0	1	8	0	9	9	6	3	29	16	0	0	2	24	82	4	173
8:30 AM	1	0	0	0	7	0	9	13	2	4	40	19	0	2	0	18	68	7	190
8:45 AM	0	0	0	0	6	0	7	9	5	3	33	21	0	0	1	27	59	8	182
TOTALS	4	1	0	2	54	0	57	76	36	40	283	181	2	2	4	191	546	52	1541
PEAK	3	1	0	1	27	0	31	37	20	20	144	103	1	0	1	99	286	28	802

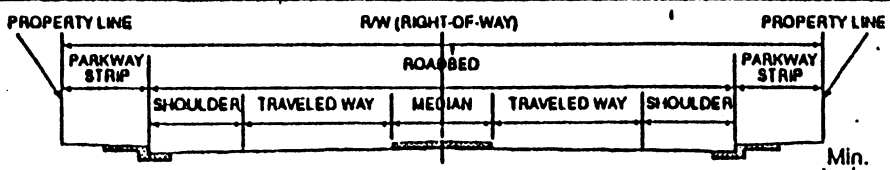
	Victoria NORTHBOUND				SOUTHBOUND				Alpine/Arnold EASTBOUND						WESTBOUND				
Time	L1	L2	T	R	L	T	R1	R2	L1	L2	T1	T2	R1	R2	L	T1	T2	R	Total
4:00 PM	0	0	0	0	4	0	4	9	11	8	66	59	0	0	0	47	44	8	258
4:15 PM	2	0	0	0	7	0	9	7	6	7	79	63	2	0	0	50	41	7	279
4:30 PM	1	0	0	1	6	0	6	10	14	13	89	54	0	0	2	54	55	3	308
4:45 PM	2	0	0	0	8	0	13	8	9	7	85	42	0	1	0	42	58	7	280
5:00 PM	0	0	0	0	4	0	13	10	8	5	77	48	0	2	1	44	61	6	279
5:15 PM	0	0	0	0	8	0	9	10	8	11	68	51	0	0	0	36	54	9	264
5:30 PM	0	0	0	1	4	0	11	6	13	8	74	55	2	0	1	41	48	5	269
5:45 PM	1	0	0	0	5	0	7	7	12	5	59	42	1	0	2	33	40	7	221
TOTALS	6	0	0	2	44	0	71	67	81	62	597	414	5	3	6	347	401	52	2158
PEAK	5	0	0	1	23	0	40	35	37	32	330	207	2	3	3	190	215	23	1146

ALL WAY STOP
FIVE WAY INTERSECTION ARNOLD AND ALPINE RUN PARALLEL
SEE DIAGRAM FOR KEY TO MOVEMENTS

peakcalc


N
ALPINE
SR1 (ARNOLD)
SR2 (ALPINE)
IDLS
VICTORIA
ALPINE
IDLS
WR
WT2 (ALPINE)
WT1 (ARNOLD)
WL
EL1
ET1
ER1
STOP
EL2
ET2
ER2
STOP
ARNOLD
STOP
NL2 (ALPINE)
NL1 (ARNOLD
LANE CONFIG
N
VICTORIA
ALPINE
ALPINE
ARNOLD

SUMMARY OF COUNTY OF SAN DIEGO PUBLIC ROAD STANDARDS†



CLASS	CIRCULATION ELEMENT ROAD CROSS-SECTIONS									AVERAGE DAILY VEHICLE TRIPS (ADT) LEVEL OF SERVICE (LOS)				
	Median	Traveled way	Shoulder	Parkway strip	Roadbed	R/W*	Min.curve radius	Max. grades	Min. design speed (mph)	A Free flow	B Steady flow	C Stable flow	D Approach unstable	E Unstable flow
EXPRESSWAY Divided highway with only selected public road access with full grade separations	34'	36'	10'	10'	126'	146'	1200'	6%	55	<36,000	<54,000	<70,000	<86,000	<108,000
PRIME ARTERIAL Divided highway, signalized intersections, access control, or extra lanes as required	14'	36'	8'	10'	102'	122'	1200'	6%	55	<22,200	<37,000	<44,600	<50,000	<57,000
MAJOR ROAD 4-lane divided road, access & parking controlled as necessary	14'	24'	8'	10'	78'	98'	1200'	7%	55	<14,800	<24,700	<29,600	<33,400	<37,000
COLLECTOR 4-lane undivided road	—	24'	8'	10'	64'	84'	700'	7%	45	<13,700	<22,800	<27,400	<30,800	<34,200
LIGHT COLLECTOR 2-lane undivided road	—	12'	8'	10'	40'	60'	700'	9%	45	<1,900	<4,100	<7,100	<10,900	<16,200
RURAL COLLECTOR 2-lane undivided road, extra R/W allows greater flexibility & upgrade	—	12'	8'	22'	40'	84'	500'	12%	40	<1,900	<4,100	<7,100	<10,900	<16,200
RURAL LIGHT COLLECTOR 2-lane undivided road, decreased "curve radii" standards	—	12'	8'	10'	40'	60'	500'	12%	40	<1,900	<4,100	<7,100	<10,900	<16,200
RURAL MOUNTAIN 2-lane undivided road appropriate only in rural mountain areas	—	12'	8'	30'	40'	100'	500'	12%	40	<1,900	<4,100	<7,100	<10,900	<16,200
RECREATIONAL PARKWAY Recreational routes for travel pleasure purposes	—	12'	8'	30'	40'	100'	400'	12%	25	<1,900	<4,100	<7,100	<10,900	<16,200
NON-CIRCULATION ROADS														
RESIDENTIAL COLLECTOR	—	12'	8'	10'	40'	60'	300'	12%	30	<4,500				
RESIDENTIAL STREET	—	12'*	6'	10'	36'	56'	200'	15%	30	<1,500				
RESIDENTIAL LOOP/CUL-DE-SAC	—	12'	4'	10'	32'	52'	200'	15%	30	<200				

Levels of service are not applied to non-circulation roads since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors. Not all non-circulation road classifications are shown.

*Additional pavement and R/W may be required for C.E. Collectors and L1 Collectors in Industrial/Commercial Zones, 4 and 12 ft., respectively. C.E. roads needing additional turn lanes will require an additional 12 to 14 ft. of pavement and R/W for each lane. C.E. roads designated with Bike Lanes will require an additional 10 ft. of pavement and R/W.

†For full standards, refer to Public Road Standards, adopted by the Board of Supervisors on 2/26/92

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MEASURE OF SIGNIFICANT PROJECT TRAFFIC IMPACTS

Level of Service with Project*	Allowable Change due to Project Impact**					
	Freeways		Roadway Segments		Intersections	Ramp*** Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay(min.)
D, E, & F (or ramp meter delays above 15 min.)	0.01	1	0.02	1	2	2

NOTES:

- * All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.
- ** If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigation (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see above * note), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.
- *** See Attachment B for ramp metering analysis.

KEY:
- V/C = Volume to Capacity ratio
- Speed = Speed measured in miles per hour
- Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters
- LOS = Level of Service

Source: *San Diego Traffic Engineers' Council (SANTEC) and the Institute of Transportation Engineers (ITE) Guidelines for Traffic Impact Studies (TIS) in the San Diego Region*, February 29, 2000 Draft

Albertsons

October 14, 1999

Mr. Steve Denny
Darnell & Associates
1446 Front Street, 3rd Floor
San Diego, CA 92101

OCT 20 1999

Re: **Proposed Albertson's Store**
Alpine, CA

Dear Steve:

We expect the following truck deliveries at our Albertson's store in Alpine, CA:

1) Fifteen to seventeen Albertson's tractor-trailer truck deliveries a week. No more than four deliveries would occur in any one day. The truck deliveries are scheduled so that, generally speaking, only one truck at a time is in the loading docks, although the loading docks will accommodate two trucks. The trucks do not idle. Albertson's requires that if trucks need to wait, that they are turned off except for the refrigeration unit. We will require that all Albertson's trucks access the store via the West Willows on and off-ramps. They will be prohibited from using the Tavern on and off-ramps.

2) Between 10 and 20 smaller trucks controlled by our vendors will deliver goods to the Albertson's store on a daily basis. At the present time, the outside delivery trucks are required to deliver between 7 a.m. and 11 a.m. and are not allowed to deliver on Wednesdays or Sundays. This is a company-wide policy applicable to all of our stores. This scheduling could change, but I would expect that any changes to the schedule would not materially change the delivery times. We would expect these trucks to have no affect on p.m. peak hour traffic in Alpine and little, if any, effect on a.m. peak hour traffic.

I trust this answers the questions that you have regarding truck deliveries. If you need any further information, do not hesitate to contact me.

Very truly yours,

Jeff A. Dierck
Real Estate Manager

JAD/ps-TruckDeliveries

Albertsons

October 19, 1999

OCT 25 1999

Mr. Steve Denny
Darnell & Associates
1446 Front Street, 3rd Floor
San Diego, CA 92101

Re: **Proposed Albertson's Store**
Alpine, CA

Dear Steve:

This letter is in response to your request that we provide you with background and methodology as to how Albertson's projects store sales.

Albertson's Economic Research Department thoroughly reviews each potential Albertson's site. Their first task is to collect and analyze data about a proposed location in order to prepare a projection of store sales. The project store sales tells us if a store is merited at a location, and how much Albertson's can spend on a facility and still have it be economically feasible. In order for our Research Department to prepare a meaningful store sales projection, they research trade area boundaries, present and likely future competition, current and future population, and the physical site characteristics.

The trade area data includes the population and related demographic information such as age distribution, sex, racial and ethnic makeup, and household incomes in the trade area. These factors tell us from which areas people are likely to frequent our market and how much they are likely (able) to spend. Defining a trade area for a potential store site is the first step in the research process. Trade area boundaries include physical ones like rivers and mountains, and psychological ones like freeways and county lines. Trade areas are also constrained by the presence of other nearby Albertson's and other competitors. Urban trade areas might encompass two to three miles around a site, while suburban and rural trade areas attract customers from a much greater distance. The Alpine location is a combination of suburban and rural trade areas. Based on the unserved areas to the east, a substantial portion of our trade area will include areas east of Alpine. The balance will be primarily within Alpine. The trade area analysis allows us to conclude from which direction given percentages of our customers will come.

After a trade area has been identified and the demographics within the trade area determined, a research analyst travels to the trade area and spends several days evaluating the other factors critical to projecting a site's store sales. The analyst visits each of the existing grocery stores in the area noting their physical attributes, customer base and merchandising mix, as well as other potential competitive undeveloped locations.

Another key element in evaluating the potential of a site is the current and future population of the trade area. The analyst drives all major roads in the trade area noting housing projects currently under construction, and visits with the city and county government with jurisdiction over the trade area to determine how much (and what kind of) housing is planned for the immediate and long-term future within the trade area, as well as other potential locations which might compete in the future with the proposed Albertson's location.

The last site element reviewed in the field is the site itself. The analyst evaluates access to a site with particular attention paid to present road improvements, projected road improvements, turn lanes, signal lights, medians and other traffic control devices. Attention is also given to the uses occupying or which may occupy the four corners of the intersection. The analyst also reviews the visibility of the site from all directions and considers how customers from all parts of the trade area might travel to the site.

After the field review of the site has been completed, the analyst reviews all the information gathered with Albertson's Economic Research management, projects the site store sales and sends the findings to the Real Estate Manager of the site for his use. The methods we use to project sales and identify the distribution of projected sales within the trade area are standard practice in market research.

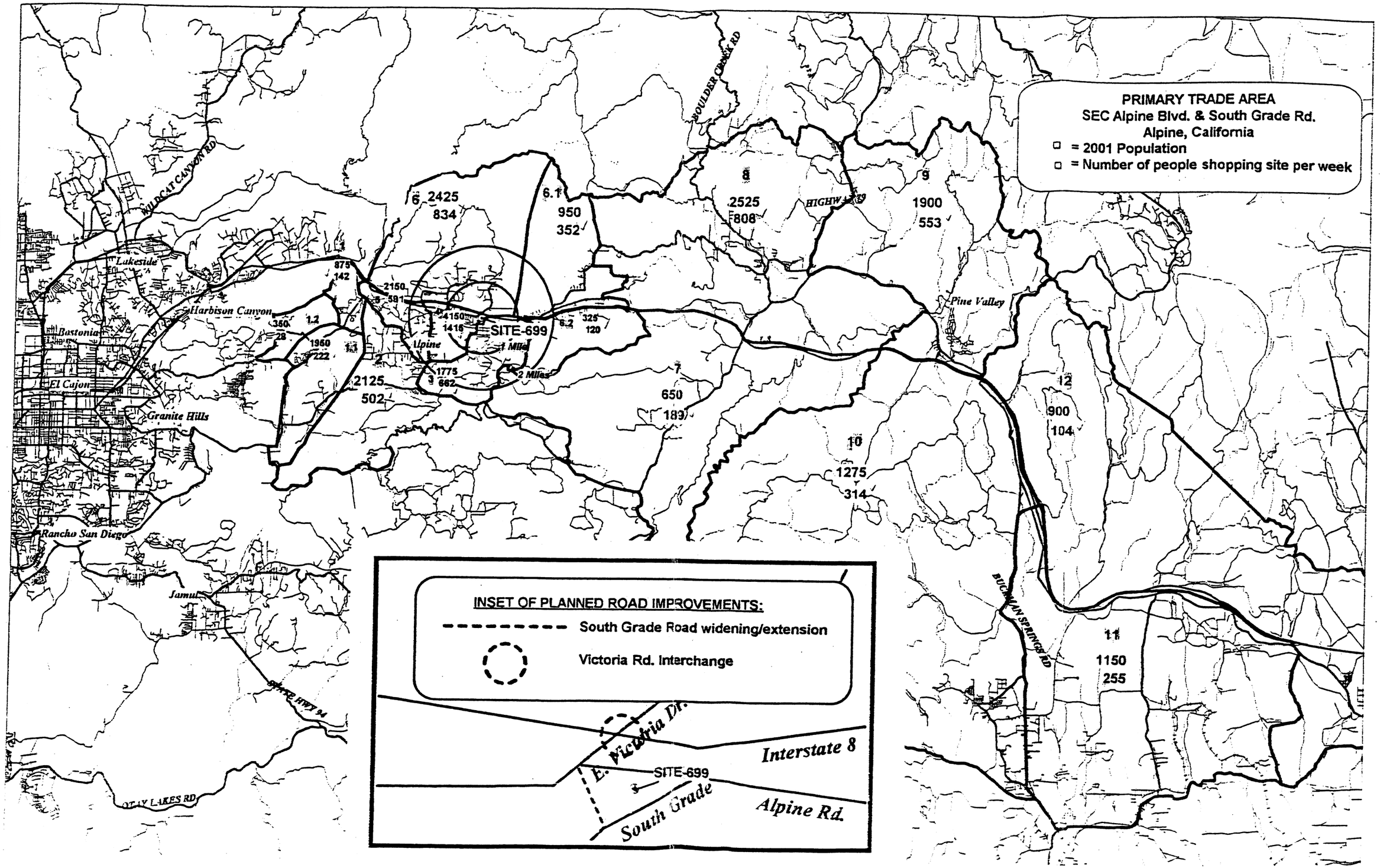
If you need any further information, do not hesitate to contact me.

Very truly yours,

Jeff A. Dierck
Senior Real Estate Manager

CC: Larry Tucker, Grant Tucker Properties

JAD/ps-Econ.Methodology


PRIMARY TRADE AREA
SEC Alpine Blvd. & South Grade Rd.
Alpine, California
= 2001 Population
= Number of people shopping site per week
INSET OF PLANNED ROAD IMPROVEMENTS:
South Grade Road widening/extension
Victoria Rd. Interchange
E. Victoria Dr.
Interstate 8
SITE-699
South Grade
Alpine Rd.
Lakeside
Harbison Canyon
Bostonia
El Cajon
Granite Hills
Rancho San Diego
Jamul
Alpine
Pine Valley
WILDCAT CANYON RD
BOULDER CREEK RD
HIGHWAY 79
BUCKMAN SPRINGS RD
STATE HWY 94
OTAY LAKES RD
SITE-699
1 Mile
2 Miles
6 2425 834
6.1 950 352
8 2525 808
9 1900 553
875 142
2150 591
4150 1416
6.2 325 120
350 28
1.2
1950 222
1.1
2 2125 502
1775 662
7 650 189
10 1275 314
12 900 104
11 1150 255

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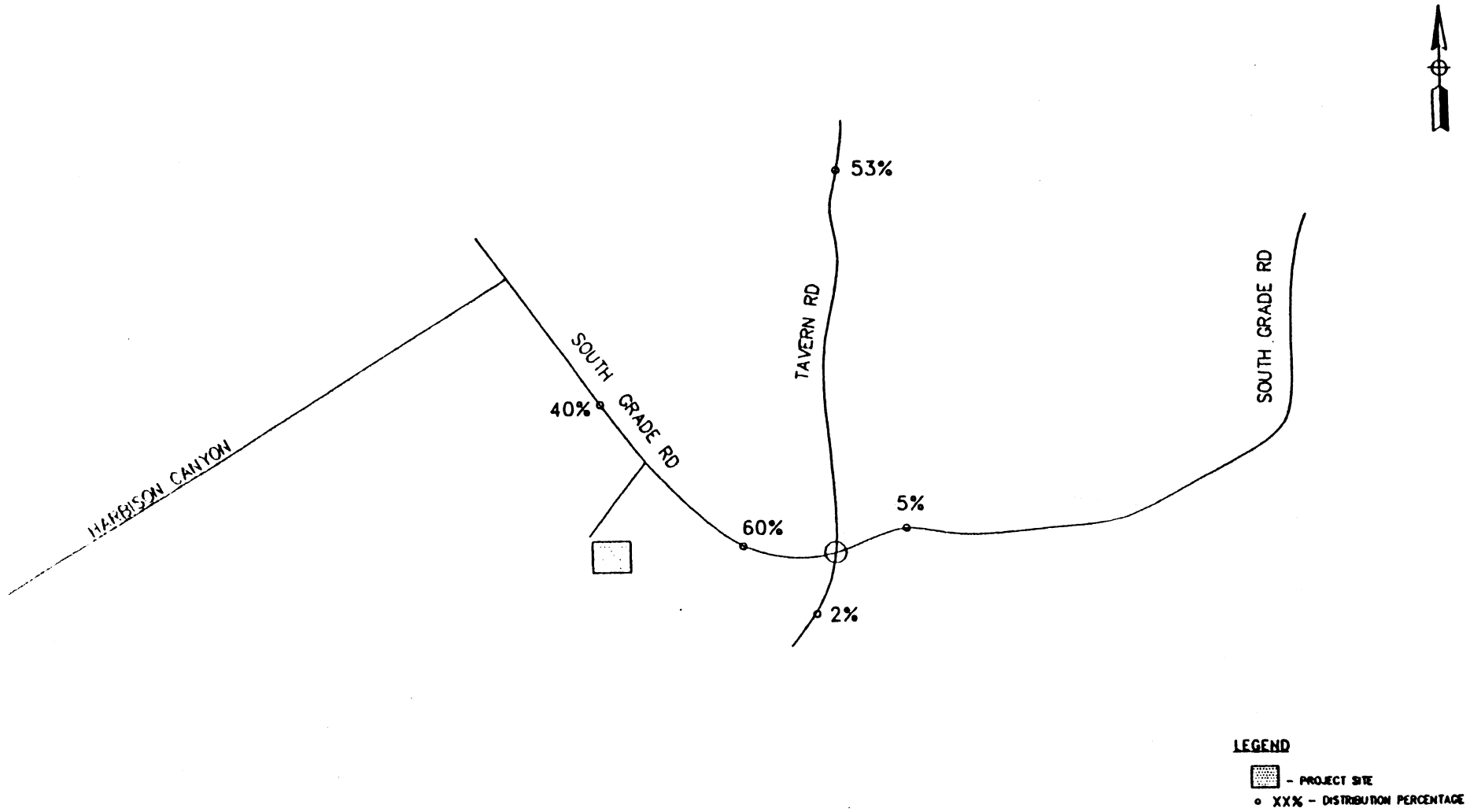
APPENDIX B

➤Other Approved/Pending Projects Trip Distribution

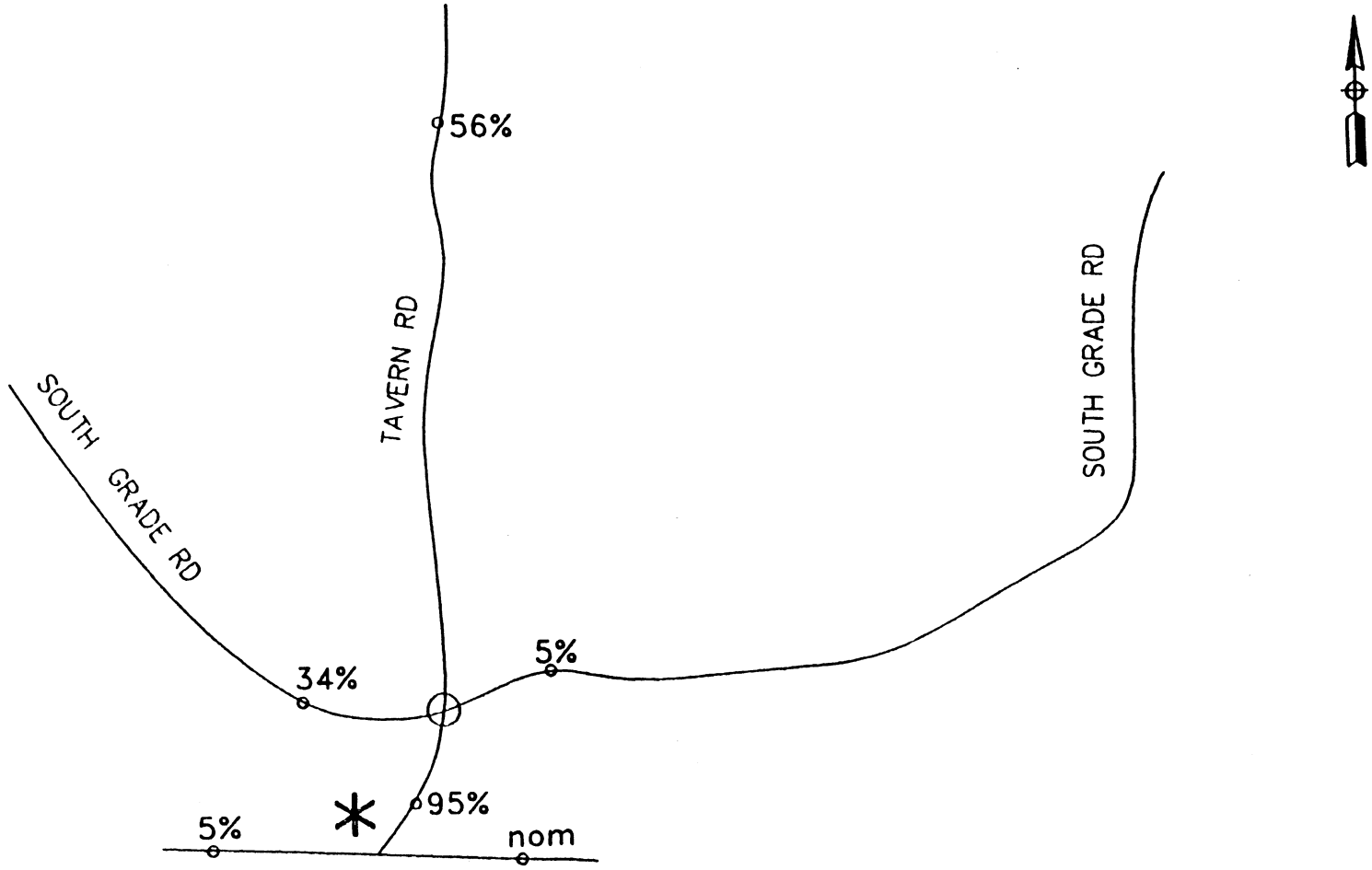


Darnell & ASSOCIATES, INC.

99J509AA 3-23-01 RMG

TRIP DISTRIBUTION FOR

SKY MESA; KNIFFING; ALPINE RANCH ESTATES; DOLORES HILL; DAVIS; PETERSON; RANCHO JUDITH



LEGEND

* - PROJECT SITE

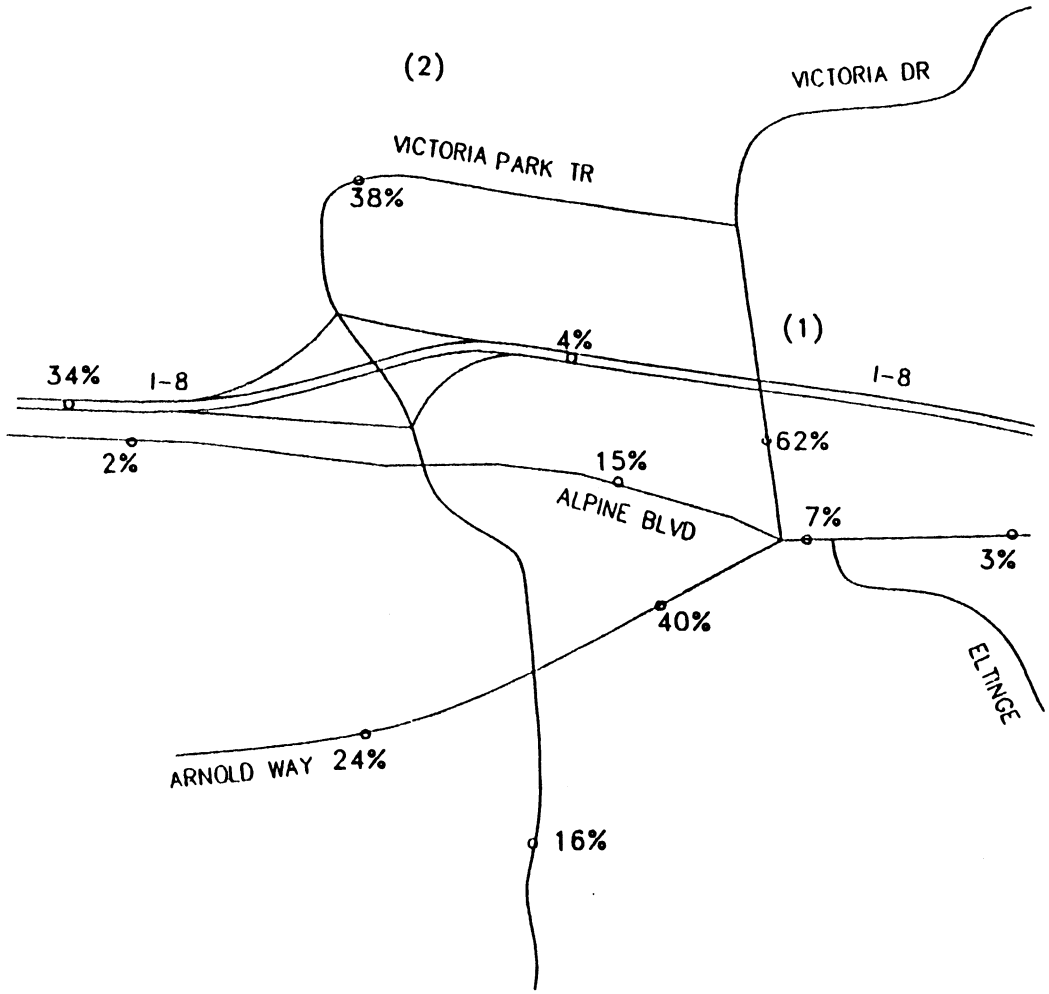
o XX% - DAILY TRAFFIC

Darnell & ASSOCIATES, INC.

990509AA 3-23-01 RMG

TRIP DISTRIBUTION FOR

ROGER MILLER (TMP 20342)



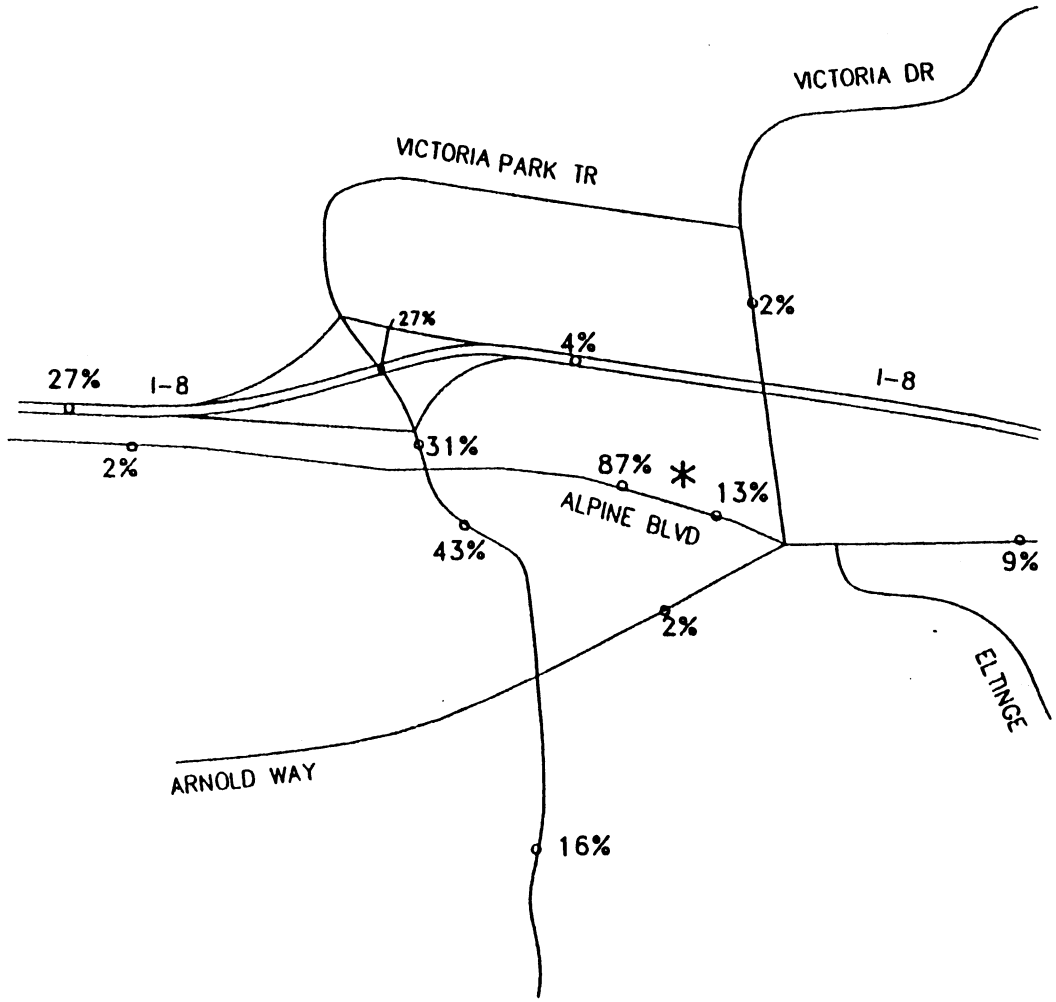
LEGEND

(1) - STROUD PROJECT SITE
(2) - REI-NC DARTMOUTH PROJECT SITE
o XX% - DAILY TRAFFIC

Darnell & ASSOCIATES, INC.

93050YAA 3-23-01 RMG

TRIP DISTRIBUTION FOR
STROUD AND REI-NC DARTMOUTH



LEGEND

✱ - PROJECT SITE

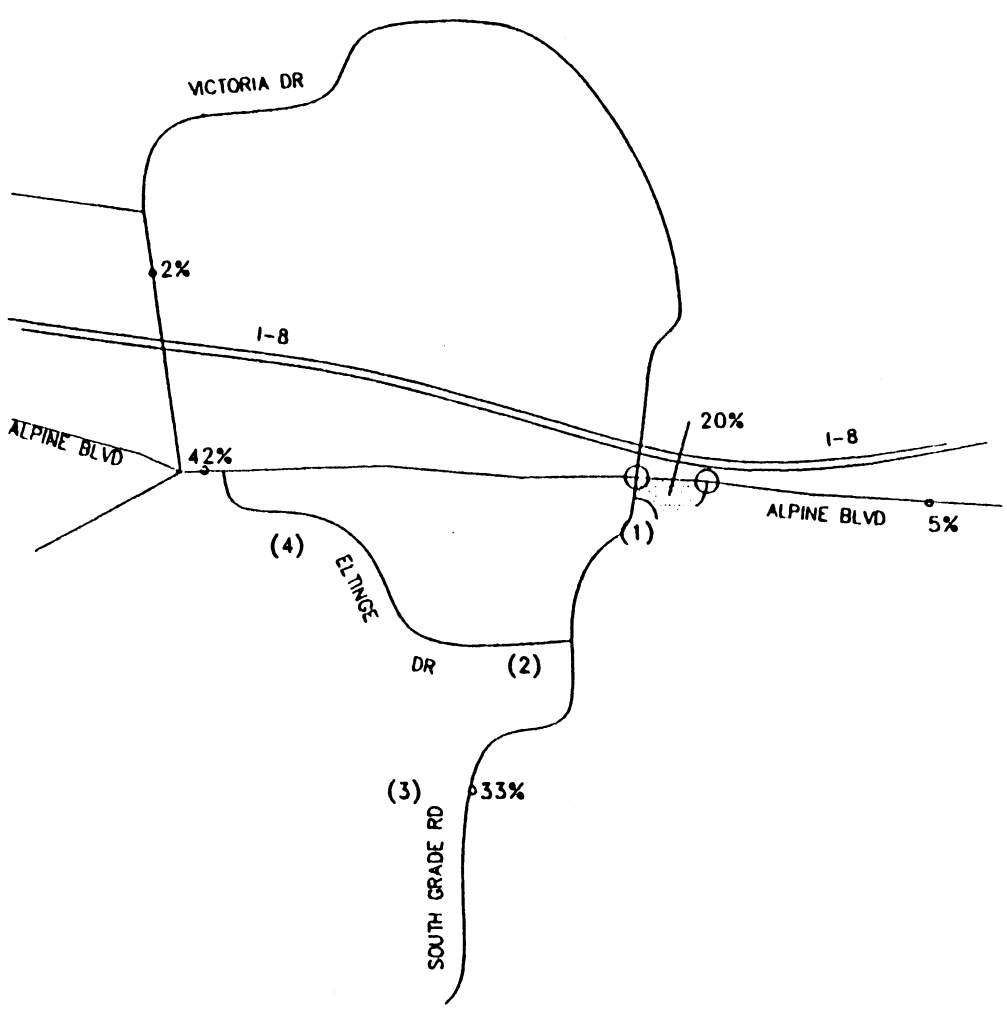
∘ X,XXX(YEAR) - DAILY TRAFFIC

Darnell & ASSOCIATES, INC.

990508AA 3-23-01 RMG

TRIP DISTRIBUTION FOR

ALPINE MOBILE ESTATES



LEGEND

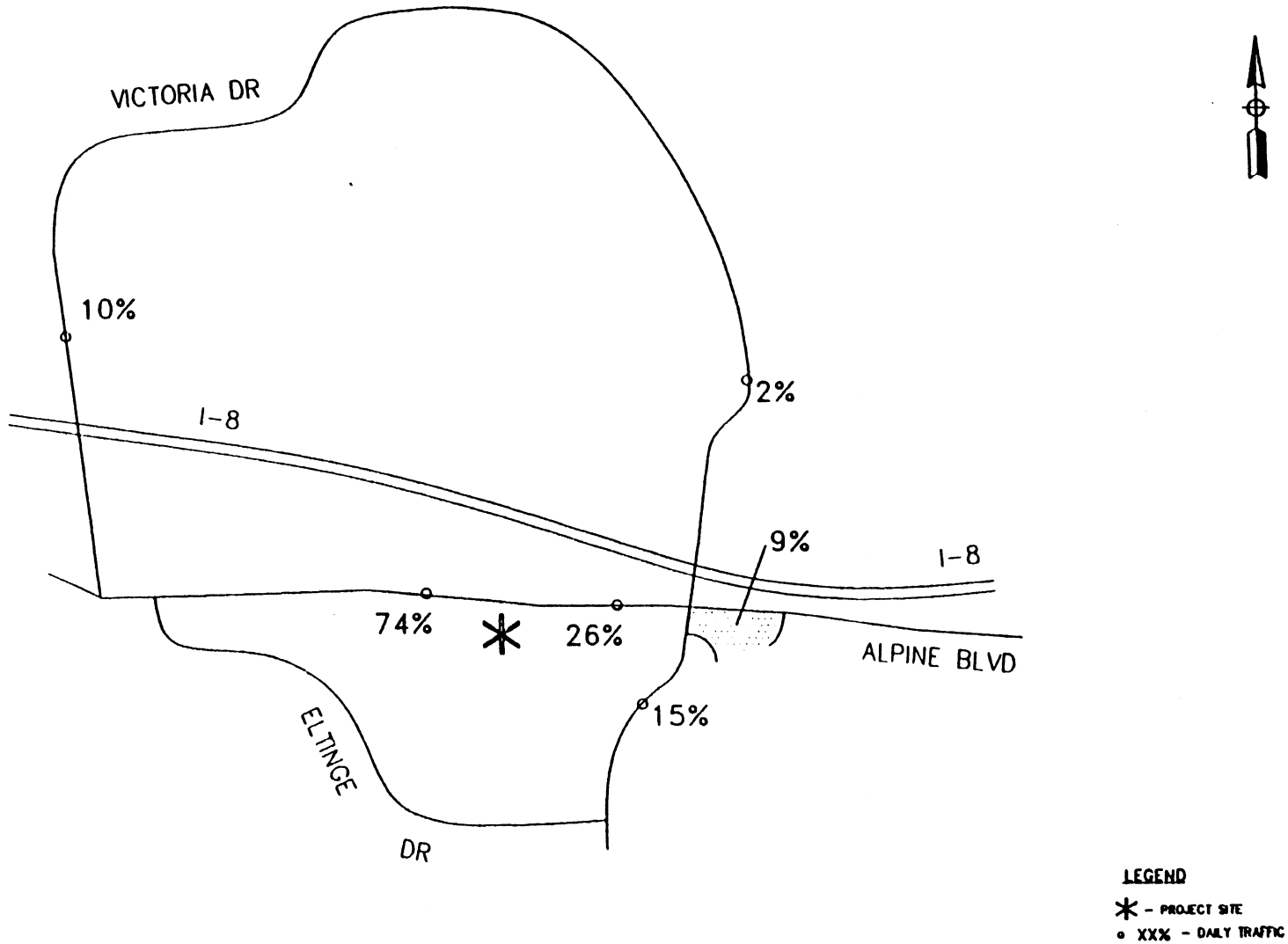
(1) - SUN RIVER PROJECT SITE
(2) - PACIFIC SCENE PROJECT SITE
(3) - CONWAY PROJECT SITE
(4) - STEWART/PRIEST PROJECT SI
o XX% - DAILY TRAFFIC

Darnell & ASSOCIATES, INC.

990509AA 3-23-01 RMG

TRIP DISTRIBUTION FOR

SUN RIVER, PACIFIC SCENE, CONWAY, & STEWART/PRIEST

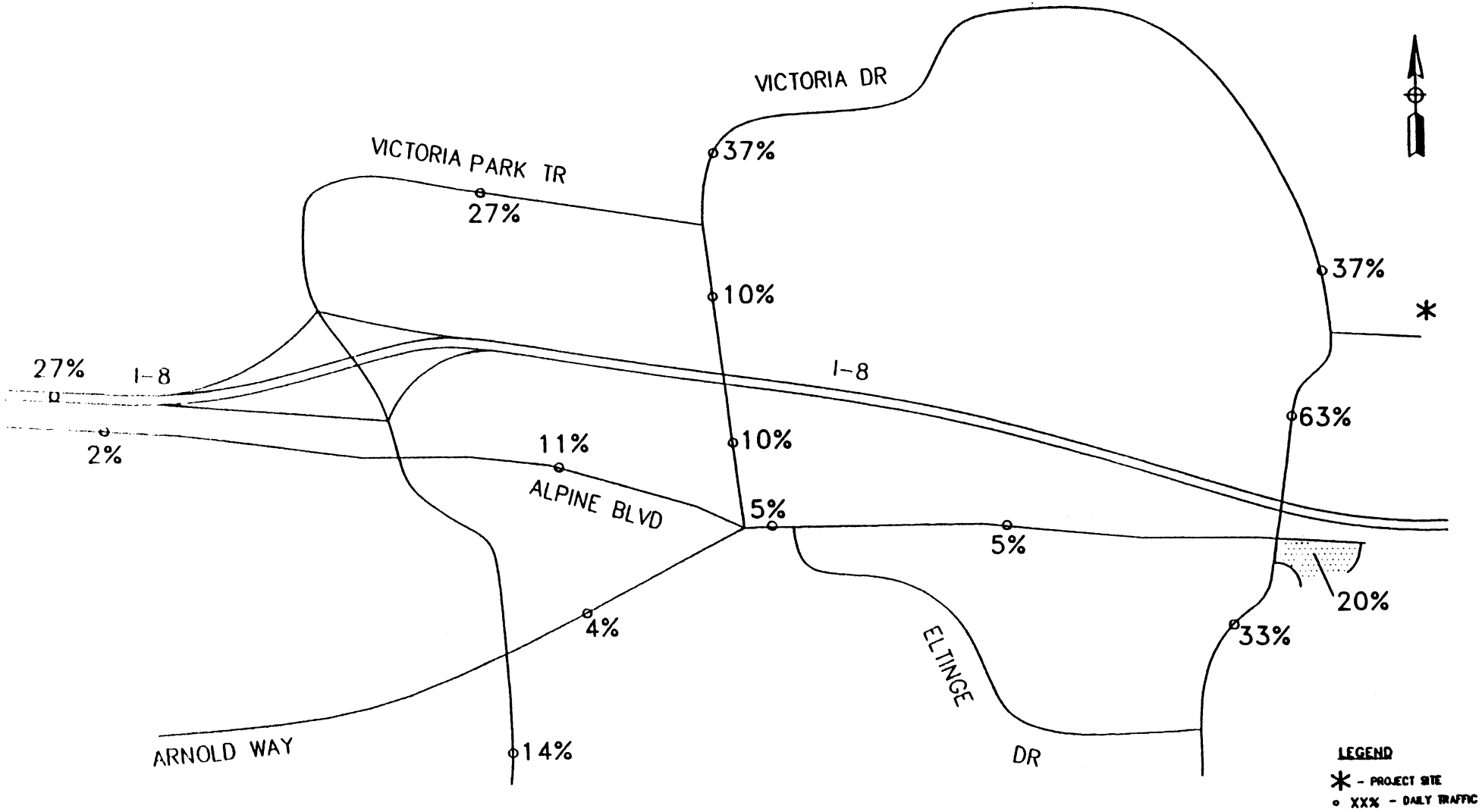


Darnell & ASSOCIATES, INC.

99050AA 3-23-01 RMG

TRIP DISTRIBUTION FOR

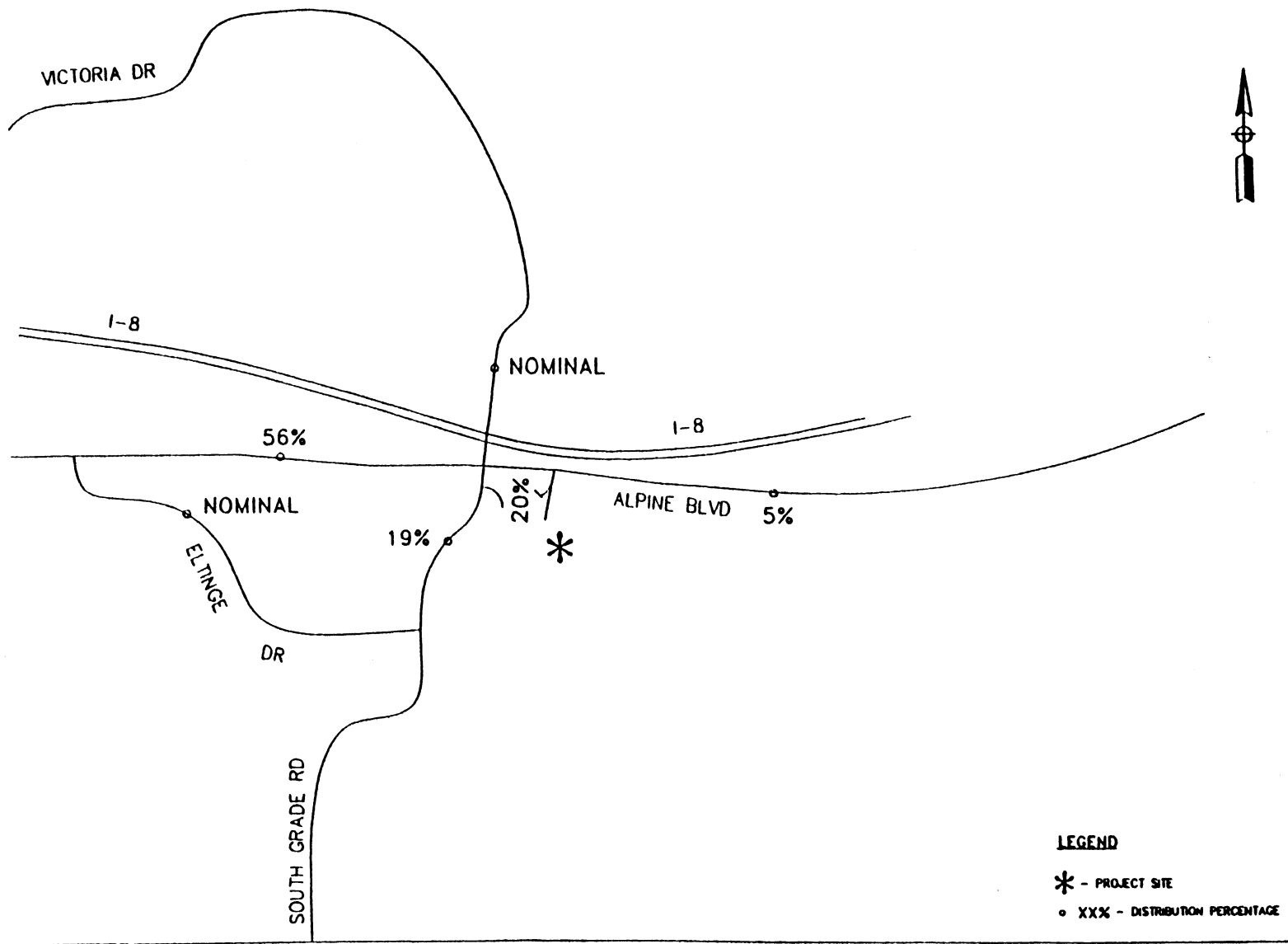
TYSMA



Darnell & ASSOCIATES, INC.

89050WAA 3-23-01 RMG

TRIP DISTRIBUTION FOR
KIBEE



Darnell & ASSOCIATES, INC.

W0509AA 3-23-01 MMG

TRIP DISTRIBUTION FOR

14-LOT RESIDENTIAL SUBDIVISION (TM 4939)

APPENDIX C

➤ Existing Conditions (HCS)

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-Arnold To Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing Conditions

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 993
ACTUAL FLOW RATE: 1045

LOS	SERVICE FLOW RATE	V/C
A	99	.04
B	393	.16
C	786	.32
D	1431	.57
E	2510	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing Conditions

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.92	.96
B	2.2	2	2.5	1	.92	.95
C	2.2	2	2.5	1	.92	.95
D	2	1.6	1.6	1	.92	.97
E	2	1.6	1.6	1	.92	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 746
ACTUAL FLOW RATE: 785

LOS	SERVICE FLOW RATE	V/C
A	98	.04
B	389	.16
C	778	.32
D	1415	.57
E	2483	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Willows e/o I-8 EB Ramps
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing Conditions

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	51 / 49
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.99	.96
B	2.2	2	2.5	1	.99	.95
C	2.2	2	2.5	1	.99	.95
D	2	1.6	1.6	1	.99	.97
E	2	1.6	1.6	1	.99	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 905
ACTUAL FLOW RATE: 953

LOS	SERVICE FLOW RATE	V/C
A	107	.04
B	422	.16
C	845	.32
D	1537	.57
E	2697	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-Arnold to Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing Conditions Based on County Cen sus

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.92	.96
B	2.2	2	2.5	1	.92	.95
C	2.2	2	2.5	1	.92	.95
D	2	1.6	1.6	1	.92	.97
E	2	1.6	1.6	1	.92	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1190
ACTUAL FLOW RATE: 1253

LOS	SERVICE FLOW RATE	V/C
A	99	.04
B	391	.16
C	782	.32
D	1423	.57
E	2496	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing-Based on County Census

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.92	.96
B	2.2	2	2.5	1	.92	.95
C	2.2	2	2.5	1	.92	.95
D	2	1.6	1.6	1	.92	.97
E	2	1.6	1.6	1	.92	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1151
ACTUAL FLOW RATE: 1212

LOS	SERVICE FLOW RATE	V/C
A	99	.04
B	391	.16
C	782	.32
D	1423	.57
E	2496	1

LOS FOR GIVEN CONDITIONS: D

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	AM Peak
Intersection:	Tavern/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Tavern Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	782	113			102	172
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	823	118			107	181
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	34	1	28			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	35	1	29			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	823			65				
C(m) (vph)	1286			44				
v/c	0.64			1.48				
95% queue length	5.22			16.43				
Control Delay	12.7							
LOS	B			F				
Approach Delay								
Approach LOS				F				

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	PM Peak
Intersection:	Tavern/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Tavern Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	436	316			132	108
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	458	332			138	113
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	60	1	43			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	63	1	45			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	458			109				
C(m) (vph)	1326			149				
v/c	0.35			0.73				
95% queue length	1.58			6.23				
Control Delay	9.1			87.9				
LOS	A			F				
Approach Delay				87.9				
Approach LOS				F				

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	AM Peak
Intersection:	Tavern/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Tavern Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		740	69	17	100	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		778	72	17	105	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				72	3	300
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				75	3	315
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?						
Storage						
RT Channelized?						No
Lanes				0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				LT		R
v (vph)		17				78		315
C(m) (vph)		797				282		955
v/c		0.02				0.28		0.33
95% queue length		0.07				1.13		1.47
Control Delay		9.6				22.6		10.6
LOS		A				C		B
Approach Delay							13.0	
Approach LOS							B	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	PM Peak
Intersection:	Tavern/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Tavern Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		433	133	42	153	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		455	140	44	161	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				304	3	667
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				320	3	702
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?						
Storage						
RT Channelized?						No
Lanes				0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				LT		R
v (vph)		44				323		702
C(m) (vph)		991				353		889
v/c		0.04				0.92		0.79
95% queue length		0.14				15.75		10.16
Control Delay		8.8				89.2		23.7
LOS		A				F		C
Approach Delay							44.3	
Approach LOS							E	

HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson
Agency: Darnell & Associates, Inc.
Date: 03/23/2001
Period: AM
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	28	38	36	61	53	219	48	507	61	151	225	20
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru		A						
	Right		A						
	Peds								
WB	Left	A							
	Thru		A						
	Right		A						
	Peds								
NB	Right	A							
SB	Right	A							
NB	Left					A			
	Thru							A	
	Right							A	
	Peds								
SB	Left					A	A		
	Thru						A	A	
	Right						A	A	
	Peds								
EB	Right					A			
WB	Right					A	A		
Green		6.0	8.0			5.0	5.0	24.0	
Yellow		3.0	3.0			3.0	0.0	3.0	
All Red		1.0	1.0			1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	168	1787	0.17	0.09	27.2	C		
T	235	1881	0.17	0.13	25.4	C	23.2	C
R	425	1599	0.09	0.27	17.8	B		
Westbound								
L	168	1787	0.38	0.09	28.7	C		
T	235	1881	0.24	0.13	25.8	C	18.2	B
R	650	1599	0.36	0.41	13.5	B		
Northbound								
L	141	1805	0.36	0.08	29.6	C		
T	713	1900	0.75	0.38	21.9	C	21.1	C
R	858	1615	0.07	0.53	7.4	A		
Southbound								
L	395	1805	0.40	0.22	22.1	C		
T	861	1900	0.28	0.45	11.1	B	15.0	B
R	984	1615	0.02	0.61	5.0	A		

Intersection Delay = 18.9 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson
Agency: Darnell & Associates, Inc.
Date: 03/23/2001
Period: PM
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	38	83	94	116	49	239	40	301	90	324	461	32
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru			A			Thru			A	
	Right			A			Right			A	
	Peds						Peds				
WB	Left	A	A			SB	Left	A	A		
	Thru		A	A			Thru		A	A	
	Right		A	A			Right		A	A	
	Peds						Peds				
NB	Right	A	A			EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		5.0	5.0	7.0				5.0	11.0	15.0	
Yellow		3.0	0.0	3.0				3.0	0.0	3.0	
All Red		1.0	0.0	1.0				1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	140	1787	0.29	0.08	28.9	C		
T	206	1881	0.42	0.11	28.0	C	24.5	C
R	400	1599	0.25	0.25	19.5	B		
Westbound								
L	391	1787	0.31	0.22	21.4	C		
T	353	1881	0.15	0.19	21.9	C	13.2	B
R	899	1599	0.28	0.56	7.4	A		
Northbound								
L	141	1805	0.30	0.08	29.0	C		
T	445	1900	0.71	0.23	28.0	C	23.9	C
R	833	1615	0.11	0.52	8.0	A		
Southbound								
L	564	1805	0.60	0.31	20.5	C		
T	772	1900	0.63	0.41	16.8	B	17.9	B
R	883	1615	0.04	0.55	6.7	A		

Intersection Delay = 19.0 (sec/veh) Intersection LOS = B

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*R Gibson*	Intersection	*Tavern/Arnold*
Agency/Co.	*Darnell & Associates, Inc.*	Jurisdiction	*Alpine*
Date Performed	*03/23/2001*	Analysis Year	*Existing*
Analysis Time Period	*AM Peak Hour*	Project ID	*990509*
East/West Street: *Arnold Way*		North/South Street: *Tavern Road*	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	149	60	21	51	52	142
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	32	335	44	57	141	43
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	219	22	80	176	33	398	60	193
% Heavy Vehicles	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.7	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.19	0.02	0.07	0.16	0.03	0.35	0.05	0.17
hd, final value	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11
x, final value	0.43	0.04	0.16	0.32	0.06	0.71	0.12	0.36
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	4.8	4.1	4.8	4.1	4.8	4.1	4.8	4.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	469	272	330	426	283	550	310	443
Delay	15.19	9.32	11.16	12.18	9.81	24.19	10.59	12.98
LOS	C	A	B	B	A	C	B	B
Approach: Delay	14.65		11.86		23.09		12.42	
LOS	B		B		C		B	
Intersection Delay	16.65							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*R Gibson*	Intersection	*Tavern/Arnold*
Agency/Co.	*Darnell & Associates, Inc.*	Jurisdiction	*Alpine*
Date Performed	*03/23/2001*	Analysis Year	*Existing*
Analysis Time Period	*PM Peak Hour*	Project ID	*990509*
East/West Street: *Arnold Way*		North/South Street: *Tavern Road*	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	120	55	10	92	85	177
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	4	212	57	258	334	205
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	183	10	140	231	4	283	271	566
% Heavy Vehicles	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.7	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.2	0.0	0.4
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.16	0.01	0.12	0.21	0.00	0.25	0.24	0.50
hd, final value	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29
x, final value	0.42	0.02	0.31	0.47	0.01	0.60	0.54	1.07
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	6.0	5.2	6.0	5.2	6.0	5.2	6.0	5.2

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	423	260	390	481	254	467	496	566
Delay	16.98	10.41	14.22	16.54	10.67	21.26	18.39	198.12
LOS	C	B	B	C	B	C	C	F
Approach: Delay	16.64		15.66		21.11		139.93	
LOS	C		C		C		F	
Intersection Delay	78.32							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*R Gibson*	Intersection	*Tavern/South Grade*
Agency/Co.	*Darnell & Associates, Inc.*	Jurisdiction	*Alpine*
Date Performed	*03/23/2001*	Analysis Year	*Existing*
Analysis Time Period	*AM Peak Hour*	Project ID	*990509*
East/West Street: *South Grade Road*		North/South Street: *Tavern Road*	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	52	6	6	18	13	100
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	5	73	5	30	49	29
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.95*		*0.95*		*0.95*		*0.95*	
Flow Rate	*66*		*136*		*86*		*112*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.8*		*0.1*		*0.1*		*0.3*	
Prop. Right-Turns	*0.1*		*0.8*		*0.1*		*0.3*	
Prop. Heavy Vehicle	*0.0*		*0.0*		0.0		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*4.61*		*4.61*		*4.61*		*4.61*	

Departure Headway and Service Time

hd, initial value	*3.20*	*3.20*	*3.20*	*3.20*
x, initial	*0.06*	*0.12*	*0.08*	*0.10*
hd, final value	*4.61*	*4.61*	*4.61*	*4.61*
x, final value	*0.08*	*0.15*	*0.11*	*0.14*
Move-up time, m	*2.0*	*2.0*	*2.0*	*2.0*
Service Time	*2.6*	*2.6*	*2.6*	*2.6*

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	*316*		*386*		*336*		*362*	
Delay	*8.04*		*7.71*		*7.98*		*8.02*	
LOS	*A*		*A*		*A*		*A*	
Approach: Delay	*8.04*		*7.71*		*7.98*		*8.02*	
LOS	*A*		*A*		*A*		*A*	
Intersection Delay	*7.91*							
Intersection LOS	*A*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*R Gibson*	Intersection	*Tavern/South Grade*
Agency/Co.	*Darnell & Associates, Inc.*	Jurisdiction	*Alpine*
Date Performed	*03/23/2001*	Analysis Year	*Existing*
Analysis Time Period	*PM Peak Hour*	Project ID	*990509*

East/West Street: *South Grade Road* North/South Street: *Tavern Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	55	24	15	15	27	45
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	11	73	14	123	96	92
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	97		90		101		326	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T				1.00				

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.2		0.1		0.4	
Prop. Right-Turns	0.2		0.5		0.1		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.05		5.05		5.05		5.05	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.09		0.08		0.09		0.29	
hd, final value	5.05		5.05		5.05		5.05	
x, final value	0.14		0.12		0.13		0.40	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.1		3.1		3.1		3.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	347		340		351		576	
Delay	8.85		8.41		8.42		10.34	
LOS	A		A		A		B	
Approach: Delay	8.85		8.41		8.42		10.34	
LOS	A		A		A		B	
Intersection Delay				9.50				
Intersection LOS				A				

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*R Gibson, V Root*	Intersection	*West Victoria/Alpine*
Agency/Co.	*Darnell & Associates, Inc.*	Jurisdiction	*Alpine*
Date Performed	*03/24/2001*	Analysis Year	*Existing*
Analysis Time Period	*AM Peak Hour*	Project ID	*990509*

East/West Street: *Alpine Boulevard* North/South Street: *West Victoria Drive*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	*20*	*144*	*1*	*100*	*286*	*28*
%Thrus Left Lane	*50*			*50*		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	*4*	*20*	*104*	*27*	*31*	*37*
%Thrus Left Lane	*50*			*50*		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.95*		*0.95*		*0.95*		*0.95*	
Flow Rate	*173*		*435*		*134*		*98*	
% Heavy Vehicles	*1*		*1*		*1*		*1*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T				*1.00*				

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.2*		*0.0*		*0.3*	
Prop. Right-Turns	*0.0*		*0.1*		*0.8*		*0.4*	
Prop. Heavy Vehicle	*0.0*		*0.0*		0.0		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*5.17*		*5.17*		*5.17*		*5.17*	

Departure Headway and Service Time

hd, initial value	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.15*		*0.39*		*0.12*		*0.09*	
hd, final value	*5.17*		*5.17*		*5.17*		*5.17*	
x, final value	*0.25*		*0.58*		*0.19*		*0.15*	
Move-up time, m	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time	*3.2*		*3.2*		*3.2*		*3.2*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	*423*		*685*		*384*		*348*	
Delay	*9.87*		*14.46*		*9.36*		*9.48*	
LOS	*A*		*B*		*A*		*A*	
Approach: Delay	*9.87*		*14.46*		*9.36*		*9.48*	
LOS	*A*		*B*		*A*		*A*	
Intersection Delay				*12.12*				
Intersection LOS				*B*				

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*R Gibson, V Root*	Intersection	*West Victoria/Alpine*
Agency/Co.	*Darnell & Associates, Inc.*	Jurisdiction	*Alpine*
Date Performed	*03/24/2001*	Analysis Year	*Existing*
Analysis Time Period	*PM Peak Hour*	Project ID	*990509*
East/West Street: *Alpine Boulevard*		North/South Street: *West Victoria Drive*	

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	37	330	2	193	215	23
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	5	32	211	23	40	35
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.95*		*0.95*		*0.95*		*0.95*	
Flow Rate	*387*		*453*		*260*		*102*	
% Heavy Vehicles	*1*		*1*		*1*		*1*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.4*		*0.0*		*0.2*	
Prop. Right-Turns	*0.0*		*0.1*		*0.9*		*0.4*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*6.02*		*6.02*		*6.02*		*6.02*	

Departure Headway and Service Time

hd, initial value	*3.20*	*3.20*	*3.20*	*3.20*
x, initial	*0.34*	*0.40*	*0.23*	*0.09*
hd, final value	*6.02*	*6.02*	*6.02*	*6.02*
x, final value	*0.65*	*0.75*	*0.44*	*0.20*
Move-up time, m	*2.0*	*2.0*	*2.0*	*2.0*
Service Time	*4.0*	*4.0*	*4.0*	*4.0*

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	*571*		*587*		*510*		*352*	
Delay	*19.87*		*25.90*		*14.07*		*11.71*	
LOS	*C*		*D*		*B*		*B*	
Approach: Delay	*19.87*		*25.90*		*14.07*		*11.71*	
LOS	*C*		*D*		*B*		*B*	
Intersection Delay	*20.20*							
Intersection LOS	*C*							

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	AM Peak Hour
Intersection:	Alpine/Victoria/South Grade
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	W. Victoria Dr/S. Grade Rd
North/South Street:	Alpine Boulevard
Intersection Orientation: EW	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	39	202	134	33	170	8
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	41	212	141	34	178	8
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized?			No			
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	79	8	20	11	4	27
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	83	8	21	11	4	28
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						No
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT	L		TR	LT		R
v (vph)	41	34	83		29	15		28
C(m) (vph)	1386	1202	449		634	339		946
v/c	0.03	0.03	0.18		0.05	0.04		0.03
95% queue length	0.09	0.09	0.68		0.14	0.14		0.09
Control Delay	7.7	8.1	14.8		11.0	16.1		8.9
LOS	A	A	B		B	C		A
Approach Delay				13.8			11.4	
Approach LOS				B			B	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	PM Peak Hour
Intersection:	Alpine/E. Victoria/South Grade
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	E. Victoria Dr/S. Grade Rd
North/South Street:	Alpine Boulevard
Intersection Orientation: EW	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	24	91	35	26	124	4
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	25	95	36	27	130	4
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized?			No			
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	102	5	31	6	10	19
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	107	5	32	6	10	20
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						No
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT	L		TR	LT		R
v (vph)	25	27	107		37	16		20
C(m) (vph)	1448	1452	622		865	534		983
v/c	0.02	0.02	0.17		0.04	0.03		0.02
95% queue length	0.05	0.06	0.62		0.13	0.09		0.06
Control Delay	7.5	7.5	12.0		9.3	11.9		8.7
LOS	A	A	B		A	B		A
Approach Delay				11.3			10.2	
Approach LOS				B			B	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	AM Peak Hour
Intersection:	Alpine/Willows
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	Alpine Boulevard
North/South Street:	Willows Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	114	7			22	19
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	120	7			23	20
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				10		123
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				10		129
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	120						139	
C(m) (vph)	1566						999	
v/c	0.08						0.14	
95% queue length	0.25						0.48	
Control Delay	7.5						9.2	
LOS	A						A	
Approach Delay							9.2	
Approach LOS							A	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/23/2001
Analysis Time Period:	PM Peak Hour
Intersection:	Alpine/Willows
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	Alpine Boulevard
North/South Street:	Willows Road
Intersection Orientation: EW	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	161	41			21	10
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	169	43			22	10
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				23		163
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				24		171
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	169						195	
C(m) (vph)	1580						937	
v/c	0.11						0.21	
95% queue length	0.36						0.79	
Control Delay	7.6						9.9	
LOS	A						A	
Approach Delay							9.9	
Approach LOS							A	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/24/2001
Analysis Time Period:	AM Peak Hour
Intersection:	Willows/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		95	36	4	115	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		100	37	4	121	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				240	1	24
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				252	1	25
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				L		TR
v (vph)		4				252		26
C(m) (vph)		1459				744		920
v/c		0.00				0.34		0.03
95% queue length		0.01				1.53		0.09
Control Delay		7.5				12.3		9.0
LOS		A				B		A
Approach Delay							12.0	
Approach LOS							B	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/24/2001
Analysis Time Period:	PM Peak Hour
Intersection:	Willows/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Willows Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		110	78	6	146	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		115	82	6	153	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				351	1	34
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				369	1	35
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				L		TR
v (vph)		6				369		36
C(m) (vph)		1388				674		884
v/c		0.00				0.55		0.04
95% queue length		0.01				3.55		0.13
Control Delay		7.6				16.8		9.2
LOS		A				C		A
Approach Delay							16.1	
Approach LOS							C	

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/24/2001
Analysis Time Period:	AM Peak Hour
Intersection:	Willows/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Willows Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	330			61	83
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	26	347			64	87
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	44	0	8			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	46	0	8			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	26			54				
C(m) (vph)	1442			540				
v/c	0.02			0.10				
95% queue length	0.06			0.33				
Control Delay	7.5			12.4				
LOS	A			B				
Approach Delay				12.4				
Approach LOS				B				

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/24/2001
Analysis Time Period:	PM Peak Hour
Intersection:	Willows/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Willows Road
Intersection Orientation: NS	Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	401			98	415
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	29	422			103	436
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	49	3	15			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	51	3	15			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	29			69				
C(m) (vph)	1040			375				
v/c	0.03			0.18				
95% queue length	0.09			0.67				
Control Delay	8.6			16.8				
LOS	A			C				
Approach Delay				16.8				
Approach LOS				C				

APPENDIX D

➤ Existing + Project Conditions - Based on Marketing Survey (HCS)

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-Arnold To Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing + Project (Market Survey)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1186
ACTUAL FLOW RATE: 1248

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing + Project (Market Survey)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 939
ACTUAL FLOW RATE: 988

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Willows e/o I-8 EB Ramps
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing + Project (Market Survey)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	51 / 49
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 936
ACTUAL FLOW RATE: 985

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-Arnold to Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing+Project-County Census (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1383
ACTUAL FLOW RATE: 1456

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: E

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-26-2001
OTHER INFORMATION.... Existing+Project-County Census (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1344
ACTUAL FLOW RATE: 1415

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Darnell & Associates, Inc.*
Date Performed	*03/23/2001*
Analysis Time Period	*AM Peak (Marketing Survey)*

Site Information

Intersection	*Tavern/I-8 WB Ramps*
Jurisdiction	*Alpine*
Analysis Year	*Existing+Project*
Project ID	*990509*

East/West Street: *I-8 WB Ramps*	North/South Street: *Tavern Road*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	787	113	0	0	102	172
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	828	118	0	0	107	181
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	34	1	28	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	35	1	29	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	828			65				
C (m) (vph)	1286			44				
v/c	0.64			1.48				
95% queue length	5.30			16.43				
Control Delay	12.8							
LOS	B			F				
Approach Delay	--	--						
Approach LOS	--	--		F				

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*Darnell & Associates, Inc.*
Date Performed	*03/23/2001*
Analysis Time Period	*PM Peak (Marketing Survey)*

Site Information

Intersection	*Tavern/I-8 WB Ramps*
Jurisdiction	*Alpine*
Analysis Year	*Existing+Project*
Project ID	*990509*

East/West Street: *I-8 WB Ramps* | North/South Street: *Tavern Road*

Intersection Orientation: *North-South* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	443	316	0	0	132	108
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	466	332	0	0	138	113
Percent Heavy Vehicles	0	–	–	0	–	–
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	60	1	43	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	63	1	45	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	466			109				
C (m) (vph)	1326			144				
v/c	0.35			0.76				
95% queue length	1.62			6.74				
Control Delay	9.2			97.5				
LOS	A			F				
Approach Delay	–	–	97.5					
Approach LOS	–	–	F					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	Tavern/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/23/2001	Analysis Year	Existing+Project
Analysis Time Period	AM Peak(Marketing Survey)	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Tavern Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	745	69	17	100	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	784	72	17	105	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	72	3	307
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	75	3	323
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				LT		R
v (vph)		17				78		323
C (m) (vph)		793				280		955
v/c		0.02				0.28		0.34
95% queue length		0.07				1.15		1.53
Control Delay		9.6				22.8		10.7
LOS		A				C		B
Approach Delay	--	--				13.0		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	Tavern/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/23/2001	Analysis Year	Existing+Project
Analysis Time Period	PM Peak(Marketing Survey)	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Tavern Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	440	133	42	153	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	463	140	44	161	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	304	3	673
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	320	3	708
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				LT		R
v (vph)		44				323		708
C (m) (vph)		984				349		889
v/c		0.04				0.93		0.80
95% queue length		0.14				16.45		10.51
Control Delay		8.8				95.5		24.3
LOS		A				F		C
Approach Delay	--	--				46.6		
Approach LOS	--	--				E		

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HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/24/2001
Period: AM Peak Hour
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Project-Market Survey

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	28	64	36	61	74	224	48	507	61	158	225	20
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru		A				Thru			A	
	Right		A				Right			A	
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru		A				Thru		A	A	
	Right		A				Right		A	A	
	Peds						Peds				
NB	Right	A				EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		6.0	8.0					5.0	5.0	24.0	
Yellow		3.0	3.0					3.0	0.0	3.0	
All Red		1.0	1.0					1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	168	1787	0.17	0.09	27.2	C		
T	235	1881	0.29	0.13	26.1	C	24.0	C
R	425	1599	0.09	0.27	17.8	B		
Westbound								
L	168	1787	0.38	0.09	28.7	C		
T	235	1881	0.33	0.13	26.4	C	18.8	B
R	650	1599	0.36	0.41	13.6	B		
Northbound								
L	141	1805	0.36	0.08	29.6	C		
T	713	1900	0.75	0.38	21.9	C	21.1	C
R	858	1615	0.07	0.53	7.4	A		
Southbound								
L	395	1805	0.42	0.22	22.2	C		
T	861	1900	0.28	0.45	11.1	B	15.2	B
R	984	1615	0.02	0.61	5.0	A		

Intersection Delay = 19.2 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/24/2001
Period: PM Peak
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Project-Market Survey

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	38	110	94	116	74	246	40	301	90	330	461	32
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru			A			Thru			A	
	Right			A			Right			A	
	Peds						Peds				
WB	Left	A	A			SB	Left	A	A		
	Thru		A	A			Thru		A	A	
	Right		A	A			Right		A	A	
	Peds						Peds				
NB	Right	A	A			EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		5.0	5.0	7.0				5.0	11.0	15.0	
Yellow		3.0	0.0	3.0				3.0	0.0	3.0	
All Red		1.0	0.0	1.0				1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	140	1787	0.29	0.08	28.9	C		
T	206	1881	0.56	0.11	30.6	C	26.0	C
R	400	1599	0.25	0.25	19.5	B		
Westbound								
L	391	1787	0.31	0.22	21.4	C		
T	353	1881	0.22	0.19	22.4	C	13.7	B
R	899	1599	0.29	0.56	7.5	A		
Northbound								
L	141	1805	0.30	0.08	29.0	C		
T	445	1900	0.71	0.23	28.0	C	23.9	C
R	833	1615	0.11	0.52	8.0	A		
Southbound								
L	564	1805	0.62	0.31	20.8	C		
T	772	1900	0.63	0.41	16.8	B	18.0	B
R	883	1615	0.04	0.55	6.7	A		

Intersection Delay = 19.4 (sec/veh) Intersection LOS = B

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/24/2001
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Tavern/Arnold
Jurisdiction	Alpine
Analysis Year	Existing+Project-Market Survey
Project ID	990509

East/West Street: Arnold Way

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	149	73	21	64	63	142
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	32	335	61	57	141	43
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	232	22	99	182	33	416	60	193
% Heavy Vehicles	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.7	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.2	0.0	0.2
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.21	0.02	0.09	0.16	0.03	0.37	0.05	0.17
hd, final value	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26
x, final value	0.47	0.04	0.20	0.34	0.06	0.76	0.12	0.37
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	5.0	4.2	5.0	4.2	5.0	4.2	5.0	4.2

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	470	272	349	432	283	540	310	443
Delay	16.29	9.49	11.78	12.69	9.99	28.57	10.86	13.49
LOS	C	A	B	B	A	D	B	B
Approach: Delay	15.70		12.37		27.21		12.86	
LOS	C		B		D		B	
Intersection Delay	18.54							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information / Site Information

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/Arnold
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/24/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Arnold Way

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	120	69	10	107	97	177
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	4	212	73	258	334	205
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	198	10	162	237	4	299	271	566
% Heavy Vehicles	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Curation, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.3	0.0	0.4
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	8.41	8.41	8.41	8.41	8.41	8.41	8.41	8.41

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.18	0.01	0.14	0.21	0.00	0.27	0.24	0.50
hd, final value	8.41	8.41	8.41	8.41	8.41	8.41	8.41	8.41
x, final value	0.46	0.02	0.36	0.49	0.01	0.64	0.56	1.10
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	6.1	5.4	6.1	5.4	6.1	5.4	6.1	5.4

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	418	260	412	474	254	459	482	566
Delay	18.29	10.55	15.37	17.33	10.84	23.91	19.40	246.94
LOS	C	B	C	C	B	C	C	F
Approach, Delay	17.92		16.54		23.74		173.27	
LOS	C		C		C		F	
Intersection Delay	93.04							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/South Grade
Agency/Co.	Cornell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/24/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: South Grade Road

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	52	23	6	37	26	100
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	5	73	28	30	49	29
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	84		170		110		112	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.2		0.0		0.3	
Prop. Right-Turns	0.1		0.6		0.3		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.70		4.70		4.70		4.70	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.07		0.15		0.10		0.10	
hd, final value	4.70		4.70		4.70		4.70	
x, final value	0.11		0.20		0.14		0.14	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.7		2.7		2.7		2.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	334		420		360		362	
Delay	8.28		8.24		8.18		8.25	
LOS	A		A		A		A	
Approach: Delay	8.28		8.24		8.18		8.25	
LOS	A		A		A		A	
Intersection Delay	8.23							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/South Grade
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/24/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: South Grade Road

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	55	40	15	37	42	45
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	11	73	37	123	96	92
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	114		129		125		326	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.3		0.1		0.4	
Prop. Right-Turns	0.1		0.4		0.3		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.22		5.22		5.22		5.22	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.10		0.11		0.11		0.29	
hd, final value	5.22		5.22		5.22		5.22	
x, final value	0.17		0.18		0.17		0.42	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.2		3.2		3.2		3.2	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	364		379		375		576	
Delay	9.25		9.11		8.77		10.93	
LOS	A		A		A		B	
Approach: Delay	9.25		9.11		8.77		10.93	
LOS	A		A		A		B	
Intersection Delay	9.92							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	West Victoria/Alpine
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/24/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard | North/South Street: West Victoria Drive

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	20	180	1	127	315	52
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	4	20	137	57	31	37
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	211		518		169		130	
% Heavy Vehicles	1		1		1		1	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.3		0.0		0.5	
Prop. Right-Turns	0.0		0.1		0.9		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.66		5.66		5.66		5.66	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.19		0.46		0.15		0.12	
hd, final value	5.66		5.66		5.66		5.66	
x, final value	0.33		0.75		0.27		0.22	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.7		3.7		3.7		3.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	461		680		419		380	
Delay	11.47		22.85		10.72		10.93	
LOS	B		C		B		B	
Approach: Delay	11.47		22.85		10.72		10.93	
LOS	B		C		B		B	
Intersection Delay	17.01							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information / Site Information

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	West Victoria/Alpine
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/24/2001	Analysis Year	Existing+Project+Market Survey
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard

North/South Street: West Victoria Drive

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	37	367	2	224	249	51
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	5	32	244	53	40	35
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	426		550		294		133	
% Heavy Vehicles	1		1		1		1	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.4		0.0		0.4	
Prop. Right-Turns	0.0		0.1		0.9		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	6.93		6.93		6.93		6.93	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.38		0.49		0.26		0.12	
hd, final value	6.93		6.93		6.93		6.93	
x, final value	0.82		1.02		0.58		0.30	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	4.9		4.9		4.9		4.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	512		550		482		383	
Delay	38.87		141.91		19.83		14.83	
LOS	E		F		C		B	
Approach: Delay	38.87		141.91		19.83		14.83	
LOS	E		F		C		B	
Intersection Delay	72.99							
Intersection LOS	F							

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Alpine/Victoria/South Grade
Jurisdiction	Alpine
Analysis Year	Existing+Project-Market Survey
Project ID	990509

East/West Street: W. Victoria Dr/S. Grade Rd	North/South Street: Alpine Boulevard
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	39	275	160	40	228	24
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	41	289	168	42	240	25
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	101	13	25	31	11	27
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	106	13	26	32	11	28
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT	LT	L		TR	LT		R
v (vph)	41	42	106		39	43		28
C (m) (vph)	1296	1100	351		509	245		893
v/c	0.03	0.04	0.30		0.08	0.18		0.03
95% queue length	0.10	0.12	1.28		0.25	0.63		0.10
Control Delay	7.9	8.4	19.7		12.7	22.8		9.2
LOS	A	A	C		B	C		A
Approach Delay	--	--	17.8			17.4		
Approach LOS	--	--	C			C		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alpine/E. Victoria/South Grade
Jurisdiction	Alpine
Analysis Year	Existing+Project-Market Survey
Project ID	990509

East/West Street: E. Victoria Dr/S. Grade Rd	North/South Street: Alpine Boulevard
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	24	215	80	38	240	36
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	25	226	84	40	252	37
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	144	16	42	40	21	19
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	151	16	44	42	22	20
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT	LT	L		TR	LT		R
v (vph)	25	40	151		60	64		20
C (m) (vph)	1270	1247	409		599	302		877
v/c	0.02	0.03	0.37		0.10	0.21		0.02
95% queue length	0.06	0.10	1.73		0.33	0.80		0.07
Control Delay	7.9	8.0	18.9		11.7	20.1		9.2
LOS	A	A	C		B	C		A
Approach Delay	--	--	16.9			17.5		
Approach LOS	--	--	C			C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Old S. Grade
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Old South Grade Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	287	3	60	277	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	302	3	63	291	0
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	0	48	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	2	0	50	0	0	0
Percent Heavy Vehicles	2	0	2	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		63		52				
C (m) (vph)		1256		710				
v/c		0.05		0.07				
95% queue length		0.16		0.24				
Control Delay		8.0		10.5				
LOS		A		B				
Approach Delay	--	--	10.5					
Approach LOS	--	--	B					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	R Gibson, V Root
Agency/Co.	Damell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alpine/Old S. Grade
Jurisdiction	Alpine
Analysis Year	Existing+Project-Market Survey
Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Old South Grade Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	234	6	101	267	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	246	6	106	281	0
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	95	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	5	0	100	0	0	0
Percent Heavy Vehicles	2	0	2	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		106		105				
C (m) (vph)		1313		746				
v/c		0.08		0.14				
95% queue length		0.26		0.49				
Control Delay		8.0		10.6				
LOS		A		B				
Approach Delay	--	--	10.6					
Approach LOS	--	--	B					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Alpine/Willows
Jurisdiction	Alpine
Analysis Year	Existing+Project-Market Survey
Project ID	990509

East/West Street: Alpine Boulevard
North/South Street: Willows Road
Intersection Orientation: East-West
Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	210	13	0	0	29	19
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	221	13	0	0	30	20
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	10	0	242
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	10	0	254
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	221						264	
C (m) (vph)	1557						984	
v/c	0.14						0.27	
95% queue length	0.50						1.10	
Control Delay	7.7						10.0-	
LOS	A						A	
Approach Delay	--	--				10.0-		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Willows
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Willows Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	273	48	0	0	27	10
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	287	50	0	0	28	10
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	23	0	283
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	24	0	297
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	287						321	
C (m) (vph)	1572						908	
v/c	0.18						0.35	
95% queue length	0.67						1.63	
Control Delay	7.8						11.1	
LOS	A						B	
Approach Delay	--	--					11.1	
Approach LOS	--	--					B	

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Willows/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	108	119	4	234	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	113	125	4	246	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	240	1	24
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	252	1	25
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L		TR
v (vph)		4				252		26
C (m) (vph)		1341				584		778
v/c		0.00				0.43		0.03
95% queue length		0.01				2.25		0.10
Control Delay		7.7				15.8		9.8
LOS		A				C		A
Approach Delay	--	--				15.3		
Approach LOS	--	--				C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Roct	Intersection	Willows/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	125	175	6	266	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	131	184	6	280	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	351	1	34
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	369	1	35
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L		TR
v (vph)		6				369		36
C (m) (vph)		1257				521		746
v/c		0.00				0.71		0.05
95% queue length		0.01				6.69		0.15
Control Delay		7.9				28.2		10.1
LOS		A				D		B
Approach Delay	--	--				26.6		
Approach LOS	--	--				D		

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Willows/I-8 WB Ramps
Jurisdiction	Alpine
Analysis Year	Existing+Project-Market Survey
Project ID	990509

East/West Street: I-8 WB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	343	0	0	78	83
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	26	361	0	0	82	87
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	146	0	8	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	153	0	8	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	26			161				
C (m) (vph)	1421			505				
v/c	0.02			0.32				
95% queue length	0.06			1.39				
Control Delay	7.6			15.5				
LOS	A			C				
Approach Delay	--	--	15.5					
Approach LOS	--	--	C					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Willows/I-8 WB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Project-Market Survey
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: I-8 WB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	416	0	0	114	415
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	29	437	0	0	120	436
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	152	3	15	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	160	3	15	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	29			178				
C (m) (vph)	1025			342				
v/c	0.03			0.52				
95% queue length	0.09			3.14				
Control Delay	8.6			26.8				
LOS	A			D				
Approach Delay	--	--	26.8					
Approach LOS	--	--	D					

APPENDIX E

➤Existing + Other Projects (HCS)

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-Arnold To Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing + Other Projects

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1070
ACTUAL FLOW RATE: 1126

LOS	SERVICE FLOW RATE	V/C
A	99	.04
B	393	.16
C	786	.32
D	1431	.57
E	2510	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing + Other Projects

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 823
ACTUAL FLOW RATE: 866

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-w/o South Grade
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-2001
OTHER INFORMATION.... Existing + Others

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	55 / 45
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.97	.96
B	2.2	2	2.5	1	.97	.95
C	2.2	2	2.5	1	.97	.95
D	2	1.6	1.6	1	.97	.97
E	2	1.6	1.6	1	.97	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 686
ACTUAL FLOW RATE: 722

LOS	SERVICE FLOW RATE	V/C
A	104	.04
B	412	.16
C	825	.32
D	1500	.57
E	2632	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Willows e/o I-8 EB Ramps
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing + Other Project

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	51 / 49
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 905
ACTUAL FLOW RATE: 953

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-Arnold to Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing + Others (Based on County Cens us)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1263
ACTUAL FLOW RATE: 1329

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing + Others -based on County Cens us

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1224
ACTUAL FLOW RATE: 1288

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/I-8 WB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak	Project ID	990509

East/West Street: I-8 WB Ramps	North/South Street: Tavern Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	836	119	0	0	103	186
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	880	125	0	0	108	195
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	36	1	28	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	37	1	29	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	880			67				
C (m) (vph)	1269			31				
v/c	0.69			2.16				
95% queue length	6.57			22.47				
Control Delay	14.2							
LOS	B			F				
Approach Delay	--	--						
Approach LOS	--	--		F				

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/I-8 WB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak	Project ID	990509

East/West Street: I-8 WB Ramps	North/South Street: Tavern Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	466	334	0	0	133	115
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	490	351	0	0	140	121
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	65	1	44	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	68	1	46	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	490			115				
C (m) (vph)	1315			126				
v/c	0.37			0.91				
95% queue length	1.77			10.67				
Control Delay	9.4			185.5				
LOS	A			F				
Approach Delay	--	--	185.5					
Approach LOS	--	--	F					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Tavern Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	794	73	18	100	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	835	76	18	105	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	78	3	324
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	82	3	341
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				LT		R
v (vph)		18				85		341
C (m) (vph)		756				259		955
v/c		0.02				0.33		0.36
95% queue length		0.07				1.44		1.66
Control Delay		9.9				25.7		10.9
LOS		A				D		B
Approach Delay	--	--				13.8		
Approach LOS	--	--				B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Tavern Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	463	135	43	153	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	487	142	45	161	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	322	3	739
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	338	3	777
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				LT		R
v (vph)		45				341		777
C (m) (vph)		963				336		889
v/c		0.05				1.01		0.87
95% queue length		0.15				23.90		16.15
Control Delay		8.9				169.6		34.3
LOS		A				F		D
Approach Delay	--	--				75.6		
Approach LOS	--	--				F		

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HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/25/2001
Period: AM Peak
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Other Projects

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	28	42	36	71	59	235	85	507	67	163	239	20
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru		A						
	Right		A						
	Peds								
WB	Left	A							
	Thru		A						
	Right		A						
	Peds								
NB	Right	A							
SB	Right	A							
NB	Left					A			
	Thru							A	
	Right							A	
	Peds								
SB	Left					A	A		
	Thru						A	A	
	Right						A	A	
	Peds								
EB	Right					A			
WB	Right					A	A		
Green		6.0	8.0			5.0	5.0	24.0	
Yellow		3.0	3.0			3.0	0.0	3.0	
All Red		1.0	1.0			1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	168	1787	0.17	0.09	27.2	C		
T	235	1881	0.19	0.13	25.5	C	23.3	C
R	425	1599	0.09	0.27	17.8	B		
Westbound								
L	168	1787	0.45	0.09	29.3	C		
T	235	1881	0.26	0.13	25.9	C	18.7	B
R	650	1599	0.38	0.41	13.7	B		
Northbound								
L	141	1805	0.63	0.08	37.8	D		
T	713	1900	0.75	0.38	21.9	C	22.5	C
R	858	1615	0.08	0.53	7.4	A		
Southbound								
L	395	1805	0.44	0.22	22.4	C		
T	861	1900	0.29	0.45	11.2	B	15.2	B
R	984	1615	0.02	0.61	5.0	A		

Intersection Delay = 19.7 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/25/2001
Period: PM Peak
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Other Projects

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	38	88	94	127	52	249	59	301	94	356	507	32
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru			A			Thru			A	
	Right			A			Right			A	
	Peds						Peds				
WB	Left	A	A			SB	Left	A	A		
	Thru		A	A			Thru		A	A	
	Right		A	A			Right		A	A	
	Peds						Peds				
NB	Right	A	A			EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		5.0	5.0	7.0				5.0	11.0	15.0	
Yellow		3.0	0.0	3.0				3.0	0.0	3.0	
All Red		1.0	0.0	1.0				1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	140	1787	0.29	0.08	28.9	C		
T	206	1881	0.45	0.11	28.3	C	24.7	C
R	400	1599	0.25	0.25	19.5	B		
Westbound								
L	391	1787	0.34	0.22	21.6	C		
T	353	1881	0.16	0.19	22.0	C	13.5	B
R	899	1599	0.29	0.56	7.5	A		
Northbound								
L	141	1805	0.44	0.08	30.4	C		
T	445	1900	0.71	0.23	28.0	C	24.2	C
R	833	1615	0.12	0.52	8.1	A		
Southbound								
L	564	1805	0.66	0.31	22.1	C		
T	772	1900	0.69	0.41	18.4	B	19.4	B
R	883	1615	0.04	0.55	6.7	A		

Intersection Delay = 19.8 (sec/veh) Intersection LOS = B

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/Arnold
Agency/Co.	Dernell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: Arnold Way

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	149	68	21	56	59	142
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	32	378	48	57	159	43
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	227	22	88	180	33	447	60	212
% Heavy Vehicles	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.7	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.20	0.02	0.08	0.16	0.03	0.40	0.05	0.19
hd, final value	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40
x, final value	0.47	0.04	0.18	0.34	0.06	0.82	0.12	0.41
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	5.1	4.4	5.1	4.4	5.1	4.4	5.1	4.4

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	459	272	338	430	283	539	310	462
Delay	16.55	9.65	11.77	12.99	10.01	36.53	10.91	14.29
LOS	C	A	B	B	B	E	B	B
Approach: Delay	15.34		12.59		34.70		13.55	
LOS	C		B		D		B	
Intersection Delay	21.82							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/Arnold
Agency/Co.	Carnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Arnold Way | North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	121	67	10	95	91	177
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	4	236	65	258	390	205
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	197	10	147	234	4	316	271	625
% Heavy Vehicles	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.2	0.0	0.3
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.18	0.01	0.13	0.21	0.00	0.28	0.24	0.56
hd, final value	8.42	8.42	8.42	8.42	8.42	8.42	8.42	8.42
x, final value	0.46	0.02	0.33	0.49	0.01	0.68	0.56	1.22
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	6.1	5.4	6.1	5.4	6.1	5.4	6.1	5.4

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	417	260	397	471	254	461	482	625
Delay	18.27	10.56	14.82	17.28	10.80	25.99	19.38	436.34
LOS	C	B	B	C	B	D	C	F
Approach: Delay	17.90		16.33		25.80		310.23	
LOS	C		C		D		F	
Intersection Delay	164.16							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information / Site Information

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Tavern/South Grade
Agency/Co.	Cornell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: South Grade Road

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	109	17	8	19	32	111
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	6	75	5	35	51	54
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	139		169		89		145	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.8		0.1		0.1		0.2	
Prop. Right-Turns	0.1		0.7		0.1		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.80		4.80		4.80		4.80	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.12		0.15		0.08		0.13	
hd, final value	4.80		4.80		4.80		4.80	
x, final value	0.19		0.20		0.12		0.18	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.8		2.8		2.8		2.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	389		419		339		395	
Delay	8.89		8.33		8.43		8.58	
LOS	A		A		A		A	
Approach: Delay	8.89		8.33		8.43		8.58	
LOS	A		A		A		A	
Intersection Delay	8.56							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Tavern/South Grade
Jurisdiction	Alpine
Analysis Year	Existing+Other Projects
Project ID	990509

East/West Street: South Grade Road

North/South Street: Tavern Road

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	88	47	16	15	44	50
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	13	75	16	139	98	164
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	157		113		107		421	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.1		0.1		0.3	
Prop. Right-Turns	0.1		0.5		0.1		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.45		5.45		5.45		5.45	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.14		0.10		0.10		0.37	
hd, final value	5.45		5.45		5.45		5.45	
x, final value	0.24		0.16		0.15		0.54	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.4		3.4		3.4		3.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	407		363		357		671	
Delay	10.14		9.25		9.08		13.08	
LOS	B		A		A		B	
Approach: Delay	10.14		9.25		9.08		13.08	
LOS	B		A		A		B	
Intersection Delay	11.42							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	West Victoria/Alpine
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard

North/South Street: West Victoria Drive/Arnold Way

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	22	163	1	101	320	30
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	4	24	108	30	43	42
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	195		473		142		120	
% Heavy Vehicles	1		1		1		1	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.2		0.0		0.3	
Prop. Right-Turns	0.0		0.1		0.8		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.38		5.38		5.38		5.38	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.17		0.42		0.13		0.11	
hd, final value	5.38		5.38		5.38		5.38	
x, final value	0.29		0.66		0.21		0.19	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.4		3.4		3.4		3.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	445		703		392		370	
Delay	10.60		17.32		9.89		10.13	
LOS	B		C		A		B	
Approach: Delay	10.60		17.32		9.89		10.13	
LOS	B		C		A		B	
Intersection Delay	13.85							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information / Site Information

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	West Victoria/Alpine
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard

North/South Street: West Victoria Drive

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	43	375	2	196	233	25
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	5	47	216	27	47	38
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	441		477		281		117	
% Heavy Vehicles	1		1		1		1	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.4		0.0		0.2	
Prop. Right-Turns	0.0		0.1		0.8		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	6.45		6.45		6.45		6.45	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.39		0.42		0.25		0.10	
hd, final value	6.45		6.45		6.45		6.45	
x, final value	0.79		0.85		0.52		0.25	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	4.4		4.4		4.4		4.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	540		549		484		367	
Delay	32.34		41.68		17.01		13.17	
LOS	D		E		C		B	
Approach: Delay	32.34		41.68		17.01		13.17	
LOS	D		E		C		B	
Intersection Delay	30.75							
Intersection LOS	D							

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Victoria/South Grade
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: W. Victoria Dr/S. Grade Rd	North/South Street: Alpine Boulevard
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	39	205	142	36	176	8
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	41	215	149	37	185	8
Percent Heavy Vehicles	2	–	–	2	–	–
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	96	12	24	12	13	28
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	101	12	25	12	13	29
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT	LT	L		TR	LT		R
v (vph)	41	37	101		37	25		29
C (m) (vph)	1378	1191	427		604	326		942
v/c	0.03	0.03	0.24		0.06	0.08		0.03
95% queue length	0.09	0.10	0.92		0.20	0.25		0.10
Control Delay	7.7	8.1	16.0		11.3	17.0		8.9
LOS	A	A	C		B	C		A
Approach Delay	–	–	14.8			12.7		
Approach LOS	–	–	B			B		

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	R Gibson, V Root
Agency/Co.	Darnell & Associates, Inc.
Date Performed	03/25/2001
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Alpine/E. Victoria/South Grade
Jurisdiction	Alpine
Analysis Year	Existing+Other Projects
Project ID	990509

East/West Street: E. Victoria Dr/S. Grade Rd

North/South Street: Alpine Boulevard

Intersection Orientation: East-West

Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	98	56	31	129	5
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	26	103	58	32	135	5
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	113	16	35	6	15	19
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	118	16	36	6	15	20
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT	LT	L		TR	LT		R
v (vph)	26	32	118		52	21		20
C (m) (vph)	1441	1416	591		764	497		978
v/c	0.02	0.02	0.20		0.07	0.04		0.02
95% queue length	0.06	0.07	0.75		0.22	0.13		0.06
Control Delay	7.5	7.6	12.6		10.1	12.6		8.8
LOS	A	A	B		B	B		A
Approach Delay	--	--	11.8			10.7		
Approach LOS	--	--	B			B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Old S. Grade
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Old South Grade Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	238	3	0	213	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	250	3	0	224	0
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	0	0	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	7	0	0	0	0	0
Percent Heavy Vehicles	2	0	2	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		0		7				
C (m) (vph)		1312		548				
v/c		0.00		0.01				
95% queue length		0.00		0.04				
Control Delay		7.7		11.7				
LOS		A		B				
Approach Delay	--	--	11.7					
Approach LOS	--	--	B					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Old S. Grade
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Old South Grade Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	130	9	1	161	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	136	9	1	169	0
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	0	0	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	4	0	0	0	0	0
Percent Heavy Vehicles	2	0	2	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		1		4				
C (m) (vph)		1437		681				
v/c		0.00		0.01				
95% queue length		0.00		0.02				
Control Delay		7.5		10.3				
LOS		A		B				
Approach Delay	--	--	10.3					
Approach LOS	--	--	B					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Willows
Agency/Co.	Damell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Willows Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	118	7	0	0	22	19
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	124	7	0	0	23	20
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	10	0	125
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	10	0	131
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	124						141	
C (m) (vph)	1566						998	
v/c	0.08						0.14	
95% queue length	0.26						0.49	
Control Delay	7.5						9.2	
LOS	A						A	
Approach Delay	--	--				9.2		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Alpine/Willows
Agency/Co.	Damell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: Alpine Boulevard	North/South Street: Willows Road
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	162	41	0	0	21	10
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	170	43	0	0	22	10
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	23	0	169
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	24	0	177
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	170						201	
C (m) (vph)	1580						940	
v/c	0.11						0.21	
95% queue length	0.36						0.81	
Control Delay	7.6						9.9	
LOS	A						A	
Approach Delay	--	--				9.9		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Willows/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	95	40	4	117	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	100	42	4	123	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	240	1	24
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	252	1	25
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L		TR
v (vph)		4				252		26
C (m) (vph)		1453				739		916
v/c		0.00				0.34		0.03
95% queue length		0.01				1.54		0.09
Control Delay		7.5				12.4		9.0
LOS		A				B		A
Approach Delay	--	--				12.1		
Approach LOS	--	--				B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Willows/I-8 EB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: I-8 EB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	110	79	6	151	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	115	83	6	158	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	351	1	34
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	0	0	369	1	35
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L		TR
v (vph)		6				369		36
C (m) (vph)		1387				669		879
v/c		0.00				0.55		0.04
95% queue length		0.01				3.60		0.13
Control Delay		7.6				16.9		9.3
LOS		A				C		A
Approach Delay	--	--				16.3		
Approach LOS	--	--				C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Willows/I-8 WB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	AM Peak Hour	Project ID	990509

East/West Street: I-8 WB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	330	0	0	61	83
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	26	347	0	0	64	87
Percent Heavy Vehicles	0	–	–	0	–	–
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	46	0	8	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	48	0	8	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	26			56				
C (m) (vph)	1442			539				
v/c	0.02			0.10				
95% queue length	0.06			0.35				
Control Delay	7.5			12.5				
LOS	A			B				
Approach Delay	–	–	12.5					
Approach LOS	–	–	B					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	R Gibson, V Root	Intersection	Willows/I-8 WB Ramps
Agency/Co.	Darnell & Associates, Inc.	Jurisdiction	Alpine
Date Performed	03/25/2001	Analysis Year	Existing+Other Projects
Analysis Time Period	PM Peak Hour	Project ID	990509

East/West Street: I-8 WB Ramps	North/South Street: Willows Road
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	401	0	0	98	415
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	29	422	0	0	103	436
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	54	3	15	0	0	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	56	3	15	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	29			74				
C (m) (vph)	1040			373				
v/c	0.03			0.20				
95% queue length	0.09			0.74				
Control Delay	8.6			17.0				
LOS	A			C				
Approach Delay	--	--	17.0					
Approach LOS	--	--	C					

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APPENDIX F

➤ Existing + Other Projects - Based on Marketing Survey (HCS)

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-Arnold To Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1263
ACTUAL FLOW RATE: 1329

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1016
ACTUAL FLOW RATE: 1069

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Willows e/o I-8 EB Ramps
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	51 / 49
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 936
ACTUAL FLOW RATE: 985

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-Arnold to Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project-County Census (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1456
ACTUAL FLOW RATE: 1533

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: E

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project-County Census (MS)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1417
ACTUAL FLOW RATE: 1492

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: E

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Marketing Survey)
Intersection: Tavern/I-8 WB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: I-8 WB Ramps
North/South Street: Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	841	119			103	186
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	885	125			108	195
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	36	1	28			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	37	1	29			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	885			67				
C(m) (vph)	1269			31				
v/c	0.70			2.16				
95% queue length	6.68			22.47				
Control Delay	14.3							
LOS	B			F				
Approach Delay								
Approach LOS				F				

HCS2000: Unsignalized Intersections Release 4.1

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak (Marketing Survey)
Intersection:	Tavern/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	473	334			133	115
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	497	351			140	121
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	65	1	44			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	68	1	46			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	497			115				
C(m) (vph)	1315			122				
v/c	0.38			0.94				
95% queue length	1.81			11.50				
Control Delay	9.4			212.5				
LOS	A			F				
Approach Delay				212.5				
Approach LOS				F				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/23/2001
Analysis Time Period: AM Peak(Marketing Survey)
Intersection: Tavern/I-8 EB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Project
Project ID: 990509
East/West Street: I-8 EB Ramps
North/South Street: Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		745	69	17	100	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		784	72	17	105	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				72	3	307
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				75	3	323
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?						
Storage						
RT Channelized?						No
Lanes				0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				LT		R
v (vph)		17				78		323
C(m) (vph)		793				280		955
v/c		0.02				0.28		0.34
95% queue length		0.07				1.15		1.53
Control Delay		9.6				22.8		10.7
LOS		A				C		B
Approach Delay							13.0	
Approach LOS							B	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak(Marketing Survey)
Intersection: Tavern/I-8 EB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: I-8 EB Ramps
North/South Street: Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		470	135	43	153	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		494	142	45	161	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				322	3	745
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				338	3	784
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?						
Storage						
RT Channelized?						No
Lanes				0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				LT		R
v (vph)		45				341		784
C(m) (vph)		957				332		889
v/c		0.05				1.03		0.88
95% queue length		0.15				24.98		16.94
Control Delay		8.9				183.9		35.9
LOS		A				F		E
Approach Delay							80.8	
Approach LOS							F	

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HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/25/2001
Period: AM Peak Hour (Market Survey)
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Others+Project
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	28	68	36	71	80	240	85	507	67	170	239	20
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru		A				Thru			A	
	Right		A				Right			A	
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru		A				Thru		A	A	
	Right		A				Right		A	A	
	Peds						Peds				
NB	Right	A				EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		6.0	8.0					5.0	5.0	24.0	
Yellow		3.0	3.0					3.0	0.0	3.0	
All Red		1.0	1.0					1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	168	1787	0.17	0.09	27.2	C		
T	235	1881	0.31	0.13	26.2	C	24.1	C
R	425	1599	0.09	0.27	17.8	B		
Westbound								
L	168	1787	0.45	0.09	29.3	C		
T	235	1881	0.36	0.13	26.6	C	19.2	B
R	650	1599	0.39	0.41	13.8	B		
Northbound								
L	141	1805	0.63	0.08	37.8	D		
T	713	1900	0.75	0.38	21.9	C	22.5	C
R	858	1615	0.08	0.53	7.4	A		
Southbound								
L	395	1805	0.45	0.22	22.5	C		
T	861	1900	0.29	0.45	11.2	B	15.4	B
R	984	1615	0.02	0.61	5.0	A		

Intersection Delay = 19.9 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/25/2001
Period: PM Peak(Marketing Survey)
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Others+Project
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	38	115	94	127	77	256	59	301	94	362	507	32
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru			A			Thru			A	
	Right			A			Right			A	
	Peds						Peds				
WB	Left	A	A			SB	Left	A	A		
	Thru		A	A			Thru		A	A	
	Right		A	A			Right		A	A	
	Peds						Peds				
NB	Right	A	A			EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		5.0	5.0	7.0				5.0	11.0	15.0	
Yellow		3.0	0.0	3.0				3.0	0.0	3.0	
All Red		1.0	0.0	1.0				1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	140	1787	0.29	0.08	28.9	C		
T	206	1881	0.59	0.11	31.5	C	26.6	C
R	400	1599	0.25	0.25	19.5	B		
Westbound								
L	391	1787	0.34	0.22	21.6	C		
T	353	1881	0.23	0.19	22.4	C	13.9	B
R	899	1599	0.30	0.56	7.6	A		
Northbound								
L	141	1805	0.44	0.08	30.4	C		
T	445	1900	0.71	0.23	28.0	C	24.2	C
R	833	1615	0.12	0.52	8.1	A		
Southbound								
L	564	1805	0.68	0.31	22.4	C		
T	772	1900	0.69	0.41	18.4	B	19.6	B
R	883	1615	0.04	0.55	6.7	A		

Intersection Delay = 20.2 (sec/veh) Intersection LOS = C

HCS2000: Unsignalized Intersections Release 4.1

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Marketing Survey)
Intersection: Tavern/Arnold
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Arnold Way
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	149	81	21	69	70	142	32	378	65	57	159	43
% Thrus Left Lane						50						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	241	22	108	185	33	465	60	212
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	241	22	108	185	33	465	60	212
Left-Turn	156	0	72	0	33	0	60	0
Right-Turn	0	22	0	149	0	68	0	45
Prop. Left-Turns	0.6	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1	-0.6	0.1	-0.5	0.2	-0.1	0.2	-0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	241	22	108	185	33	465	60	212
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.21	0.02	0.10	0.16	0.03	0.41	0.05	0.19
hd, final value	7.57	6.84	7.59	6.97	7.02	6.73	7.45	7.12
x, final value	0.51	0.04	0.23	0.36	0.06	0.87	0.12	0.42

Service Time	5.3	4.5	5.3	4.7	4.7	4.4	5.2	4.8

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	241	22	108	185	33	465	60	212
Service Time	5.3	4.5	5.3	4.7	4.7	4.4	5.2	4.8
Utilization, x	0.51	0.04	0.23	0.36	0.06	0.87	0.12	0.42
Dep. headway, hd	7.57	6.84	7.59	6.97	7.02	6.73	7.45	7.12
Capacity	451	272	358	435	283	529	310	462
Delay	17.98	9.84	12.52	13.55	10.20	48.02	11.21	14.94
LOS	C	A	B	B	B	E	B	B
Approach:								
Delay	17.29		13.17		45.52		14.12	
LOS	C		B		E		B	

Intersection Delay 26.33 Intersection LOS D

HCS2000: Unsignalized Intersections Release 4.1

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak (Marketing Survey)
Intersection: Tavern/Arnold
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Arnold Way
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	121	81	10	110	103	177	4	236	81	258	390	205
% Thrus Left Lane						50						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	212	10	168	240	4	333	271	625
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	212	10	168	240	4	333	271	625
Left-Turn	127	0	115	0	4	0	271	0
Right-Turn	0	10	0	186	0	85	0	215
Prop. Left-Turns	0.6	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.3	0.0	0.3
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1	-0.6	0.1	-0.5	0.2	-0.2	0.2	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	212	10	168	240	4	333	271	625
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.19	0.01	0.15	0.21	0.00	0.30	0.24	0.56
hd, final value	8.55	7.83	8.24	7.64	8.19	7.84	7.63	7.23
x, final value	0.50	0.02	0.38	0.51	0.01	0.72	0.57	1.25

Service Time	6.3	5.5	5.9	5.3	5.9	5.5	5.3	4.9

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	212	10	168	240	4	333	271	625
Service Time	6.3	5.5	5.9	5.3	5.9	5.5	5.3	4.9
Utilization, x	0.50	0.02	0.38	0.51	0.01	0.72	0.57	1.25
Dep. headway, hd	8.55	7.83	8.24	7.64	8.19	7.84	7.63	7.23
Capacity	411	260	418	463	254	454	469	625
Delay	19.84	10.71	16.06	18.19	10.97	30.40	20.51	501.81
LOS	C	B	C	C	B	D	C	F
Approach:								
Delay	19.43		17.31		30.16		356.24	
LOS	C		C		D		F	

Intersection Delay 182.89 Intersection LOS F

HCS2000: Unsignalized Intersections Release 4.1

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/24/2001
Analysis Time Period: AM Peak Hour
Intersection: Tavern/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: South Grade Road
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	52	23	6	37	26	100	5	73	28	30	49	29
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	84		170		110		112	
% Heavy Veh	0		0		0		0	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	84		170		110		112	
Left-Turn	54		38		5		31	
Right-Turn	6		105		29		30	
Prop. Left-Turns	0.6		0.2		0.0		0.3	
Prop. Right-Turns	0.1		0.6		0.3		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1		-0.3		-0.1		-0.1	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	84		170		110		112	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.07		0.15		0.10		0.10	
hd, final value	4.70		4.20		4.47		4.51	
x, final value	0.11		0.20		0.14		0.14	

Service Time	2.7	2.2	2.5	2.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	84		170		110		112	
Service Time	2.7		2.2		2.5		2.5	
Utilization, x	0.11		0.20		0.14		0.14	
Dep. headway, hd	4.70		4.20		4.47		4.51	
Capacity	334		420		360		362	
Delay	8.28		8.24		8.18		8.25	
LOS	A		A		A		A	
Approach:								
Delay	8.28		8.24		8.18		8.25	
LOS	A		A		A		A	

Intersection Delay 8.23 Intersection LOS A

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/24/2001
Analysis Time Period: PM Peak Hour
Intersection: Tavern/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: South Grade Road
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	55	40	15	37	42	45	11	73	37	123	96	92
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	114		129		125		326	
% Heavy Veh	0		0		0		0	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	114		129		125		326	
Left-Turn	57		38		11		129	
Right-Turn	15		47		38		96	
Prop. Left-Turns	0.5		0.3		0.1		0.4	
Prop. Right-Turns	0.1		0.4		0.3		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		-0.2		-0.2		-0.1	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	114		129		125		326	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.10		0.11		0.11		0.29	
hd, final value	5.22		5.02		4.80		4.62	
x, final value	0.17		0.18		0.17		0.42	

Service Time	3.2	3.0	2.8	2.6

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	114		129		125		326	
Service Time	3.2		3.0		2.8		2.6	
Utilization, x	0.17		0.18		0.17		0.42	
Dep. headway, hd	5.22		5.02		4.80		4.62	
Capacity	364		379		375		576	
Delay	9.25		9.11		8.77		10.93	
LOS	A		A		A		B	
Approach:								
Delay	9.25		9.11		8.77		10.93	
LOS	A		A		A		B	

Intersection Delay 9.92 Intersection LOS A

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Market Survey)
Intersection: West Victoria/Alpine
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: West Victoria Drive/Arnold Way

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	22	199	1	128	349	54	4	24	141	60	43	42
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	233		557		177		152	
% Heavy Veh	1		1		1		1	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	233		557		177		152	
Left-Turn	23		134		4		63	
Right-Turn	1		56		148		44	
Prop. Left-Turns	0.1		0.2		0.0		0.4	
Prop. Right-Turns	0.0		0.1		0.8		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		-0.5		-0.1	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	233		557		177		152	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.21		0.50		0.16		0.14	
hd, final value	5.96		5.40		6.02		6.48	
x, final value	0.39		0.84		0.30		0.27	

Service Time	4.0	3.4	4.0	4.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	233		557		177		152	
Service Time	4.0		3.4		4.0		4.5	
Utilization, x	0.39		0.84		0.30		0.27	
Dep. headway, hd	5.96		5.40		6.02		6.48	
Capacity	483		656		427		402	
Delay	12.68		33.73		11.55		11.91	
LOS	B		D		B		B	
Approach:								
Delay	12.68		33.73		11.55		11.91	
LOS	B		D		B		B	

Intersection Delay 22.87 Intersection LOS C

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/24/2001
Analysis Time Period: PM Peak Hour
Intersection: West Victoria/Alpine
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: West Victoria Drive

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	37	367	2	224	249	51	5	32	244	53	40	35
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	426		550		294		133	
% Heavy Veh	1		1		1		1	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	426		550		294		133	
Left-Turn	38		235		5		55	
Right-Turn	2		53		256		36	
Prop. Left-Turns	0.1		0.4		0.0		0.4	
Prop. Right-Turns	0.0		0.1		0.9		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		-0.5		-0.1	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	426		550		294		133	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.38		0.49		0.26		0.12	
hd, final value	6.93		6.69		7.11		8.24	
x, final value	0.82		1.02		0.58		0.30	

Service Time	4.9	4.7	5.1	6.2

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	426		550		294		133	
Service Time	4.9		4.7		5.1		6.2	
Utilization, x	0.82		1.02		0.58		0.30	
Dep. headway, hd	6.93		6.69		7.11		8.24	
Capacity	512		550		482		383	
Delay	38.87		141.91		19.83		14.83	
LOS	E		F		C		B	
Approach:								
Delay	38.87		141.91		19.83		14.83	
LOS	E		F		C		B	

Intersection Delay 72.99 Intersection LOS F

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak Hour
Intersection:	Alpine/Victoria/South Grade
Jurisdiction:	Alpine
Analysis Year:	Existing+Project-Market Survey
Project ID: 990509	
East/West Street:	E. Victoria Dr/S. Grade Rd
North/South Street:	Alpine Boulevard

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	39	275	160	40	228	24
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	41	289	168	42	240	25
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized?			No			
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	101	13	25	31	11	27
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	106	13	26	32	11	28
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						No
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT	L		TR	LT		R
v (vph)	41	42	106		39	43		28
C(m) (vph)	1296	1100	351		509	245		893
v/c	0.03	0.04	0.30		0.08	0.18		0.03
95% queue length	0.10	0.12	1.28		0.25	0.63		0.10
Control Delay	7.9	8.4	19.7		12.7	22.8		9.2
LOS	A	A	C		B	C		A
Approach Delay				17.8			17.4	
Approach LOS				C			C	

HCS2000: Unsignalized Intersections Release 4.1

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HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak(Market Survey)
Intersection: Alpine/E. Victoria/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: E. Victoria Dr/S. Grade Rd
North/South Street: Alpine Boulevard

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	222	101	43	245	37
Peak-Hour Factor, PHF	0.89	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	28	233	106	45	257	38
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized?			No			
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	155	27	46	40	26	19
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	163	28	48	42	27	20
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						No
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT	L		TR	LT		R
v (vph)	28	45	163		76	69		20
C(m) (vph)	1263	1217	381		535	274		872
v/c	0.02	0.04	0.43		0.14	0.25		0.02
95% queue length	0.07	0.12	2.20		0.50	1.00		0.07
Control Delay	7.9	8.1	21.5		12.8	22.5		9.2
LOS	A	A	C		B	C		A
Approach Delay				18.7			19.6	
Approach LOS				C			C	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Market Survey)
Intersection: Alpine/Old S. Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: Old South Grade Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		292	6	60	279	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		308	6	63	293	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9		48			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	9		50			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		63		59				
C(m) (vph)		1246		635				
v/c		0.05		0.09				
95% queue length		0.16		0.31				
Control Delay		8.0		11.2				
LOS		A		B				
Approach Delay				11.2				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak (Market Survey)
Intersection:	Alpine/Old S. Grade
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	Alpine Boulevard
North/South Street:	Old South Grade Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		236	15	102	274	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		248	15	107	288	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9		95			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	9		100			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		107		109				
C(m) (vph)		1301		708				
v/c		0.08		0.15				
95% queue length		0.27		0.54				
Control Delay		8.0		11.0				
LOS		A		B				
Approach Delay				11.0				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak Hour
Intersection:	Alpine/Willows
Jurisdiction:	Alpine
Analysis Year:	Existing+Project-Market Survey
Project ID: 990509	
East/West Street:	Alpine Boulevard
North/South Street:	Willows Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	210	13			29	19
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	221	13			30	20
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				10		242
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				10		254
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	221						264	
C(m) (vph)	1557						984	
v/c	0.14						0.27	
95% queue length	0.50						1.10	
Control Delay	7.7						10.0-	
LOS	A						A	
Approach Delay							10.0-	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak Hour
Intersection: Alpine/Willows
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: Willows Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	273	48			27	10
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	287	50			28	10
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				23		283
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				24		297
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	287						321	
C(m) (vph)	1572						908	
v/c	0.18						0.35	
95% queue length	0.67						1.63	
Control Delay	7.8						11.1	
LOS	A						B	
Approach Delay							11.1	
Approach LOS							B	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak Hour
Intersection: Willows/I-8 EB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: I-8 EB Ramps
North/South Street: Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		108	119	4	234	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		113	125	4	246	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				240	1	24
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				252	1	25
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				L		TR
v (vph)		4				252		26
C(m) (vph)		1341				584		778
v/c		0.00				0.43		0.03
95% queue length		0.01				2.25		0.10
Control Delay		7.7				15.8		9.8
LOS		A				C		A
Approach Delay							15.3	
Approach LOS							C	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak Hour
Intersection:	Willows/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Project-Market Survey
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		125	175	6	266	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		131	184	6	280	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				351	1	34
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				369	1	35
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				L		TR
v (vph)		6				369		36
C(m) (vph)		1257				521		746
v/c		0.00				0.71		0.05
95% queue length		0.01				6.69		0.15
Control Delay		7.9				28.2		10.1
LOS		A				D		B
Approach Delay							26.6	
Approach LOS							D	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak Hour
Intersection: Willows/I-8 WB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: I-8 WB Ramps
North/South Street: Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	343			78	83
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	26	361			82	87
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	146	0	8			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	153	0	8			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	26			161				
C(m) (vph)	1421			505				
v/c	0.02			0.32				
95% queue length	0.06			1.39				
Control Delay	7.6			15.5				
LOS	A			C				
Approach Delay				15.5				
Approach LOS				C				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak Hour
Intersection: Willows/I-8 WB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Project-Market Survey
Project ID: 990509
East/West Street: I-8 WB Ramps
North/South Street: Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	416			114	415
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	29	437			120	436
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	152	3	15			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	160	3	15			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	29			178				
C(m) (vph)	1025			342				
v/c	0.03			0.52				
95% queue length	0.09			3.14				
Control Delay	8.6			26.8				
LOS	A			D				
Approach Delay				26.8				
Approach LOS				D				

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APPENDIX G

➤ Existing + Other Projects - Based on Select Zone Assignment (HCS)

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-Arnold To Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project (SZ)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1314
ACTUAL FLOW RATE: 1383

LOS	SERVICE FLOW RATE	V/C
A	99	.04
B	393	.16
C	786	.32
D	1431	.57
E	2510	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project (SZ)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.96
B	2.2	2	2.5	1	.93	.95
C	2.2	2	2.5	1	.93	.95
D	2	1.6	1.6	1	.93	.97
E	2	1.6	1.6	1	.93	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1067
ACTUAL FLOW RATE: 1123

LOS	SERVICE FLOW RATE	V/C
A	100	.04
B	395	.16
C	791	.32
D	1438	.57
E	2523	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine Blvd-w/o South Grade
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-2001
OTHER INFORMATION.... Existing+Others+Project (SZ)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	55 / 45
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.97	.96
B	2.2	2	2.5	1	.97	.95
C	2.2	2	2.5	1	.97	.95
D	2	1.6	1.6	1	.97	.97
E	2	1.6	1.6	1	.97	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1327
ACTUAL FLOW RATE: 1397

LOS	SERVICE FLOW RATE	V/C
A	104	.04
B	412	.16
C	825	.32
D	1500	.57
E	2632	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Willows e/o I-8 EB Ramps
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project (SZ)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	51 / 49
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.99	.96
B	2.2	2	2.5	1	.99	.95
C	2.2	2	2.5	1	.99	.95
D	2	1.6	1.6	1	.99	.97
E	2	1.6	1.6	1	.99	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 925
ACTUAL FLOW RATE: 974

LOS	SERVICE FLOW RATE	V/C
A	107	.04
B	422	.16
C	845	.32
D	1537	.57
E	2697	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-Arnold to Marshall
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project-County Census (SZ)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	63 / 37
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.99	.96
B	2.2	2	2.5	1	.99	.95
C	2.2	2	2.5	1	.99	.95
D	2	1.6	1.6	1	.99	.97
E	2	1.6	1.6	1	.99	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1507
ACTUAL FLOW RATE: 1586

LOS	SERVICE FLOW RATE	V/C
A	106	.04
B	421	.16
C	842	.32
D	1531	.57
E	2686	1

LOS FOR GIVEN CONDITIONS: E

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... Alpine-w/o Bay Meadows
ANALYST..... V Root
TIME OF ANALYSIS..... PM Peak
DATE OF ANALYSIS..... 03-27-01
OTHER INFORMATION.... Existing+Others+Project-County Census (SZ)

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	2
PERCENTAGE OF BUSES.....	0
PERCENTAGE OF RECREATIONAL VEHICLES.....	2
DESIGN SPEED (MPH).....	50
PEAK HOUR FACTOR.....	.95
DIRECTIONAL DISTRIBUTION (UP/DOWN).....	65 / 35
LANE WIDTH (FT).....	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES.....	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.99	.96
B	2.2	2	2.5	1	.99	.95
C	2.2	2	2.5	1	.99	.95
D	2	1.6	1.6	1	.99	.97
E	2	1.6	1.6	1	.99	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1468
ACTUAL FLOW RATE: 1545

LOS	SERVICE FLOW RATE	V/C
A	106	.04
B	421	.16
C	842	.32
D	1531	.57
E	2686	1

LOS FOR GIVEN CONDITIONS: E

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Tavern/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume	860	119			103	186
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	905	125			108	195
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	36	1	28			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	37	1	29			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	905			67				
C(m) (vph)	1269			26				
v/c	0.71			2.58				
95% queue length	7.18			24.59				
Control Delay	14.8							
LOS	B			F				
Approach Delay								
Approach LOS				F				

HCS2000: Unsignalized Intersections Release 4.1

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HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak (Select Zone)
Intersection:	Tavern/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	494	334			133	115
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	520	351			140	121
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	65	1	44			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	68	1	46			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	520			115				
C(m) (vph)	1315			112				
v/c	0.40			1.03				
95% queue length	1.95			13.91				
Control Delay	9.5			306.2				
LOS	A			F				
Approach Delay				306.2				
Approach LOS				F				

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Tavern/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		818	73	18	100	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		861	76	18	105	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				78	3	354
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				82	3	372
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?						
Storage						
RT Channelized?						No
Lanes				0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				LT		R
v (vph)		18				85		372
C(m) (vph)		739				249		955
v/c		0.02				0.34		0.39
95% queue length		0.07				1.53		1.90
Control Delay		10.0-				26.9		11.2
LOS		A				D		B
Approach Delay							14.1	
Approach LOS							B	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak (Select Zone)
Intersection:	Tavern/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Tavern Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		491	135	43	153	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		516	142	45	161	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				322	3	769
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				338	3	809
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?						
Storage						
RT Channelized?						No
Lanes				0	1	1
Configuration				LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				LT		R
v (vph)		45				341		809
C(m) (vph)		939				322		889
v/c		0.05				1.06		0.91
95% queue length		0.15				27.86		20.17
Control Delay		9.0				224.6		42.9
LOS		A				F		E
Approach Delay							96.8	
Approach LOS							F	

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Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/25/2001
Period: AM Peak Hour (Select Zone)
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Others+Project
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	28	45	36	71	62	259	85	507	67	193	239	20
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru		A				Thru			A	
	Right		A				Right			A	
	Peds						Peds				
WB	Left	A				SB	Left	A	A		
	Thru		A				Thru		A	A	
	Right		A				Right		A	A	
	Peds						Peds				
NB	Right	A				EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		6.0	8.0					5.0	5.0	24.0	
Yellow		3.0	3.0					3.0	0.0	3.0	
All Red		1.0	1.0					1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	168	1787	0.17	0.09	27.2	C		
T	235	1881	0.20	0.13	25.5	C	23.4	C
R	425	1599	0.09	0.27	17.8	B		
Westbound								
L	168	1787	0.45	0.09	29.3	C		
T	235	1881	0.28	0.13	26.0	C	18.7	B
R	650	1599	0.42	0.41	14.0	B		
Northbound								
L	141	1805	0.63	0.08	37.8	D		
T	713	1900	0.75	0.38	21.9	C	22.5	C
R	858	1615	0.08	0.53	7.4	A		
Southbound								
L	395	1805	0.51	0.22	23.2	C		
T	861	1900	0.29	0.45	11.2	B	16.0	B
R	984	1615	0.02	0.61	5.0	A		

Intersection Delay = 19.8 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: R Gibson, V Root
Agency: Darnell & Associates, Inc.
Date: 03/25/2001
Period: PM Peak (Select Zone)
Project ID: 990509
E/W St: Alpine Boulevard

Inter.: Alpine/Tavern
Area Type: All other areas
Jurisd: Alpine
Year : Existing+Others+Project
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1	1	1	1	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	38	92	94	127	55	277	59	301	94	386	507	32
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru			A			Thru			A	
	Right			A			Right			A	
	Peds						Peds				
WB	Left	A	A			SB	Left	A	A		
	Thru		A	A			Thru		A	A	
	Right		A	A			Right		A	A	
	Peds						Peds				
NB	Right	A	A			EB	Right	A			
SB	Right	A				WB	Right	A	A		
Green		5.0	5.0	7.0				5.0	11.0	15.0	
Yellow		3.0	0.0	3.0				3.0	0.0	3.0	
All Red		1.0	0.0	1.0				1.0	0.0	1.0	

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	140	1787	0.29	0.08	28.9	C		
T	206	1881	0.47	0.11	28.5	C	24.8	C
R	400	1599	0.25	0.25	19.5	B		
Westbound								
L	391	1787	0.34	0.22	21.6	C		
T	353	1881	0.16	0.19	22.0	C	13.3	B
R	899	1599	0.32	0.56	7.7	A		
Northbound								
L	141	1805	0.44	0.08	30.4	C		
T	445	1900	0.71	0.23	28.0	C	24.2	C
R	833	1615	0.12	0.52	8.1	A		
Southbound								
L	564	1805	0.72	0.31	24.1	C		
T	772	1900	0.69	0.41	18.4	B	20.4	C
R	883	1615	0.04	0.55	6.7	A		

Intersection Delay = 20.1 (sec/veh) Intersection LOS = C

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Select Zone)
Intersection: Tavern/Arnold
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Arnold Way
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	149	75	21	59	64	142	32	378	51	57	159	43
% Thrus Left Lane						50						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	234	22	95	182	33	450	60	212
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	234	22	95	182	33	450	60	212
Left-Turn	156	0	62	0	33	0	60	0
Right-Turn	0	22	0	149	0	53	0	45
Prop. Left-Turns	0.7	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1	-0.6	0.1	-0.5	0.2	-0.1	0.2	-0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	234	22	95	182	33	450	60	212
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.21	0.02	0.08	0.16	0.03	0.40	0.05	0.19
hd, final value	7.45	6.72	7.48	6.86	6.92	6.65	7.31	6.98
x, final value	0.48	0.04	0.20	0.35	0.06	0.83	0.12	0.41

Service Time	5.2	4.4	5.2	4.6	4.6	4.3	5.0	4.7

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	234	22	95	182	33	450	60	212
Service Time	5.2	4.4	5.2	4.6	4.6	4.3	5.0	4.7
Utilization, x	0.48	0.04	0.20	0.35	0.06	0.83	0.12	0.41
Dep. headway, hd	7.45	6.72	7.48	6.86	6.92	6.65	7.31	6.98
Capacity	457	272	345	432	283	534	310	462
Delay	17.10	9.71	12.01	13.18	10.09	39.08	11.02	14.52
LOS	C	A	B	B	B	E	B	B
Approach:								
Delay	16.47		12.78		37.10		13.75	
LOS	C		B		E		B	

Intersection Delay 22.84 Intersection LOS C

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak (Select Zone)
Intersection: Tavern/Arnold
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Arnold Way
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	121	73	10	98	98	177	4	236	69	258	390	205
% Thrus Left Lane						50						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	TR	L	TR	L	TR
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flow Rate	203	10	154	237	4	320	271	625
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	203	10	154	237	4	320	271	625
Left-Turn	127	0	103	0	4	0	271	0
Right-Turn	0	10	0	186	0	72	0	215
Prop. Left-Turns	0.6	0.0	0.7	0.0	1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0	1.0	0.0	0.8	0.0	0.2	0.0	0.3
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1	-0.6	0.1	-0.5	0.2	-0.1	0.2	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	203	10	154	237	4	320	271	625
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.18	0.01	0.14	0.21	0.00	0.28	0.24	0.56
hd, final value	8.46	7.74	8.15	7.55	8.09	7.75	7.49	7.09
x, final value	0.48	0.02	0.35	0.50	0.01	0.69	0.56	1.23

Service Time	6.2	5.4	5.9	5.2	5.8	5.5	5.2	4.8

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	203	10	154	237	4	320	271	625
Service Time	6.2	5.4	5.9	5.2	5.8	5.5	5.2	4.8
Utilization, x	0.48	0.02	0.35	0.50	0.01	0.69	0.56	1.23
Dep. headway, hd	8.46	7.74	8.15	7.55	8.09	7.75	7.49	7.09
Capacity	415	260	404	468	254	458	477	625
Delay	18.83	10.61	15.20	17.64	10.86	27.13	19.77	458.99
LOS	C	B	C	C	B	D	C	F
Approach:								
Delay	18.44		16.68		26.93		326.14	
LOS	C		C		D		F	

Intersection Delay 170.72 Intersection LOS F

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Select Zone)
Intersection: Tavern/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: South Grade Road
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	109	17	8	19	32	111	6	75	5	35	51	54
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	139		169		89		145	
% Heavy Veh	0		0		0		0	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	139		169		89		145	
Left-Turn	114		20		6		36	
Right-Turn	8		116		5		56	
Prop. Left-Turns	0.8		0.1		0.1		0.2	
Prop. Right-Turns	0.1		0.7		0.1		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1		-0.4		-0.0		-0.2	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	139		169		89		145	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.12		0.15		0.08		0.13	
hd, final value	4.80		4.26		4.79		4.56	
x, final value	0.19		0.20		0.12		0.18	

Service Time	2.8	2.3	2.8	2.6

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	139		169		89		145	
Service Time	2.8		2.3		2.8		2.6	
Utilization, x	0.19		0.20		0.12		0.18	
Dep. headway, hd	4.80		4.26		4.79		4.56	
Capacity	389		419		339		395	
Delay	8.89		8.33		8.43		8.58	
LOS	A		A		A		A	
Approach:								
Delay	8.89		8.33		8.43		8.58	
LOS	A		A		A		A	

Intersection Delay 8.56 Intersection LOS A

HCS2000: Unsignalized Intersections Release 4.1

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/24/2001
Analysis Time Period: PM Peak (Select Zone)
Intersection: Tavern/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: South Grade Road
North/South Street: Tavern Road

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	83	47	16	15	44	50	13	75	16	139	98	164
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	157		113		107		421	
% Heavy Veh	0		0		0		0	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	157		113		107		421	
Left-Turn	92		15		13		146	
Right-Turn	16		52		16		172	
Prop. Left-Turns	0.6		0.1		0.1		0.3	
Prop. Right-Turns	0.1		0.5		0.1		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.1		-0.2		-0.1		-0.2	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	157		113		107		421	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.14		0.10		0.10		0.37	
hd, final value	5.45		5.23		5.15		4.63	
x, final value	0.24		0.16		0.15		0.54	

Service Time	3.4	3.2	3.2	2.6

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	157		113		107		421	
Service Time	3.4		3.2		3.2		2.6	
Utilization, x	0.24		0.16		0.15		0.54	
Dep. headway, hd	5.45		5.23		5.15		4.63	
Capacity	407		363		357		671	
Delay	10.14		9.25		9.08		13.08	
LOS	B		A		A		B	
Approach:								
Delay	10.14		9.25		9.08		13.08	
LOS	B		A		A		B	

Intersection Delay 11.42 Intersection LOS B

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Select Zone)
Intersection: West Victoria/Alpine
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: West Victoria Drive/Arnold Way

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	22	232	1	128	376	49	4	24	141	53	43	42
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	268		580		177		144	
% Heavy Veh	1		1		1		1	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	268		580		177		144	
Left-Turn	23		134		4		55	
Right-Turn	1		51		148		44	
Prop. Left-Turns	0.1		0.2		0.0		0.4	
Prop. Right-Turns	0.0		0.1		0.8		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		-0.5		-0.1	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	268		580		177		144	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.24		0.52		0.16		0.13	
hd, final value	6.01		5.49		6.21		6.68	
x, final value	0.45		0.88		0.31		0.27	

Service Time	4.0	3.5	4.2	4.7

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	268		580		177		144	
Service Time	4.0		3.5		4.2		4.7	
Utilization, x	0.45		0.88		0.31		0.27	
Dep. headway, hd	6.01		5.49		6.21		6.68	
Capacity	518		649		427		394	
Delay	13.87		44.12		11.93		12.11	
LOS	B		E		B		B	
Approach:								
Delay	13.87		44.12		11.93		12.11	
LOS	B		E		B		B	

Intersection Delay 28.37 Intersection LOS D

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ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak (Select Zone)
Intersection: West Victoria/Alpine
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: West Victoria Drive/Arnold Way

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	43	444	2	227	299	47	5	47	249	50	47	38
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.95		0.95		0.95		0.95	
Flow Rate	514		601		316		141	
% Heavy Veh	1		1		1		1	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	514		601		316		141	
Left-Turn	45		238		5		52	
Right-Turn	2		49		262		40	
Prop. Left-Turns	0.1		0.4		0.0		0.4	
Prop. Right-Turns	0.0		0.1		0.8		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
Geometry Group	1		1		1		1	
Adjustments Table 10-40:								
hLT-adj	0.2		0.2		0.2		0.2	
hRT-adj	-0.6		-0.6		-0.6		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		-0.5		-0.1	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	514		601		316		141	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.46		0.53		0.28		0.13	
hd, final value	7.24		7.26		7.55		8.82	
x, final value	1.03		1.21		0.66		0.35	

Service Time	5.2	5.3	5.6	6.8

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	514		601		316		141	
Service Time	5.2		5.3		5.6		6.8	
Utilization, x	1.03		1.21		0.66		0.35	
Dep. headway, hd	7.24		7.26		7.55		8.82	
Capacity	514		601		471		390	
Delay	160.94		429.04		25.08		16.46	
LOS	F		F		D		C	
Approach:								
Delay	160.94		429.04		25.08		16.46	
LOS	F		F		D		C	

Intersection Delay 223.17 Intersection LOS F

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Select Zone)
Intersection: Alpine/Victoria/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: E. Victoria Dr/S. Grade Rd
North/South Street: Alpine Boulevard

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	39	406	142	36	325	16
Peak-Hour Factor, PHF	0.98	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	39	427	149	37	342	16
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized?			No			
Lanes	0	1	1	0	2	0
Configuration		LT	R		LT	TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	109	17	24	22	20	28
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	114	17	25	23	21	29
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						No
Lanes	1	1	0	0	1	1
Configuration		L	TR		LT	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT	L		TR	LT		R
v (vph)	39	37	114		42	44		29
C(m) (vph)	1197	993	246		370	178		833
v/c	0.03	0.04	0.46		0.11	0.25		0.03
95% queue length	0.10	0.12	2.50		0.38	0.97		0.11
Control Delay	8.1	8.8	32.1		16.0	31.8		9.5
LOS	A	A	D		C	D		A
Approach Delay				27.8			23.0	
Approach LOS				D			C	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak (Select Zone)
Intersection: Alpine/E. Victoria/South Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: E. Victoria Dr/S. Grade Rd
North/South Street: Alpine Boulevard

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	441	56	31	424	21
Peak-Hour Factor, PHF	0.89	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	28	464	58	32	446	22
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized?			No			
Lanes	0	1	1	0	2	0
Configuration	LT		R	LT		TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	139	27	35	23	26	19
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	146	28	36	24	27	20
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						No
Lanes	1	1	0	0	1	1
Configuration	L		TR	LT		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT	L		TR	LT		R
v (vph)	28	32	146		64	51		20
C(m) (vph)	1090	1041	221		321	160		768
v/c	0.03	0.03	0.66		0.20	0.32		0.03
95% queue length	0.08	0.10	5.14		0.74	1.37		0.08
Control Delay	8.4	8.6	51.5		19.0	37.9		9.8
LOS	A	A	F		C	E		A
Approach Delay				41.6			30.0	
Approach LOS				E			D	

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HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Alpine/Old S. Grade
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	Alpine Boulevard
North/South Street:	Old South Grade Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		262	10	26	243	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		275	10	27	255	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12		21			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	12		22			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		27		34				
C(m) (vph)		1277		618				
v/c		0.02		0.06				
95% queue length		0.06		0.17				
Control Delay		7.9		11.2				
LOS		A		B				
Approach Delay				11.2				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak (Select Zone)
Intersection: Alpine/Old S. Grade
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: Old South Grade Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		177	20	46	212	
Peak-Hour Factor, PHF		0.94	0.95	0.95	0.95	
Hourly Flow Rate, HFR		188	21	48	223	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15		42			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	15		44			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		48		59				
C(m) (vph)		1362		718				
v/c		0.04		0.08				
95% queue length		0.11		0.27				
Control Delay		7.7		10.5				
LOS		A		B				
Approach Delay				10.5				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: AM Peak (Select Zone)
Intersection: Alpine/Willows
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: Alpine Boulevard
North/South Street: Willows Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	139	7			22	19
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	146	7			23	20
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				10		151
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				10		158
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	146						168	
C(m) (vph)	1566						998	
v/c	0.09						0.17	
95% queue length	0.31						0.61	
Control Delay	7.5						9.3	
LOS	A						A	
Approach Delay							9.3	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak (Select Zone)
Intersection:	Alpine/Willows
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	Alpine Boulevard
North/South Street:	Willows Road

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	187	41			21	10
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	196	43			22	10
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				23		196
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				24		206
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	196						230	
C(m) (vph)	1580						936	
v/c	0.12						0.25	
95% queue length	0.42						0.97	
Control Delay	7.6						10.1	
LOS	A						B	
Approach Delay							10.1	
Approach LOS							B	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Willows/I-8 EB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 EB Ramps
North/South Street:	Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		103	53	4	143	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		108	55	4	150	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				240	1	24
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				252	1	25
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		C			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				L		TR
v (vph)		4				252		26
C(m) (vph)		1428				699		885
v/c		0.00				0.36		0.03
95% queue length		0.01				1.68		0.09
Control Delay		7.5				13.0		9.2
LOS		A				B		A
Approach Delay							12.7	
Approach LOS							B	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: R Gibson, V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 03/25/2001
Analysis Time Period: PM Peak (Select Zone)
Intersection: Willows/I-8 EB Ramps
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509
East/West Street: I-8 EB Ramps
North/South Street: Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		120	94	6	178	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		126	98	6	187	
Percent Heavy Vehicles		--	--	0	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				351	1	34
Peak Hour Factor, PHF				0.95	0.95	0.95
Hourly Flow Rate, HFR				367	1	35
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				1	1	0
Configuration				L		TR

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT				L		TR
v (vph)		6				367		36
C(m) (vph)		1357				628		845
v/c		0.00				0.58		0.04
95% queue length		0.01				4.09		0.13
Control Delay		7.7				18.7		9.4
LOS		A				C		A
Approach Delay							17.9	
Approach LOS							C	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Willows/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	338			71	83
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	26	355			74	87
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	63	0	8			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	66	0	8			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	26			74				
C(m) (vph)	1430			522				
v/c	0.02			0.14				
95% queue length	0.06			0.49				
Control Delay	7.6			13.0				
LOS	A			B				
Approach Delay				13.0				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	R Gibson, V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	03/25/2001
Analysis Time Period:	PM Peak (Select Zone)
Intersection:	Willows/I-8 WB Ramps
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID: 990509	
East/West Street:	I-8 WB Ramps
North/South Street:	Willows Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	411			108	415
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	29	432			113	436
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	70	3	15			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Hourly Flow Rate, HFR	73	3	15			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LTR				
v (vph)	29			91				
C(m) (vph)	1031			358				
v/c	0.03			0.25				
95% queue length	0.09			1.01				
Control Delay	8.6			18.5				
LOS	A			C				
Approach Delay				18.5				
Approach LOS				C				

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APPENDIX H

➤Existing Mitigated Intersection Analysis (HCS)

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Existing - Mit:Signalization

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				34	1	28	782	113			102	172
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
WB	Left	A				SB	Left				
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0						55.0	22.0		
Yellow		3.0						3.0	3.0		
All Red		1.0						1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	127	1740	0.52	0.07	46.7	D	46.7	D
Northbound								
LT	1043	1820	0.90	0.57	30.9	C	30.9	C
Southbound								
TR	399	1739	0.72	0.23	40.7	D	40.7	D

Intersection Delay = 33.9 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Existing - Mit:Signalization

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				60	1	43	436	316			132	108
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left								
	Thru								
	Right								
	Peds								
WB	Left	A							
	Thru	A							
	Right	A							
	Peds								
NB	Right								
SB	Right								
NB	Left					A			
	Thru					A			
	Right								
	Peds								
SB	Left								
	Thru						A		
	Right						A		
	Peds								
EB	Right								
WB	Right								
Green		13.0				50.0	21.0		
Yellow		3.0				3.0	3.0		
All Red		1.0				1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	236	1744	0.46	0.14	39.7	D	39.7	D
Northbound								
LT	961	1846	0.82	0.52	25.6	C	25.6	C
Southbound								
TR	390	1784	0.65	0.22	38.0	D	38.0	D

Intersection Delay = 29.6 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Existing - Mit:Signalization
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	72	3	300					740	69	17	100	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left				
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left					SB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		35.0						53.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	658	1805	0.12	0.36	20.4	C		
TR	590	1618	0.57	0.36	25.8	C	24.7	C
Westbound								
Northbound								
TR	1037	1878	0.87	0.55	27.1	C	27.1	C
Southbound								
LT	520	941	0.25	0.55	11.4	B	11.4	B

Intersection Delay = 25.0 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Existing - Mit:Signalization

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	304	3	667					433	133	42	153	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru	A							
	Right	A							
	Peds								
WB	Left								
	Thru								
	Right								
	Peds								
NB	Right								
SB	Right								
NB	Left								
	Thru					A			
	Right					A			
	Peds								
SB	Left					A			
	Thru					A			
	Right								
	Peds								
EB	Right								
WB	Right								
Green		45.5				42.5			
Yellow		3.0				3.0			
All Red		1.0				1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	855	1805	0.37	0.47	16.4	B		
TR	766	1616	0.92	0.47	44.3	D	35.6	D
Westbound								
Northbound								
TR	815	1840	0.73	0.44	25.5	C	25.5	C
Southbound								
LT	246	555	0.83	0.44	48.6	D	48.6	D

Intersection Delay = 33.8 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Existing-Mit:Signalization
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	149	60	21	51	52	142	32	335	44	57	141	43
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru		A		
	Right		A				Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		11.0	8.0					10.0	19.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		1.0	1.0					1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	315	1835	0.74	0.17	34.6	C	32.8	C
R	530	1615	0.04	0.33	14.7	B		
Westbound								
LTR	408	3263	0.67	0.13	31.0	C	31.0	C
Northbound								
L	282	1805	0.13	0.16	23.5	C		
TR	554	1867	0.76	0.30	26.8	C	26.5	C
Southbound								
L	282	1805	0.22	0.16	24.0	C		
T	564	1900	0.28	0.30	17.5	B	18.8	B
R	479	1615	0.10	0.30	16.4	B		

Intersection Delay = 27.1 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Existing - Mit:Signalization
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	120	55	10	92	85	177	4	212	57	258	334	205
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru	A							
	Right	A							
	Peds								
WB	Left		A						
	Thru		A						
	Right		A						
	Peds								
NB	Right								
SB	Right								
NB	Left					A			
	Thru						A		
	Right						A		
	Peds								
SB	Left					A			
	Thru						A		
	Right						A		
	Peds								
EB	Right					A			
WB	Right								
Green		10.0	10.0			13.0	15.0		
Yellow		3.0	3.0			3.0	3.0		
All Red		1.0	1.0			1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	287	1837	0.64	0.16	30.2	C	29.3	C
R	580	1615	0.02	0.36	13.2	B		
Westbound								
LTR	515	3296	0.72	0.16	30.8	C	30.8	C
Northbound								
L	367	1805	0.01	0.20	20.4	C		
TR	431	1840	0.66	0.23	25.9	C	25.8	C
Southbound								
L	367	1805	0.74	0.20	32.1	C		
T	445	1900	0.79	0.23	33.1	C	30.4	C
R	379	1615	0.57	0.23	23.7	C		

Intersection Delay = 29.6 (sec/veh) Intersection LOS = C

APPENDIXI I

➤ Existing + Project Mitigated Intersection Analysis - Based on Marketing Survey (HCS)

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				34	1	28	787	113			102	172
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
WB	Left	A				SB	Left				
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0						55.0	22.0		
Yellow		3.0						3.0	3.0		
All Red		1.0						1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	127	1740	0.52	0.07	46.7	D	46.7	D
Northbound								
LT	1043	1820	0.91	0.57	31.7	C	31.7	C
Southbound								
TR	399	1739	0.72	0.23	40.7	D	40.7	D

Intersection Delay = 34.5 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				60	1	43	443	316			132	108
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left								
	Thru								
	Right								
	Peds								
WB	Left	A							
	Thru	A							
	Right	A							
	Peds								
NB	Right								
SB	Right								
NB	Left					A			
	Thru					A			
	Right								
	Peds								
SB	Left								
	Thru						A		
	Right						A		
	Peds								
EB	Right								
WB	Right								
Green		13.0				50.0	21.0		
Yellow		3.0				3.0	3.0		
All Red		1.0				1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	236	1744	0.46	0.14	39.7	D	39.7	D
Northbound								
LT	961	1846	0.83	0.52	26.1	C	26.1	C
Southbound								
TR	390	1784	0.65	0.22	38.0	D	38.0	D

Intersection Delay = 30.0 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	72	3	307					745	69	17	100	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left				
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left					SB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		35.0						53.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	658	1805	0.12	0.36	20.3	C		
TR	590	1618	0.55	0.36	25.4	C	24.4	C
Westbound								
Northbound								
TR	1037	1878	0.83	0.55	23.6	C	23.6	C
Southbound								
LT	531	962	0.23	0.55	11.3	B	11.3	B

Intersection Delay = 22.8 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	304	3	673					440	133	42	153	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left				
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left					SB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		45.5						42.5			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	855	1805	0.37	0.47	16.4	B		
TR	766	1616	0.93	0.47	46.6	D	37.3	D
Westbound								
Northbound								
TR	815	1840	0.74	0.44	25.9	C	25.9	C
Southbound								
LT	246	555	0.83	0.44	48.6	D	48.6	D

Intersection Delay = 34.8 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	149	73	21	64	63	142	32	335	61	57	141	43
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru	A							
	Right	A							
	Peds								
WB	Left		A						
	Thru		A						
	Right		A						
	Peds								
NB	Right								
SB	Right								
NB	Left					A			
	Thru						A		
	Right						A		
	Peds								
SB	Left					A			
	Thru						A		
	Right						A		
	Peds								
EB	Right					A			
WB	Right								
Green		11.0	8.0			10.0	19.0		
Yellow		3.0	3.0			3.0	3.0		
All Red		1.0	1.0			1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	316	1838	0.74	0.17	34.6	C	32.9	C
R	530	1615	0.04	0.33	14.7	B		
Westbound								
LTR	411	3285	0.69	0.13	31.6	C	31.6	C
Northbound								
L	282	1805	0.12	0.16	23.4	C		
TR	551	1856	0.76	0.30	26.6	C	26.4	C
Southbound								
L	282	1805	0.21	0.16	23.9	C		
T	564	1900	0.26	0.30	17.4	B	18.8	B
R	479	1615	0.09	0.30	16.4	B		

Intersection Delay = 27.4 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	120	69	10	107	97	177	4	212	73	258	334	205
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru		A		
	Right		A				Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		10.0	10.0					13.0	15.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		1.0	1.0					1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	288	1842	0.69	0.16	32.7	C	31.7	C
R	580	1615	0.02	0.36	13.2	B		
Westbound								
LTR	518	3312	0.77	0.16	33.5	C	33.5	C
Northbound								
L	367	1805	0.01	0.20	20.4	C		
TR	428	1827	0.70	0.23	27.7	C	27.6	C
Southbound								
L	367	1805	0.74	0.20	32.1	C		
T	445	1900	0.79	0.23	33.1	C	30.4	C
R	379	1615	0.57	0.23	23.7	C		

Intersection Delay = 30.7 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization
N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	20	180	1	127	315	52	4	20	137	57	31	37
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		32.0						24.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	885	1770	0.24	0.50	9.2	A	9.2	A
Westbound								
LTR	798	1595	0.65	0.50	13.8	B	13.8	B
Northbound								
LTR	628	1674	0.27	0.38	14.1	B	14.1	B
Southbound								
LTR	567	1511	0.23	0.38	13.9	B	13.9	B

Intersection Delay = 12.9 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Project-Mit:Signalization

N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	37	367	2	224	249	51	5	32	244	53	40	35
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	36.0					20.0			
Yellow	3.0					3.0			
All Red	1.0					1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	984	1749	0.43	0.56	8.4	A	8.4	A
Westbound								
LTR	697	1239	0.79	0.56	17.3	B	17.3	B
Northbound								
LTR	522	1671	0.57	0.31	19.8	B	19.8	B
Southbound								
LTR	459	1469	0.29	0.31	17.0	B	17.0	B

Intersection Delay = 15.1 (sec/veh) Intersection LOS = B

APPENDIX J

➤ Existing + Other Projects - Mitigated Intersection Analysis (HCS)

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: AM Peak
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others - Mit:Signalization

N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	22	163	1	101	320	30	4	24	108	30	43	42
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		32.0						24.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	879	1757	0.22	0.50	9.1	A	9.1	A
Westbound								
LTR	827	1653	0.57	0.50	12.2	B	12.2	B
Northbound								
LTR	633	1687	0.23	0.38	13.8	B	13.8	B
Southbound								
LTR	620	1653	0.20	0.38	13.6	B	13.6	B

Intersection Delay = 12.0 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: PM Peak
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others Mit:Signalization

N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	43	375	2	196	233	25	5	47	216	27	47	38
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		36.0						20.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	982	1745	0.45	0.56	8.5	A	8.5	A
Westbound								
LTR	708	1258	0.67	0.56	12.4	B	12.4	B
Northbound								
LTR	527	1687	0.53	0.31	19.2	B	19.2	B
Southbound								
LTR	507	1621	0.23	0.31	16.5	B	16.5	B

Intersection Delay = 12.9 (sec/veh) Intersection LOS = B

APPENDIX K

➤ Existing + Other Projects + Project Mitigated Intersection Analysis- Based on Marketing Survey (HCS)

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				36	1	28	841	119			103	186
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
WB	Left	A				SB	Left				
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0						55.0	22.0		
Yellow		3.0						3.0	3.0		
All Red		1.0						1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	127	1742	0.54	0.07	47.4	D	47.4	D
Northbound								
LT	1043	1820	0.97	0.57	51.8	D	51.8	D
Southbound								
TR	398	1735	0.76	0.23	43.6	D	43.6	D

Intersection Delay = 49.8 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				65	1	44	473	334			133	115
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
WB	Left	A				SB	Left				
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0						50.0	21.0		
Yellow		3.0						3.0	3.0		
All Red		1.0						1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	236	1746	0.49	0.14	40.0	D	40.0	D
Northbound								
LT	961	1846	0.88	0.52	31.6	C	31.6	C
Southbound								
TR	390	1781	0.67	0.22	38.8	D	38.8	D

Intersection Delay = 33.9 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	78	3	331					799	73	18	100	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left				
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left					SB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		35.0						53.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	658	1805	0.12	0.36	20.4	C		
TR	590	1617	0.59	0.36	26.4	C	25.3	C
Westbound								
Northbound								
TR	1037	1878	0.89	0.55	29.3	C	29.3	C
Southbound								
LT	520	941	0.24	0.55	11.3	B	11.3	B

Intersection Delay = 26.6 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	322	3	745					470	135	43	153	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A							
Thru	A							
Right	A							
Peds								
WB Left								
Thru								
Right								
Peds								
NB Right								
SB Right								
NB Left								
Thru					A			
Right					A			
Peds								
SB Left					A			
Thru					A			
Right								
Peds								
EB Right								
WB Right								
Green	47.5				40.5			
Yellow	3.0				3.0			
All Red	1.0				1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	893	1805	0.38	0.49	15.4	B		
TR	800	1616	0.98	0.49	73.3	E	55.8	E
Westbound								
Northbound								
TR	778	1843	0.82	0.42	31.8	C	31.8	C
Southbound								
LT	227	537	0.91	0.42	77.0	E	77.0	E

Intersection Delay = 50.3 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	149	81	21	69	70	142	32	378	65	57	159	43
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru		A		
	Right		A				Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		11.0	8.0					10.0	19.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		1.0	1.0					1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	316	1840	0.77	0.17	36.8	D	34.9	C
R	530	1615	0.04	0.33	14.7	B		
Westbound								
LTR	412	3297	0.72	0.13	33.1	C	33.1	C
Northbound								
L	282	1805	0.12	0.16	23.4	C		
TR	552	1858	0.84	0.30	33.9	C	33.2	C
Southbound								
L	282	1805	0.21	0.16	23.9	C		
T	564	1900	0.30	0.30	17.6	B	18.8	B
R	479	1615	0.09	0.30	16.4	B		

Intersection Delay = 30.6 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize

N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	121	81	10	110	103	177	4	236	81	258	390	205
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru		A		
	Right		A				Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		10.0	9.0					12.0	17.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		1.0	1.0					1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	288	1845	0.74	0.16	35.8	D	34.7	C
R	555	1615	0.02	0.34	13.9	B		
Westbound								
LTR	466	3317	0.88	0.14	47.9	D	47.9	D
Northbound								
L	338	1805	0.01	0.19	21.2	C		
TR	485	1827	0.69	0.27	25.2	C	25.2	C
Southbound								
L	338	1805	0.80	0.19	39.5	D		
T	505	1900	0.81	0.27	32.7	C	31.9	C
R	429	1615	0.50	0.27	20.9	C		

Intersection Delay = 34.6 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	22	199	1	128	349	54	4	24	141	60	43	42
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		32.0						24.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	880	1760	0.26	0.50	9.4	A	9.4	A
Westbound								
LTR	799	1597	0.70	0.50	15.1	B	15.1	B
Northbound								
LTR	629	1678	0.28	0.38	14.2	B	14.2	B
Southbound								
LTR	572	1525	0.27	0.38	14.1	B	14.1	B

Intersection Delay = 13.6 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons - Existing Lane Configurations
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	43	412	2	227	267	53	5	47	249	57	47	38
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		36.0						20.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	976	1735	0.49	0.56	8.9	A	8.9	A
Westbound								
LTR	672	1195	0.86	0.56	23.8	C	23.8	C
Northbound								
LTR	525	1681	0.60	0.31	20.6	C	20.6	C
Southbound								
LTR	446	1428	0.33	0.31	17.3	B	17.3	B

Intersection Delay = 17.8 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 10/11/01
Period: AM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons - With WBL Turn Lane
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	0	1	0	0	1	0
LGConfig		LTR		L	TR			LTR			LTR	
Volume	22	199	1	128	349	54	4	24	141	60	43	42
Lane Width		12.0		12.0	12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		32.0						24.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	893	1786	0.26	0.50	9.4	A	9.4	A
Westbound								
L	584	1167	0.23	0.50	9.2	A		
TR	922	1843	0.46	0.50	10.8	B	10.4	B
Northbound								
LTR	629	1678	0.28	0.38	14.2	B	14.2	B
Southbound								
LTR	572	1525	0.27	0.38	14.1	B	14.1	B

Intersection Delay = 11.3 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 10/11/01
Period: PM Peak (Market Survey)
Project ID: 990509-Alpine Albertsons - With WBL Turn Lane
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	0	1	0	0	1	0
LGConfig		LTR		L	TR			LTR			LTR	
Volume	43	412	2	227	267	53	5	47	249	57	47	38
Lane Width		12.0		12.0	12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		36.0						20.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1002	1782	0.48	0.56	8.8	A	8.8	A
Westbound								
L	488	868	0.49	0.56	9.2	A		
TR	1032	1834	0.33	0.56	7.7	A	8.3	A
Northbound								
LTR	525	1681	0.60	0.31	20.6	C	20.6	C
Southbound								
LTR	446	1428	0.33	0.31	17.3	B	17.3	B

Intersection Delay = 11.9 (sec/veh) Intersection LOS = B

APPENDIX L

➤ Existing + Other Projects + Project Mitigated Intersection Analysis - Based on Select Zone Assignment (HCS)

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				36	1	28	860	119			103	186
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
WB	Left	A				SB	Left				
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0						56.0	21.0		
Yellow		3.0						3.0	3.0		
All Red		1.0						1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	127	1742	0.54	0.07	47.4	D	47.4	D
Northbound								
LT	1062	1820	0.97	0.58	51.7	D	51.7	D
Southbound								
TR	380	1735	0.80	0.22	48.1	D	48.1	D

Intersection Delay = 50.7 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Westbound Ramp

Inter.: Tavern Rd/I-8 WB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	1	0	0	1	0	0	1	0
LGConfig					LTR			LT			TR	
Volume				65	1	44	494	334			133	115
Lane Width					12.0			12.0			12.0	
RTOR Vol						0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
WB	Left	A				SB	Left				
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0						50.0	21.0		
Yellow		3.0						3.0	3.0		
All Red		1.0						1.0	1.0		

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LTR	236	1746	0.49	0.14	40.0	D	40.0	D
Northbound								
LT	961	1845	0.91	0.52	35.3	D	35.3	D
Southbound								
TR	390	1781	0.67	0.22	38.8	D	38.8	D

Intersection Delay = 36.5 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	72	3	330					764	69	17	100	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left				
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left					SB	Left	A			
	Thru						Thru	A			
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		35.0						53.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 96.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	658	1805	0.12	0.36	20.3	C		
TR	590	1617	0.59	0.36	26.4	C	25.3	C
Westbound								
Northbound								
TR	1037	1879	0.85	0.55	25.1	C	25.1	C
Southbound								
LT	531	962	0.23	0.55	11.3	B	11.3	B

Intersection Delay = 24.0 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: I-8 Eastbound Ramp

Inter.: Tavern Rd/I-8 EB Ramp
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	0	0	0	1	0	0	1	0
LGConfig	L	TR						TR			LT	
Volume	322	3	769					491	135	43	153	
Lane Width	12.0	12.0						12.0			12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru	A							
	Right	A							
	Peds								
WB	Left								
	Thru								
	Right								
	Peds								
NB	Right								
SB	Right								
NB	Left								
	Thru					A			
	Right					A			
	Peds								
SB	Left					A			
	Thru					A			
	Right								
	Peds								
EB	Right								
WB	Right								
Green		49.5				38.0			
Yellow		3.0				3.0			
All Red		1.0				1.0			

Cycle Length: 95.5 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	936	1805	0.36	0.52	13.9	B		
TR	838	1616	0.97	0.52	60.2	E	46.6	D
Westbound								
Northbound								
TR	734	1845	0.90	0.40	43.5	D	43.5	D
Southbound								
LT	210	527	0.98	0.40	133.6	F	133.6	F

Intersection Delay = 54.5 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: AM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	149	75	21	59	64	142	32	378	51	57	159	43
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A							
	Thru	A							
	Right	A							
	Peds								
WB	Left		A						
	Thru		A						
	Right		A						
	Peds								
NB	Right								
SB	Right								
NB	Left					A			
	Thru						A		
	Right						A		
	Peds								
SB	Left					A			
	Thru						A		
	Right						A		
	Peds								
EB	Right					A			
WB	Right								
Green		11.0	8.0			10.0	19.0		
Yellow		3.0	3.0			3.0	3.0		
All Red		1.0	1.0			1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	316	1839	0.75	0.17	35.1	D	33.4	C
R	530	1615	0.04	0.33	14.7	B		
Westbound								
LTR	410	3283	0.68	0.13	31.3	C	31.3	C
Northbound								
L	282	1805	0.12	0.16	23.4	C		
TR	554	1866	0.82	0.30	30.8	C	30.3	C
Southbound								
L	282	1805	0.21	0.16	23.9	C		
T	564	1900	0.30	0.30	17.6	B	18.8	B
R	479	1615	0.09	0.30	16.4	B		

Intersection Delay = 28.7 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc.
Date: 3/26/01
Period: PM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: Arnold Way

Inter.: Tavern Rd/Arnold Way
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: Tavern Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	1	1	1
LGConfig		LT	R		LTR		L	TR		L	T	R
Volume	121	73	10	98	98	177	4	236	69	258	390	205
Lane Width		12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru		A		
	Right		A				Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		10.0	9.0					12.0	17.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		1.0	1.0					1.0	1.0		

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	288	1843	0.71	0.16	33.8	C	32.7	C
R	555	1615	0.02	0.34	13.9	B		
Westbound								
LTR	465	3310	0.84	0.14	41.7	D	41.7	D
Northbound								
L	338	1805	0.01	0.19	21.2	C		
TR	487	1835	0.66	0.27	24.2	C	24.2	C
Southbound								
L	338	1805	0.80	0.19	39.5	D		
T	505	1900	0.81	0.27	32.7	C	31.9	C
R	429	1615	0.50	0.27	20.9	C		

Intersection Delay = 32.8 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: AM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	22	232	1	128	376	49	4	24	141	53	43	42
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A							
Thru	A							
Right	A							
Peds								
WB Left	A							
Thru	A							
Right	A							
Peds								
NB Right								
SB Right								
NB Left					A			
Thru					A			
Right					A			
Peds								
SB Left					A			
Thru					A			
Right					A			
Peds								
EB Right								
WB Right								
Green	32.0				24.0			
Yellow	3.0				3.0			
All Red	1.0				1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	886	1771	0.30	0.50	9.6	A	9.6	A
Westbound								
LTR	799	1597	0.73	0.50	16.0	B	16.0	B
Northbound								
LTR	629	1678	0.28	0.38	14.2	B	14.2	B
Southbound								
LTR	581	1548	0.25	0.38	14.0	B	14.0	B

Intersection Delay = 14.0 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: PM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/West Victoria Drive
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize

N/S St: West Victoria Drive/Arnold Way

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	43	444	2	227	299	47	5	47	249	50	47	38
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		36.0						20.0			
Yellow		3.0						3.0			
All Red		1.0						1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	977	1737	0.53	0.56	9.2	A	9.2	A
Westbound								
LTR	667	1185	0.90	0.56	28.3	C	28.3	C
Northbound								
LTR	525	1681	0.60	0.31	20.6	C	20.6	C
Southbound								
LTR	463	1481	0.31	0.31	17.1	B	17.1	B

Intersection Delay = 19.5 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1

Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: AM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/South Grade/E. Victoria
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: South Grade Rd/E. Victoria Dr.

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	0	1	1
LGConfig		LT	R		LTR		L	TR			LT	R
Volume	39	406	142	36	325	16	109	17	24	22	20	28
Lane Width		12.0	12.0		12.0		12.0	12.0			12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru	A			
	Right		A				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		22.0	20.0					10.0			
Yellow		3.0	3.0					3.0			
All Red		1.0	1.0					1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	638	1855	0.73	0.34	22.9	C	21.1	C
R	544	1583	0.27	0.34	15.5	B		
Westbound								
LTR	1094	3500	0.36	0.31	17.3	B	17.3	B
Northbound								
L	216	1384	0.53	0.16	27.4	C		
TR	271	1734	0.16	0.16	23.6	C	26.4	C
Southbound								
LT	254	1626	0.17	0.16	23.7	C	23.6	C
R	252	1615	0.12	0.16	23.4	C		

Intersection Delay = 20.7 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1
Analyst: V Root
Agency: Darnell & Associates, Inc
Date: 3/27/01
Period: PM Peak (Select Zone)
Project ID: 990509-Alpine Albertsons
E/W St: Alpine Boulevard

Inter.: Alpine/South Grade/E. Victoria
Area Type: All other areas
Jurisd: Alpine
Year : Ex+Others+Proj-Mit:Signalize
N/S St: South Grade Rd/E. Victoria Dr.

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	0	1	1
LGConfig		LT	R		LTR		L	TR			LT	R
Volume	25	441	56	31	424	21	139	27	35	23	26	19
Lane Width		12.0	12.0		12.0		12.0	12.0			12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	A			
	Right	A					Right	A			
	Peds						Peds				
WB	Left		A			SB	Left	A			
	Thru		A				Thru	A			
	Right		A				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		22.0	20.0					10.0			
Yellow		3.0	3.0					3.0			
All Red		1.0	1.0					1.0			

Cycle Length: 64.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	639	1858	0.77	0.34	24.5	C	23.4	C
R	544	1583	0.11	0.34	14.4	B		
Westbound								
LTR	1095	3504	0.46	0.31	18.0	B	18.0	B
Northbound								
L	215	1375	0.68	0.16	34.2	C		
TR	272	1738	0.24	0.16	24.1	C	31.1	C
Southbound								
LT	255	1629	0.20	0.16	23.9	C	23.7	C
R	252	1615	0.08	0.16	23.2	C		

Intersection Delay = 22.6 (sec/veh) Intersection LOS = C

APPENDIX M

➤ Driveway Analysis - Based on Marketing Survey

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc
Date Performed: 3/27/01
Analysis Time Period: AM Peak (Market Survey)
Intersection: Alpine Blvd/West Driveway
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Alpine Boulevard
North/South Street: West Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		273	66	49	248	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		287	69	51	261	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	53		40			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	55		42			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		51		97				
C(m) (vph)		1203		492				
v/c		0.04		0.20				
95% queue length		0.13		0.73				
Control Delay		8.1		14.1				
LOS		A		B				
Approach Delay				14.1				
Approach LOS				B				

HCS2000: Unsignalized Intersections Release 4.1

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc
Date Performed: 3/27/01
Analysis Time Period: PM Peak (Market Survey)
Intersection: Alpine Blvd/West Driveway
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Alpine Boulevard
North/South Street: West Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		195	113	84	219	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		205	118	88	230	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	106		79			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	111		83			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		88		194				
C(m) (vph)		1237		497				
v/c		0.07		0.39				
95% queue length		0.23		1.90				
Control Delay		8.1		16.9				
LOS		A		C				
Approach Delay				16.9				
Approach LOS				C				

HCS2000: Unsignalized Intersections Release 4.1

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc
Date Performed:	3/27/01
Analysis Time Period:	AM Peak (Market Survey)
Intersection:	Alpine Blvd/East Driveway
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Alpine Boulevard
North/South Street:	East Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume		290	23	10	273	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		305	24	10	287	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	19		8			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	20		8			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		10		28				
C(m) (vph)		1231		500				
v/c		0.01		0.06				
95% queue length		0.02		0.18				
Control Delay		7.9		12.6				
LOS		A		B				
Approach Delay				12.6				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc
Date Performed:	3/27/01
Analysis Time Period:	PM Peak (Market Survey)
Intersection:	Alpine Blvd/East Driveway
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Alpine Boulevard
North/South Street:	East Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		235	39	17	266	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		247	41	17	280	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	37		16			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	38		16			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		17		54				
C(m) (vph)		1274		531				
v/c		0.01		0.10				
95% queue length		0.04		0.34				
Control Delay		7.9		12.5				
LOS		A		B				
Approach Delay				12.5				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: AM Peak (Market Survey)
Intersection: Old South Grade/Proj. Access
Jurisdiction: Alpine
Analysis Year: Ex+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Project Access
North/South Street: Old South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	7			3	63
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	2	7			3	66
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				50		1
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				52		1
Percent Heavy Vehicles				2		0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	2						53	
C(m) (vph)	1532						963	
v/c	0.00						0.06	
95% queue length	0.00						0.17	
Control Delay	7.4						9.0	
LOS	A						A	
Approach Delay							9.0	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: PM Peak (Market Survey)
Intersection: Old South Grade/Proj. Access
Jurisdiction: Alpine
Analysis Year: Ex+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Project Access
North/South Street: Old South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	4			10	107
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	1	4			10	112
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				100		2
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				105		2
Percent Heavy Vehicles				2		0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	1						107	
C(m) (vph)	1465						932	
v/c	0.00						0.11	
95% queue length	0.00						0.39	
Control Delay	7.5						9.4	
LOS	A						A	
Approach Delay							9.4	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	3/27/01
Analysis Time Period:	AM Peak (Market Survey)
Intersection:	Highlands View/Project Access
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Highlands View Road
North/South Street:	Project Access

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume	122	7			16	7
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	128	7			16	7
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume				5		96
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				5		101
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	128						106	
C(m) (vph)	1592						1028	
v/c	0.08						0.10	
95% queue length	0.26						0.34	
Control Delay	7.5						8.9	
LOS	A						A	
Approach Delay							8.9	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: PM Peak (Market Survey)
Intersection: Highlands View/Project Access
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Highlands View Road
North/South Street: Project Access

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	200	20			8	8
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	210	21			8	8
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				10		191
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				10		201
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	210						211	
C(m) (vph)	1602						1013	
v/c	0.13						0.21	
95% queue length	0.45						0.79	
Control Delay	7.6						9.5	
LOS	A						A	
Approach Delay							9.5	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: AM Peak (Market Survey)
Intersection: Highlands View/South Grade
Jurisdiction: Alpine
Analysis Year: Ex+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Highlands View Road
North/South Street: South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume		123	89	47	183	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		129	93	49	192	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	72		41			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	75		43			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		49		118				
C(m) (vph)		1347		622				
v/c		0.04		0.19				
95% queue length		0.11		0.70				
Control Delay		7.8		12.1				
LOS		A		B				
Approach Delay				12.1				
Approach LOS				B				

HCS2000: Unsignalized Intersections Release 4.1

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	3/27/01
Analysis Time Period:	PM Peak (Market Survey)
Intersection:	Highlands View/South Grade
Jurisdiction:	Alpine
Analysis Year:	Ex+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Highlands View Road
North/South Street:	South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		154	142	82	88	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		162	149	86	92	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	140		68			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	147		71			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		86		218				
C(m) (vph)		1249		565				
v/c		0.07		0.39				
95% queue length		0.22		1.86				
Control Delay		8.1		15.4				
LOS		A		C				
Approach Delay				15.4				
Approach LOS				C				

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APPENDIX N

➤ Driveway Analysis - Based on Select Zone Assignment (HCS)

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc
Date Performed:	3/27/01
Analysis Time Period:	PM Peak (Select Zone)
Intersection:	Alpine Blvd/West Driveway
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Alpine Boulevard
North/South Street:	West Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		240	259	40	260	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		252	272	42	273	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	216		37			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	227		38			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		42		265				
C(m) (vph)		1043		392				
v/c		0.04		0.68				
95% queue length		0.13		5.74				
Control Delay		8.6		32.8				
LOS		A		D				
Approach Delay				32.8				
Approach LOS				D				

HCS2000: Unsignalized Intersections Release 4.1

Bill E Darnell
Darnell & Associates

HCS2000: Unsignalized Intersections Release 4.1

TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc
Date Performed:	3/27/01
Analysis Time Period:	AM Peak Marketing Survey Distr
Intersection:	Alpine Blvd/East Driveway
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Alpine Boulevard
North/South Street:	East Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		266	53	6	249	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		280	55	6	262	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	43		5			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	45		5			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		6		50				
C(m) (vph)		1224		490				
v/c		0.00		0.10				
95% queue length		0.01		0.34				
Control Delay		8.0		13.2				
LOS		A		B				
Approach Delay				13.2				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc
Date Performed: 3/27/01
Analysis Time Period: PM Peak Marketing Survey Distr
Intersection: Alpine Blvd/East Driveway
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Alpine Boulevard
North/South Street: East Driveway

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		187	90	11	216	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		196	94	11	227	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	84		11			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	88		11			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		11		99				
C(m) (vph)		1272		551				
v/c		0.01		0.18				
95% queue length		0.03		0.66				
Control Delay		7.9		13.0				
LOS		A		B				
Approach Delay				13.0				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: AM Peak (Select Zone)
Intersection: Old South Grade/Proj. Access
Jurisdiction: Alpine
Analysis Year: Ex+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Project Access
North/South Street: Old South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	7			3	33
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	2	7			3	34
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				26		1
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				27		1
Percent Heavy Vehicles				2		0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	2						28	
C(m) (vph)	1574						985	
v/c	0.00						0.03	
95% queue length	0.00						0.09	
Control Delay	7.3						8.8	
LOS	A						A	
Approach Delay							8.8	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	3/27/01
Analysis Time Period:	PM Peak (Select Zone)
Intersection:	Old South Grade/Proj. Access
Jurisdiction:	Alpine
Analysis Year:	Ex+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Project Access
North/South Street:	Old South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	4			10	56
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	1	4			10	58
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				53		2
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				55		2
Percent Heavy Vehicles				2		0
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	1						57	
C(m) (vph)	1533						966	
v/c	0.00						0.06	
95% queue length	0.00						0.19	
Control Delay	7.3						9.0	
LOS	A						A	
Approach Delay							9.0	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	3/27/01
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Highlands View/Project Access
Jurisdiction:	Alpine
Analysis Year:	Existing+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Highlands View Road
North/South Street:	Project Access

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	69	7			16	4
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	72	7			16	4
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				2		67
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				2		70
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	72						72	
C(m) (vph)	1596						1051	
v/c	0.05						0.07	
95% queue length	0.14						0.22	
Control Delay	7.4						8.7	
LOS	A						A	
Approach Delay							8.7	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: PM Peak (Select Zone)
Intersection: Highlands View/Project Access
Jurisdiction: Alpine
Analysis Year: Existing+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Highlands View Road
North/South Street: Project Access

Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	110	20			8	2
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Hourly Flow Rate, HFR	115	21			8	2
Percent Heavy Vehicles	2	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				5		133
Peak Hour Factor, PHF				0.95		0.95
Hourly Flow Rate, HFR				5		140
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	115						145	
C(m) (vph)	1610						1052	
v/c	0.07						0.14	
95% queue length	0.23						0.48	
Control Delay	7.4						9.0	
LOS	A						A	
Approach Delay							9.0	
Approach LOS							A	

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TWO-WAY STOP CONTROL SUMMARY

Analyst:	V Root
Agency/Co.:	Darnell & Associates, Inc.
Date Performed:	3/27/01
Analysis Time Period:	AM Peak (Select Zone)
Intersection:	Highlands View/South Grade
Jurisdiction:	Alpine
Analysis Year:	Ex+Others+Project
Project ID:	990509-Alpine Albertsons
East/West Street:	Highlands View Road
North/South Street:	South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		123	69	14	183	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		129	72	14	192	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	56		28			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	58		29			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		14		87				
C(m) (vph)		1371		681				
v/c		0.01		0.13				
95% queue length		0.03		0.44				
Control Delay		7.7		11.1				
LOS		A		B				
Approach Delay				11.1				
Approach LOS				B				

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TWO-WAY STOP CONTROL SUMMARY

Analyst: V Root
Agency/Co.: Darnell & Associates, Inc.
Date Performed: 3/27/01
Analysis Time Period: PM Peak (Select Zone)
Intersection: Highlands View/South Grade
Jurisdiction: Alpine
Analysis Year: Ex+Others+Project
Project ID: 990509-Alpine Albertsons
East/West Street: Highlands View Road
North/South Street: South Grade Road

Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		154	109	25	88	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		162	114	26	92	
Percent Heavy Vehicles		--	--	2	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	109		42			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	114		44			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Median Storage						
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		26		158				
C(m) (vph)		1287		668				
v/c		0.02		0.24				
95% queue length		0.06		0.93				
Control Delay		7.9		12.1				
LOS		A		B				
Approach Delay				12.1				
Approach LOS				B				

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APPENDIX O

➤ Signal Warrants

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE 3-27-01
CHK ____ DATE ____

Major St: Tavern Road — Critical Approach Speed ____ mph
Minor St: I-8 WB Ramps — Critical Approach Speed ____ mph

Critical speed of major street traffic ≥ 40 mph ☐ or
In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)
EXISTING CONDITIONS ☐ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☐ NO ☒
80% SATISFIED YES ☐ NO ☒

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PM Peak	60% of Peak						Hour
	U	R	U	R								
APPROACH LANES	1		2 or more									
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	992	595	595	595	595	595	595	595
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	104	62	62	62	62	62	62	62

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☒ NO ☐
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PM Peak							Hour
	U	R	U	R								
APPROACH LANES	1		2 or more									
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	992	595	595	595	595	595	595	595
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	104	62	62	62	62	62	62	62

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 300 feet; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-3
TRAFFIC SIGNAL WARRANTS

Major Street - Tavern Road
Minor Street - I-8 WB Ramp

WARRANT 8 - Combination of Warrants SATISFIED YES ☐ NO ☑

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	No	
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	YES ☐ NO ☑

WARRANT 9 - Four Hour Volume SATISFIED* YES ☐ NO ☒

Approach Lanes	One	2 or more	PM Peak	/	/	/	Hour
Both Approaches - Major Street	✓		992	595	595	595	
Highest Approaches - Minor Street	✓		104	62	62	62	

* Refer to Figure 9-6 (URBAN AREAS) or Figure 9-7 (RURAL AREAS) to determine if this warrant is satisfied.

WARRANT 10 - Peak Hour Delay SATISFIED YES ☐ NO ☒
(ALL PARTS MUST BE SATISFIED)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND YES ☐ NO ☒
   2.66 veh-hours
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND YES ☒ NO ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. YES ☒ NO ☐

WARRANT 11 - Peak Hour Volume SATISFIED* YES ☒ NO ☐

Approach Lanes	One	2 or more		/	/	/	Hour
Both Approaches - Major Street	✓			1169	992		
Highest Approaches - Minor Street	✓			63	104		

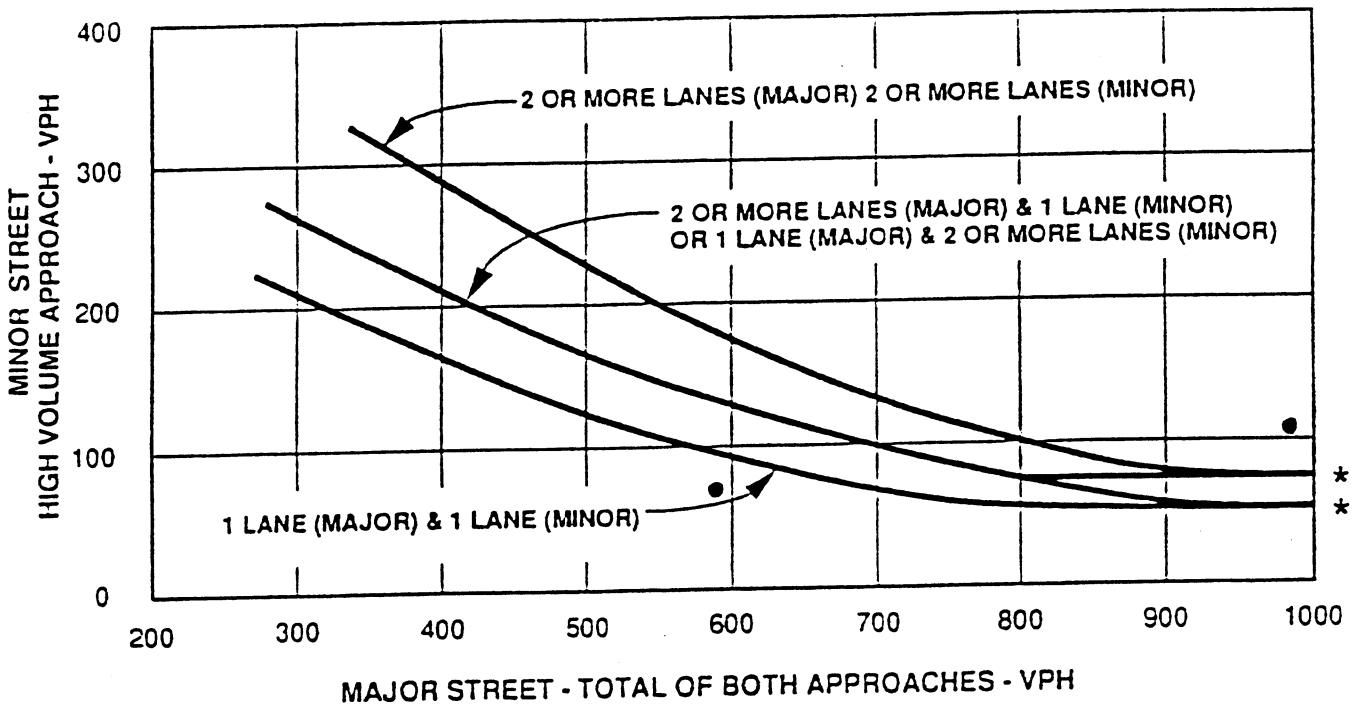
* Refer to Figure 9-8 (URBAN AREAS) or Figure 9-9 (RURAL AREAS) to determine if this warrant is satisfied.

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-7
FOUR HOUR VOLUME WARRANT
(Rural Areas)

Major St: Tavern Road
Minor St: I-8 WB Ramp

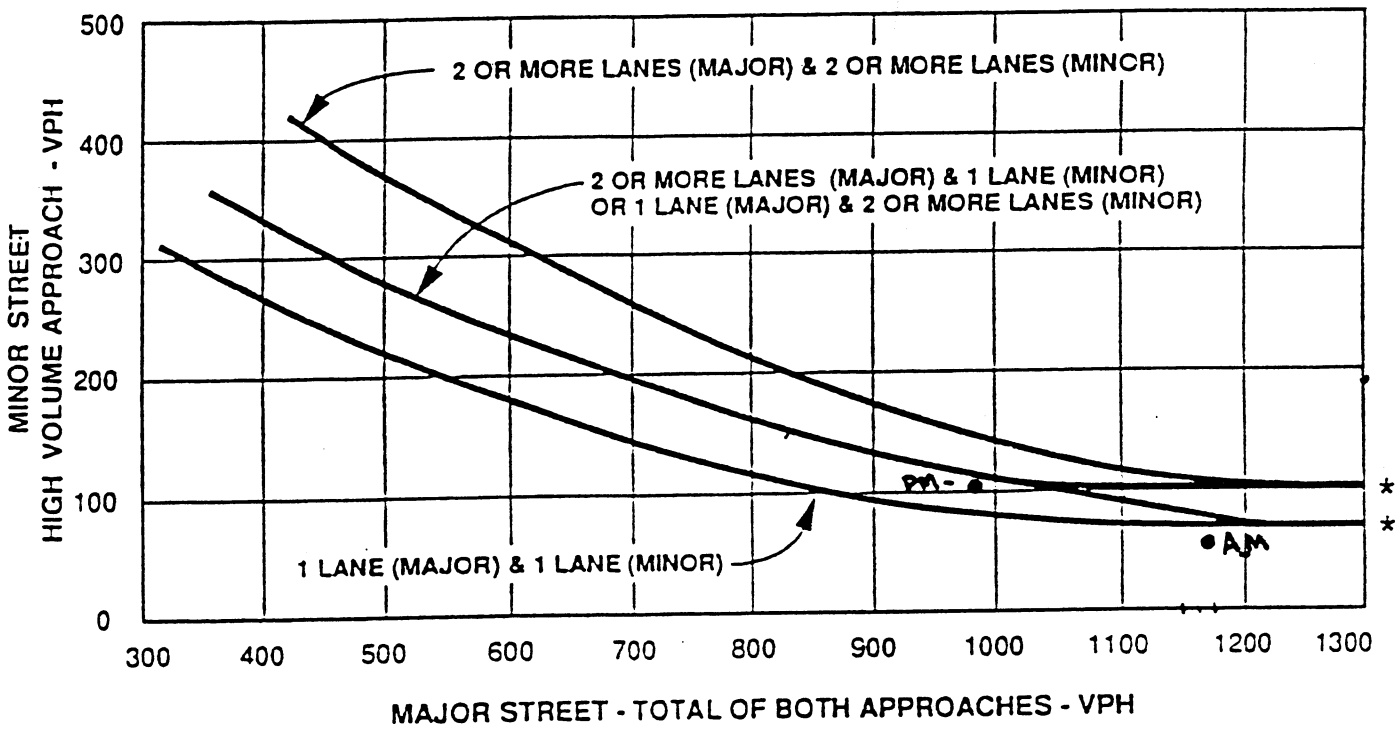
EXISTING CONDITIONS



* NOTE:
80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-9
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Tavern Road
Minor Street: I-8 WB Ramp



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE 3-27-01
CHK ____ DATE ____

Major St: Tavern Road — Critical Approach Speed ____ mph
Minor St: I-8 EB Ramp — Critical Approach Speed ____ mph

Critical speed of major street traffic ≥ 40 mph ☐ or
In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)

EXISTING CONDITIONS ☐ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☒ NO ☐
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				AM Peak	60% of Peak						Hour
	U	R	U	R								
APPROACH LANES	1		2 or more									
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	926	556	556	556	556	556	556	556
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	375	225	225	225	225	225	225	225

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☒ NO ☐
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)											Hour
	U	R	U	R								
APPROACH LANES	1		2 or more									
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	926	556	556	556	556	556	556	556
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	375	225	225	225	225	225	225	225

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 300 feet; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-3
TRAFFIC SIGNAL WARRANTS

Major Street: Tavern Road EXISTING Conditions
Minor Street: I-8 EB Ramp

WARRANT 8 - Combination of Warrants SATISFIED YES ☑ NO ☐

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	✓	YES ☑ NO ☐
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	

WARRANT 9 - Four Hour Volume SATISFIED* YES ☒ NO ☐

Approach Lanes	One	2 or more					Hour
Both Approaches - Major Street	X		926	556	556	556	
Highest Approaches - Minor Street		X	375	225	225	225	

* Refer to Figure 9-6 (URBAN AREAS) or Figure 9-7 (RURAL AREAS) to determine if this warrant is satisfied.

WARRANT 10 - Peak Hour Delay SATISFIED YES ☒ NO ☐
(ALL PARTS MUST BE SATISFIED)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND YES ☒ NO ☐
   8 veh-hours
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND YES ☒ NO ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. YES ☒ NO ☐

WARRANT 11 - Peak Hour Volume SATISFIED* YES ☒ NO ☐

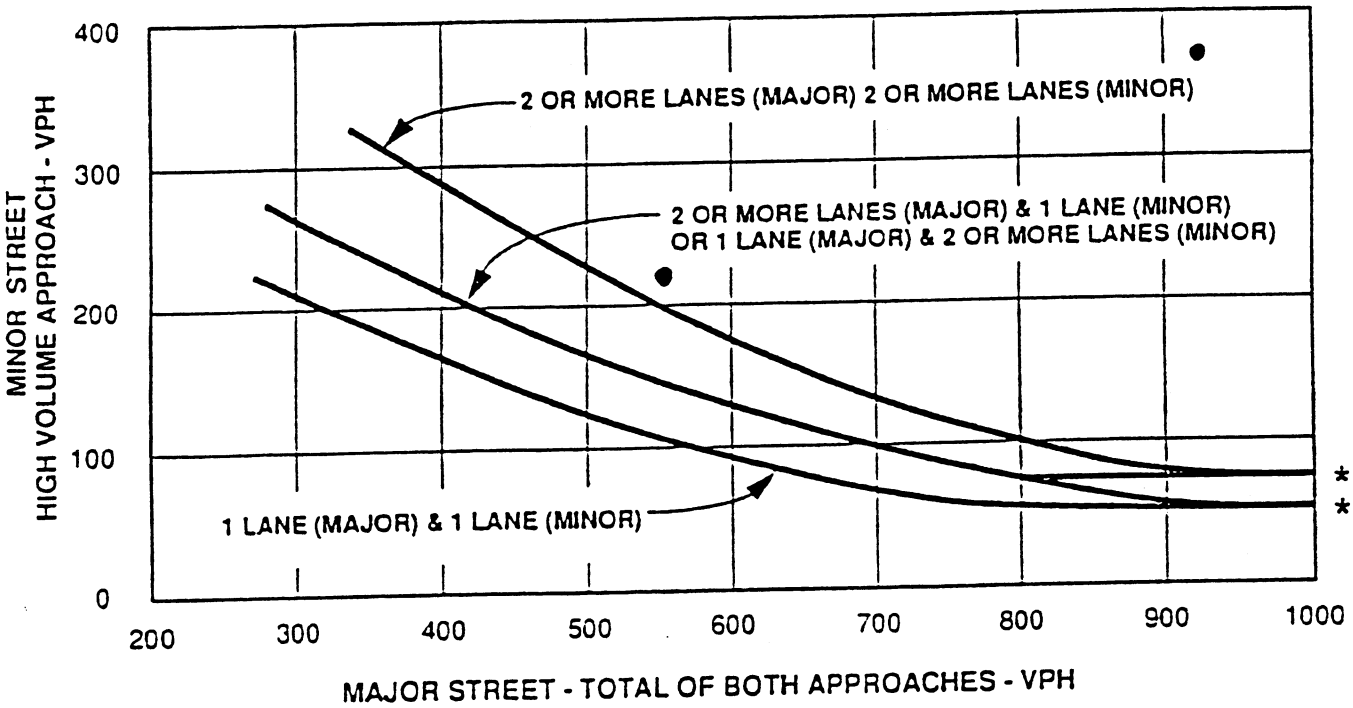
Approach Lanes	One	2 or more	AM Peak	PM Peak			Hour
Both Approaches - Major Street	X		926	761			
Highest Approaches - Minor Street		X	375	974			

* Refer to Figure 9-8 (URBAN AREAS) or Figure 9-9 (RURAL AREAS) to determine if this warrant is satisfied.

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-7
FOUR HOUR VOLUME WARRANT
(Rural Areas)

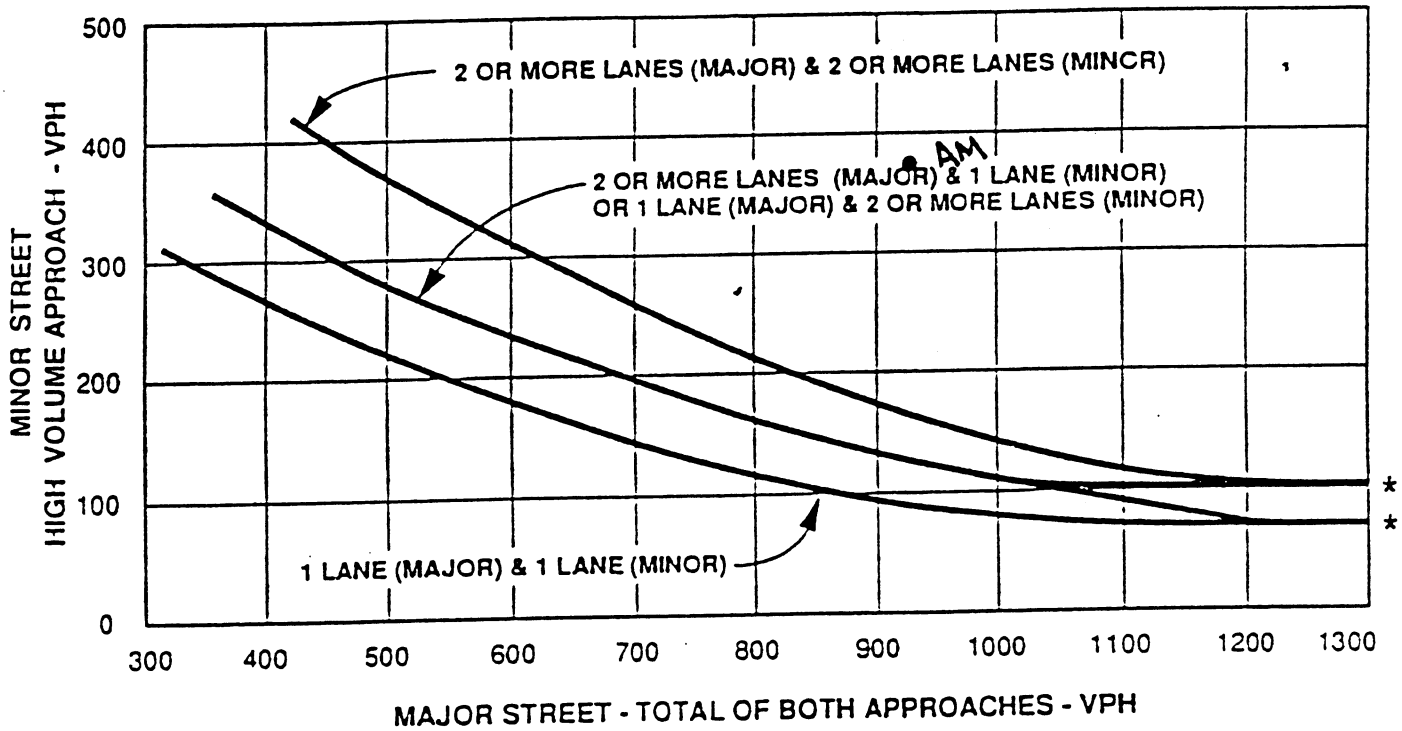
Major Street: Tavern Road
Minor Street: I-8 EB Ramp
EXISTING Conditions



* NOTE:
80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-9
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Tavern Road
Minor Street: I-8 EB Ramp
EXISTING Conditions
•PM



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE 3-27-01
CHK ____ DATE ____

Major St: Tavern Road — Critical Approach Speed ____ mph
Minor St: Arnold Way — Critical Approach Speed ____ mph

Critical speed of major street traffic ≥ 40 mph ☐ or
In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)

EXISTING CONDITIONS ☐ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☒ NO ☐
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or more										
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1070	642	642	642	642	642	642	642	
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	354	212	212	212	212	212	212	212	

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☒ NO ☐
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or more										
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1070	642	642	642	642	642	642	642	
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	354	212	212	212	212	212	212	212	

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 300 feet; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-3
TRAFFIC SIGNAL WARRANTS

Major Street: Tavern Road EXISTING Conditions
Minor Street: Arnold Way

WARRANT 8 - Combination of Warrants SATISFIED YES ☑ NO ☐

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	✓	
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	YES ☑ NO ☐

WARRANT 9 - Four Hour Volume SATISFIED* YES ☒ NO ☐

Approach Lanes	One	2 or more	/	/	/	/ Hour
Both Approaches - Major Street		✓	1070	642	642	642
Highest Approaches - Minor Street		✓	354	212	212	212

* Refer to Figure 9-6 (URBAN AREAS) or Figure 9-7 (RURAL AREAS) to determine if this warrant is satisfied.

WARRANT 10 - Peak Hour Delay SATISFIED YES ☐ NO ☒
(ALL PARTS MUST BE SATISFIED)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — YES ☐ NO ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — YES ☒ NO ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — YES ☒ NO ☐

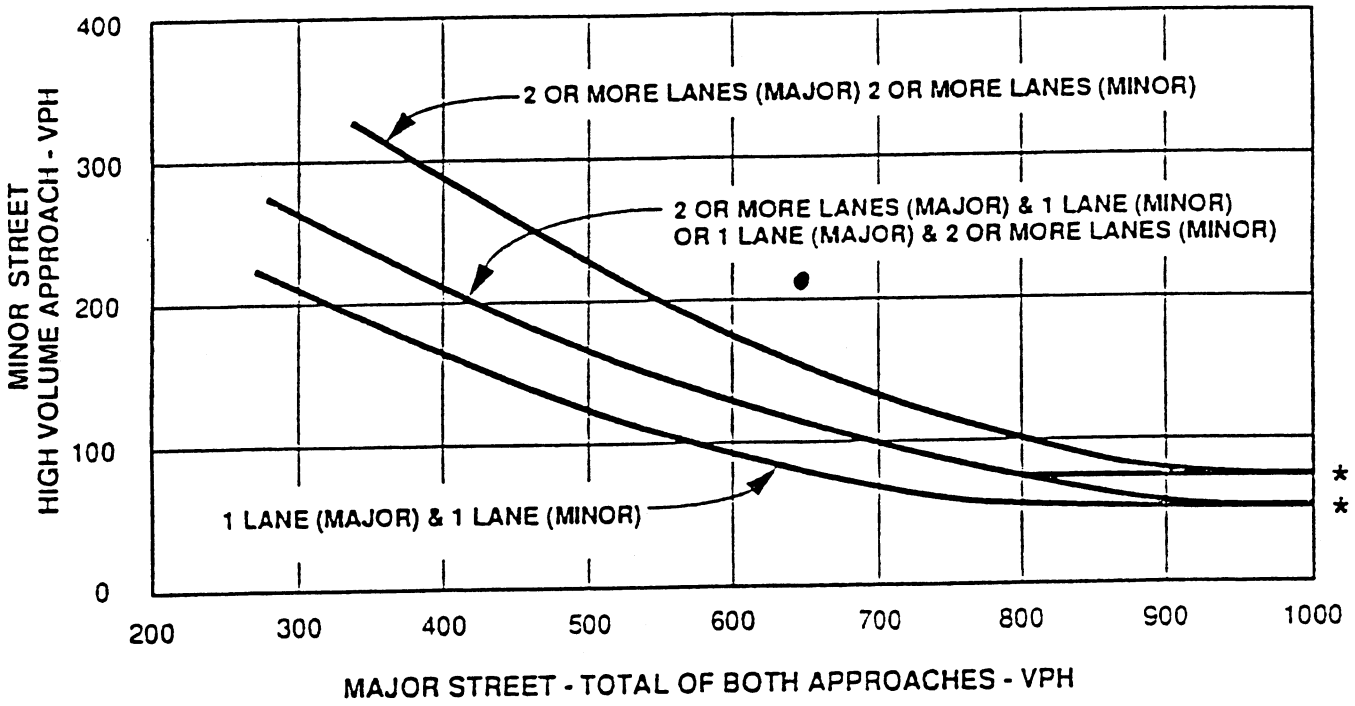
WARRANT 11 - Peak Hour Volume SATISFIED* YES ☒ NO ☐

Approach Lanes	One	2 or more		AM Peak	PM Peak	Hour
Both Approaches - Major Street				652	1070	
Highest Approaches - Minor Street				245	354	

* Refer to Figure 9-8 (URBAN AREAS) or Figure 9-9 (RURAL AREAS) to determine if this warrant is satisfied.

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-7
FOUR HOUR VOLUME WARRANT
(Rural Areas)



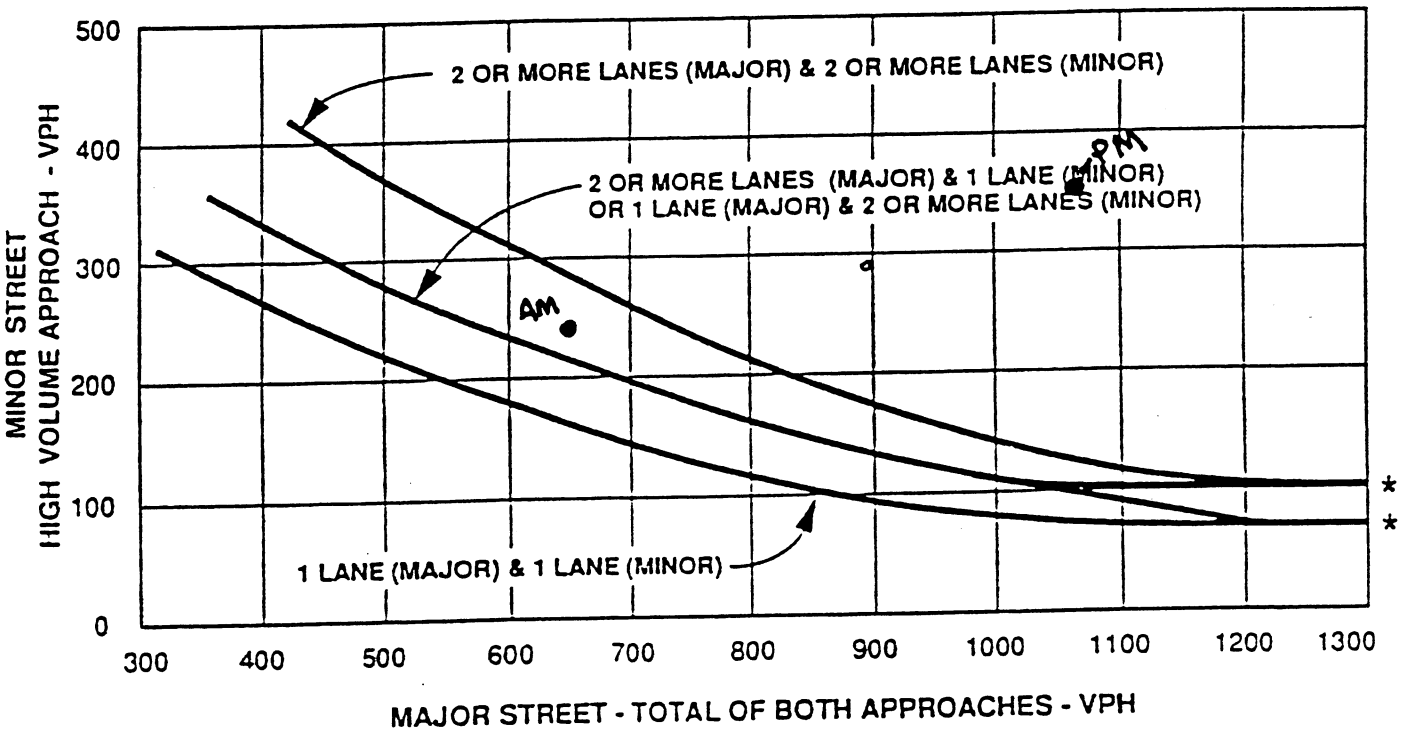
* NOTE:

80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-9
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Major Street : Tavern Road
Minor Street : Arnold Way

EXISTING Conditions



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE 3-27-01
CHK ____ DATE ____

Major St: Alpine Boulevard
Minor St: W. Victoria Dr / Arnold Way

Critical Approach Speed ____ mph
Critical Approach Speed ____ mph

Critical speed of major street traffic ≥ 40 mph ☐ or
In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)
☐ URBAN (U)

EXISTING CONDITIONS

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☒ NO ☐
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												
	U	R	U	R									
APPROACH LANES	1		2 or more		12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	Hour
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	476	446	555	731	690	800	690	496	
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	254	242	228	385	317	327	269	240	

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☒
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												
	U	R	U	R									
APPROACH LANES	1		2 or more		12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	Hour
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	476	446	555	731	690	800	690	496	
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	254	242	228	385	317	327	269	240	

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 300 feet; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-3 EXISTING CONDITIONS
TRAFFIC SIGNAL WARRANTS

Major Street : Alpine Blvd.
Major Street : W. Victoria Drive / Arnold Way

WARRANT 8 - Combination of Warrants SATISFIED YES ☑ NO ☐

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	✓	YES ☑ NO ☐
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	

WARRANT 9 - Four Hour Volume SATISFIED* YES ☒ NO ☐

Approach Lanes	One	2 or more	3-4	4-5	5-6	6-7 Hour
Both Approaches - Major Street	✓		731	690	800	690
Highest Approaches - Minor Street	✓		385	317	327	269

* Refer to Figure 9-6 (URBAN AREAS) or Figure 9-7 (RURAL AREAS) to determine if this warrant is satisfied.

WARRANT 10 - Peak Hour Delay SATISFIED YES ☐ NO ☒
(ALL PARTS MUST BE SATISFIED)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — YES ☐ NO ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — YES ☒ NO ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — YES ☒ NO ☐

WARRANT 11 - Peak Hour Volume SATISFIED* YES ☒ NO ☐

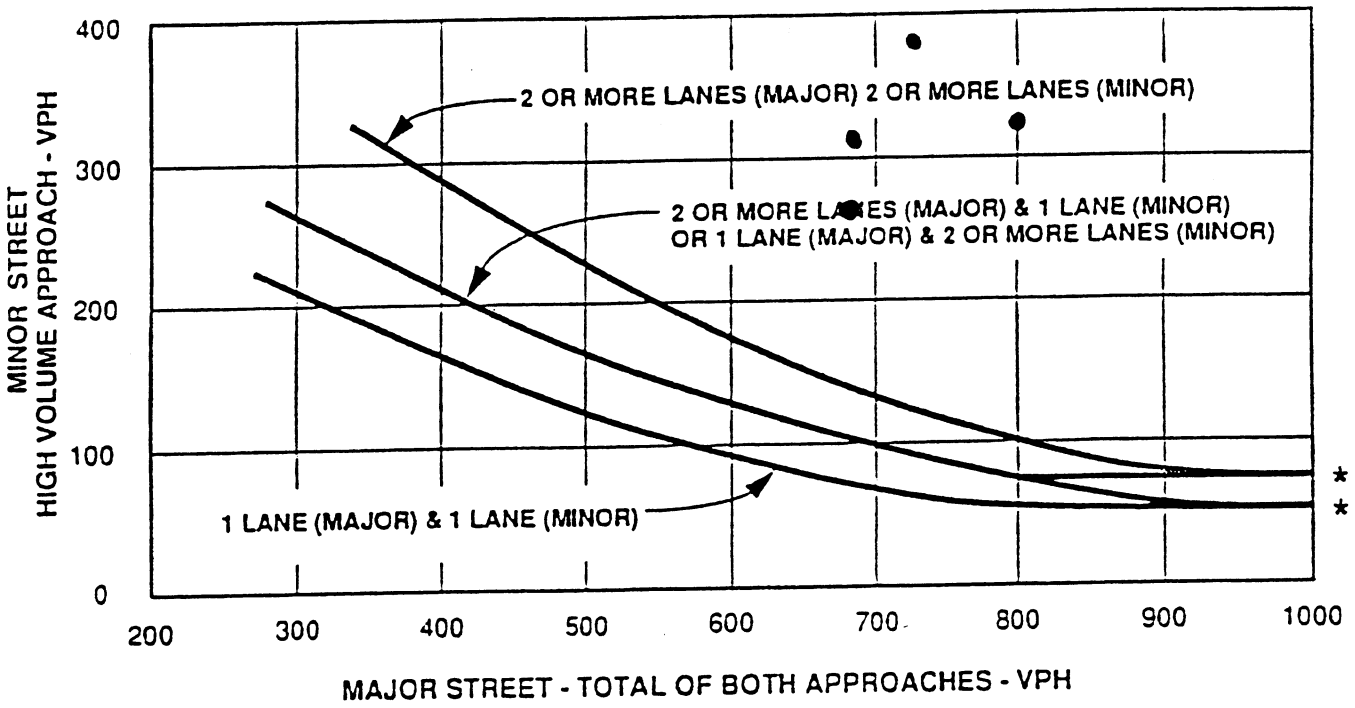
Approach Lanes	One	2 or more		AM Peak	PM Peak	Hour
Both Approaches - Major Street	✓			579	800	
Highest Approaches - Minor Street	✓			128	248	

* Refer to Figure 9-8 (URBAN AREAS) or Figure 9-9 (RURAL AREAS) to determine if this warrant is satisfied.

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-7
FOUR HOUR VOLUME WARRANT
(Rural Areas)

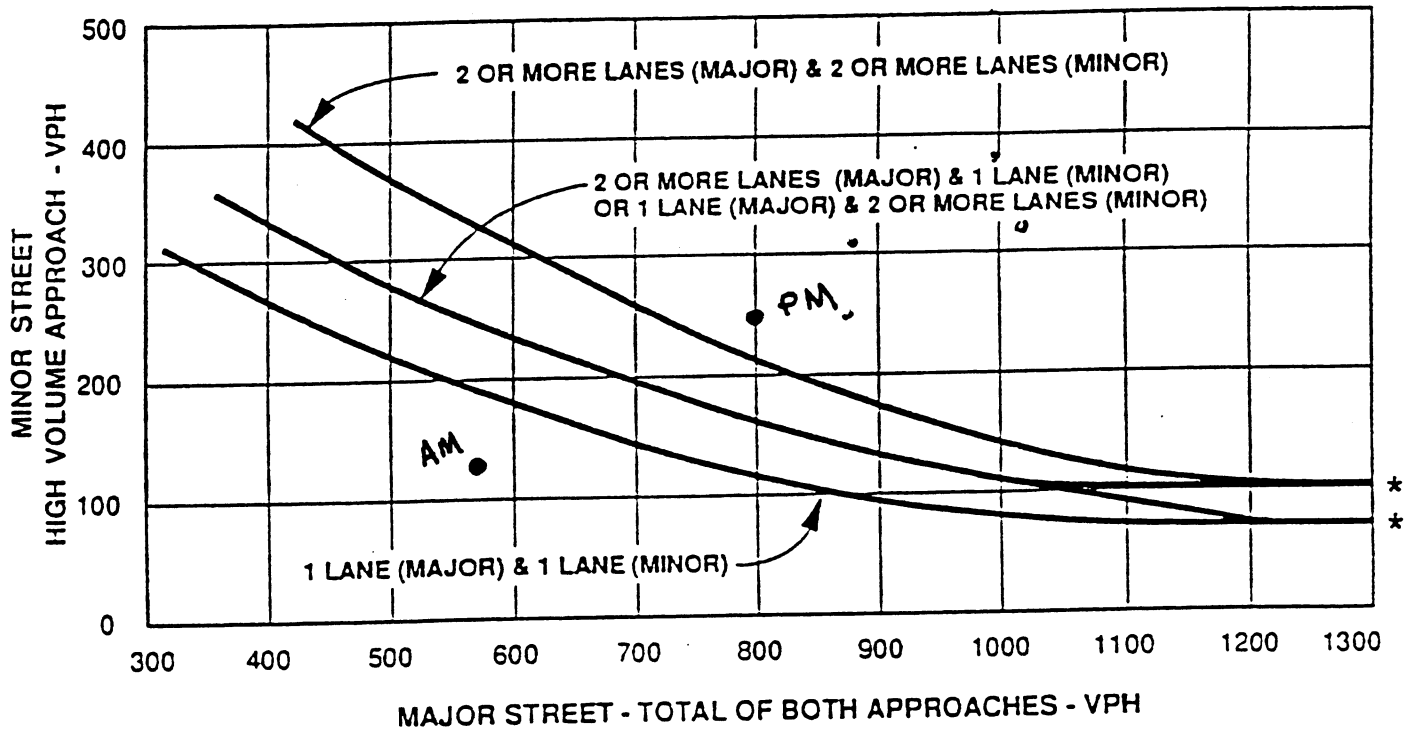
Major Street: Alpine Blvd.
Minor Street: W. Victoria Drive / Arnold Way



* NOTE:
80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-9
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Alpine Blvd
Minor Street: W. Victoria Drive /Arnold Way
EXISTING Conditions



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE 3-27-01
CHK ____ DATE ____

Major St: Alpine Blvd — Critical Approach Speed ____ mph
Minor St: E. Victoria Drive / South Grade — Critical Approach Speed ____ mph

Critical speed of major street traffic ≥ 40 mph ☐ or
In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)
EXISTING + Project + Other Project ☐ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

Marketing Survey

100% SATISFIED YES ☐ NO ☒
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PM Peak							
	U	R	U	R								
APPROACH LANES	1		2 or more									Hour
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	673	404	404	404	404	404	404	404
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	228	137	137	137	137	137	137	137

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☒
80% SATISFIED YES ☐ NO ☒

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				PM Peak							
	U	R	U	R								
APPROACH LANES	1		2 or more									Hour
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	673	404	404	404	404	404	404	404
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	228	137	137	137	137	137	137	137

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 300 feet; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-3
TRAFFIC SIGNAL WARRANTS

Major Street: Alpine Blvd.
Minor Street: E. Victoria Drive / South Grade

WARRANT 8 - Combination of Warrants SATISFIED YES ☐ NO ☒

EXISTING + Project + Other Projects (Marketing Survey)

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	✓	
	2. INTERRUPTION OF CONTINUOUS TRAFFIC		YES ☐ NO ☒

WARRANT 9 - Four Hour Volume SATISFIED* YES ☐ NO ☒

Approach Lanes	One	2 or more	/	/	/	Hour
Both Approaches - Major Street	✗	✓				
Highest Approaches - Minor Street	✗	✓				

* Refer to Figure 9-6 (URBAN AREAS) or Figure 9-7 (RURAL AREAS) to determine if this warrant is satisfied.

WARRANT 10 - Peak Hour Delay SATISFIED YES ☐ NO ☒
(ALL PARTS MUST BE SATISFIED)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — YES ☐ NO ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — YES ☒ NO ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — YES ☒ NO ☐

WARRANT 11 - Peak Hour Volume SATISFIED* YES ☐ NO ☒

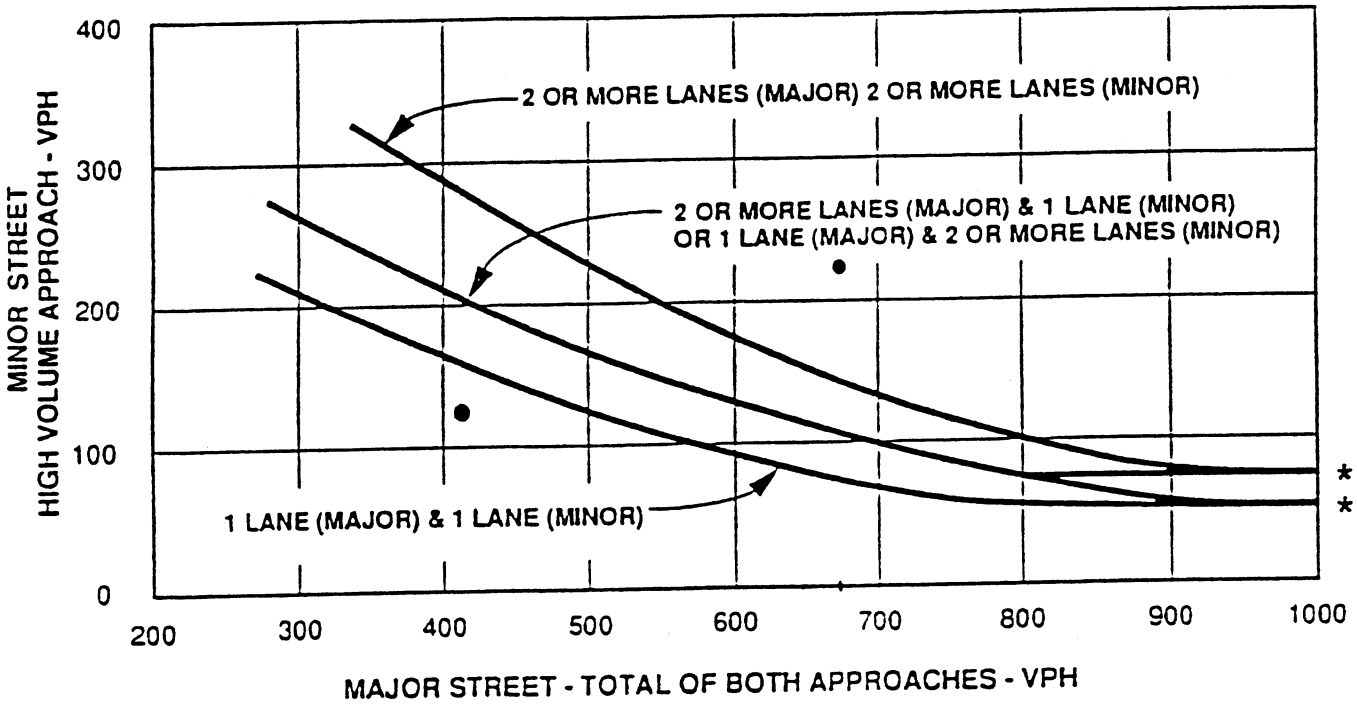
Approach Lanes	One	2 or more	AM Peak	PM Peak	/	Hour
Both Approaches - Major Street		✓	786	673		
Highest Approaches - Minor Street		✓	164	228		

* Refer to Figure 9-8 (URBAN AREAS) or Figure 9-9 (RURAL AREAS) to determine if this warrant is satisfied.

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-7
FOUR HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Alpine Blvd.
Minor Street: E. Victoria Drive / S. Grade Rd
EXISTING + Project + other Projects (Marketing Survey)

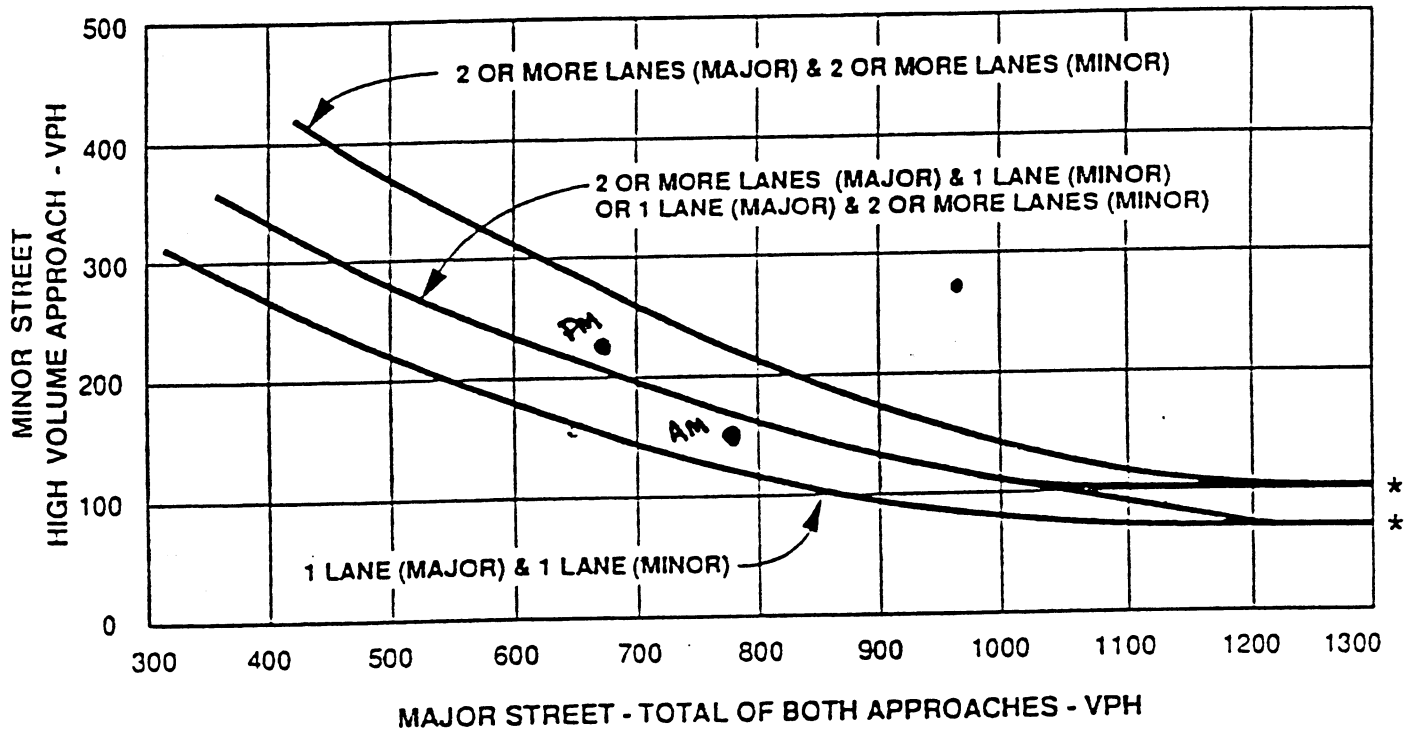


* NOTE:
80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-9
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Alpine Blvd.
Minor Street: E. Victoria Drive / S. Grade Rd

EXISTING + Project + other Projects (Marketing Survey)



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ PM ____

CALC ____ DATE 3-27-01
CHK ____ DATE ____

Major St: Alpine Blvd. Critical Approach Speed ____ mph
Minor St: E. Victoria / S. Grade Critical Approach Speed ____ mph

Critical speed of major street traffic ≥ 40 mph ☐ or
In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)
EXISTING + Project + other Projects ☐ URBAN (U)

(Select Zone)

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☐ NO ☒
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or more										
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	998	599	599	599	599	599	599	599	
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	191	115	115	115	115	115	115	115	

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☒
80% SATISFIED YES ☒ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or more										
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	998	599	599	599	599	599	599	599	
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	191	115	115	115	115	115	115	115	

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 300 feet; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-3
TRAFFIC SIGNAL WARRANTS

Major Street: Alpine Blvd.
Minor Street: E. Victoria Dr / S. Grade Rd

WARRANT 8 - Combination of Warrants SATISFIED YES ☒ NO ☐

EXISTING + PROJECT + OTHER PROJECTS (SELECT ZONE)

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	✓	
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	YES ☒ NO ☐

WARRANT 9 - Four Hour Volume SATISFIED* YES ☐ NO ☒

Approach Lanes	One	2 or more					Hour
Both Approaches - Major Street		✓	998	599	599	599	
Highest Approaches - Minor Street		✓	191	115	115	115	

* Refer to Figure 9-6 (URBAN AREAS) or Figure 9-7 (RURAL AREAS) to determine if this warrant is satisfied.

WARRANT 10 - Peak Hour Delay SATISFIED YES ☐ NO ☒
(ALL PARTS MUST BE SATISFIED)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — YES ☐ NO ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — YES ☒ NO ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — YES ☒ NO ☐

WARRANT 11 - Peak Hour Volume SATISFIED* YES ☒ NO ☐

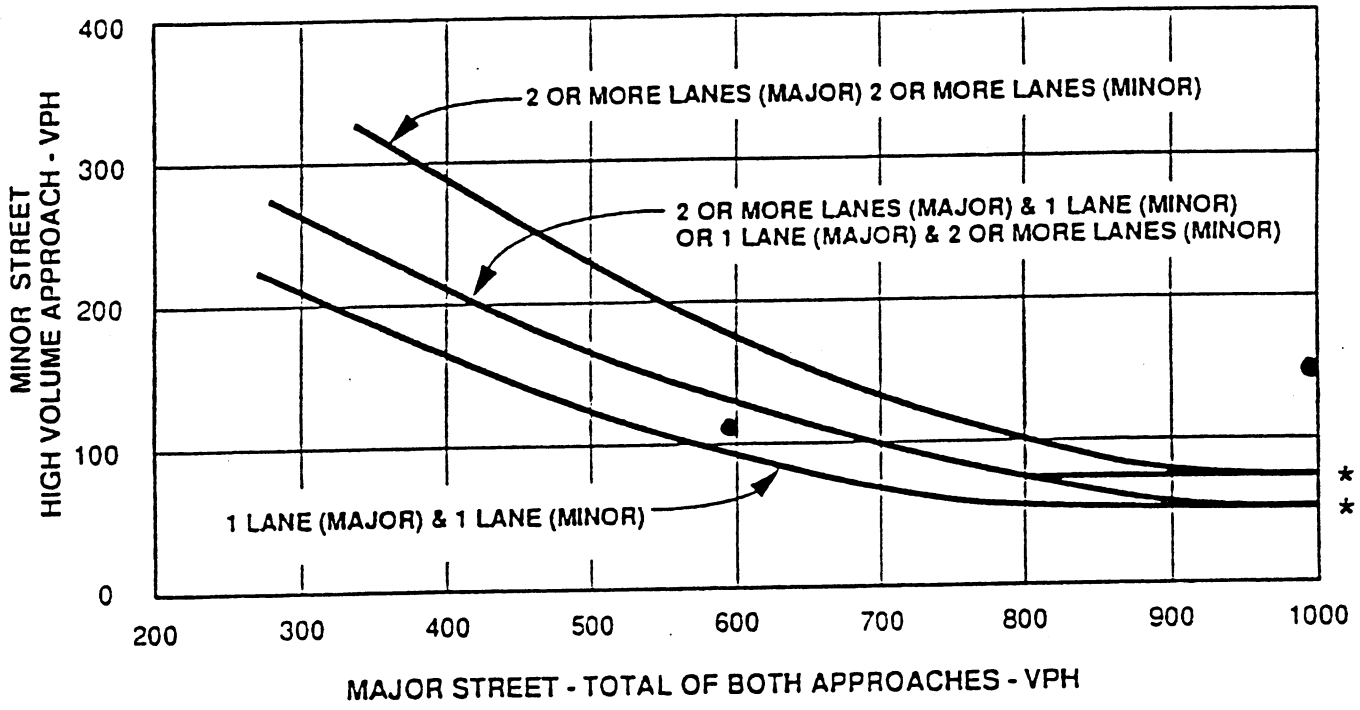
Approach Lanes	One	2 or more		AM Peak	PM Peak	Hour
Both Approaches - Major Street		✓		964	998	
Highest Approaches - Minor Street		✓		150	191	

* Refer to Figure 9-8 (URBAN AREAS) or Figure 9-9 (RURAL AREAS) to determine if this warrant is satisfied.

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-7
FOUR HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Alpine Blvd
Minor Street: E. Victoria Drive / South Grade
EXISTING + Project + Other Projects (Select Zone)

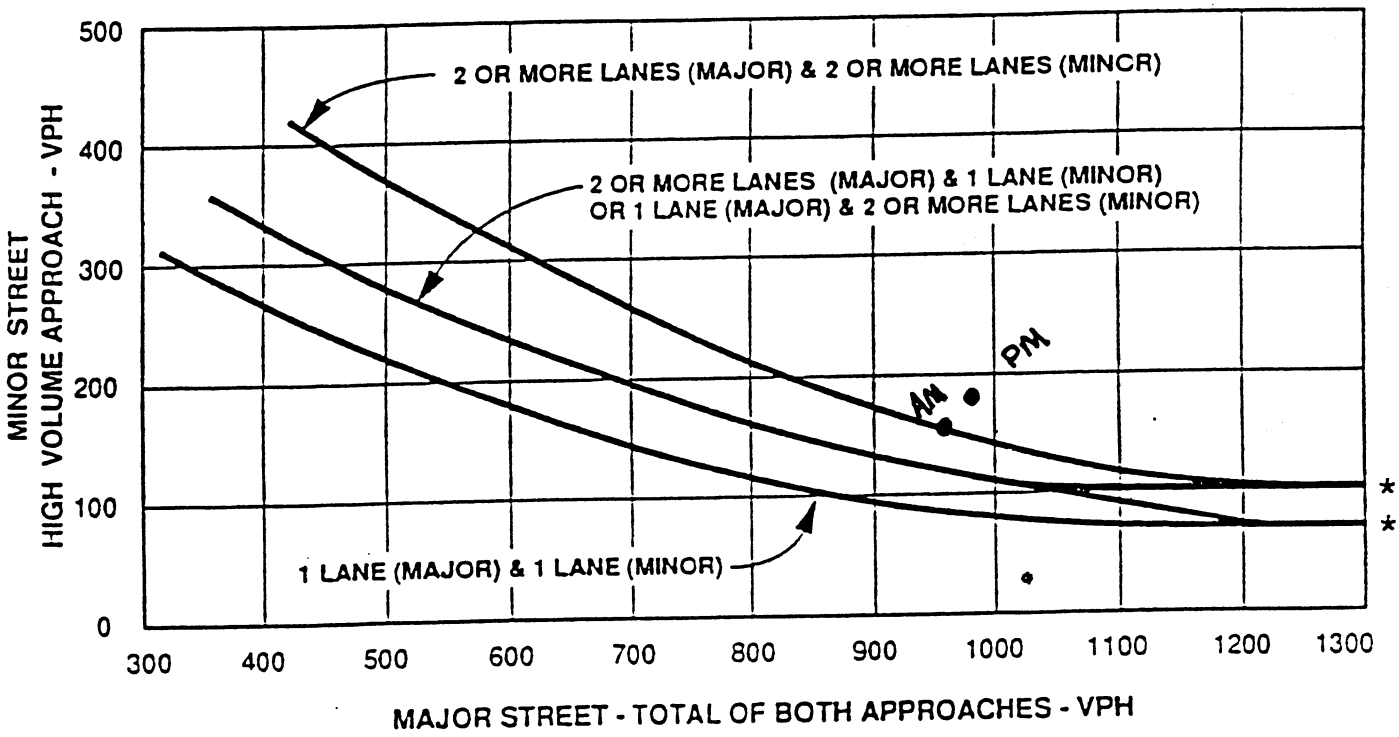


* NOTE:
80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-9
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Major Street: Alpine Blvd
Minor Street: E. Victoria Dr / South Grade Road

Existing + other Projects + Project (Select Zone)



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

APPENDIX P

➤Responses to County Comments

COUNTY OF SAN DIEGO

DEPARTMENT OF PUBLIC WORKS

INTRADEPARTMENTAL CORRESPONDENCE

December 26, 2001

TO: Ken Brazell, Project Management Team

FROM: Bob Goralka, Route Locations BG

ALPINE VILLAGE CENTER/ALBERTSONS MARKET (TP 9047)

Route Locations staff has reviewed the following documents pertaining to the Alpine Village Center/Albertsons Market development:

1) Traffic study prepared by Darnell & Associates dated October 22, 2001
2) First County Counsel Screencheck Environmental Impact Report (EIR) prepared by CBA dated October 2001

The following are our comments.

The EIR and the traffic study have adequately addressed our section's previous comments dated September 25, 2001. For the purposes of better consistency between the traffic study and EIR, the following items should be addressed:

- In the EIR (Pg. 1-3) and in Appendix A, it is stated that the proposed project will be required to convert the intersections of Willows Road with the I-8 eastbound ramps and Willows Road with the I-8 westbound ramps from one-way stop control to all-way stop control. The off-site mitigation measures related to the Willows Road/I-8 interchange are not identified in Table S-1 (Summary of Mitigation Measures) of the EIR and Section V (Recommended Traffic Mitigation Measures) of the traffic study. The overall LOS at the intersection is LOS C or better. The traffic study/EIR should identify if the project impacts a specific turn movement that would necessitate the conversion of the intersection controls. The EIR and the traffic study should be revised in order to consistently identify the recommended mitigation measures related to the Willows Road/I-8 interchange.

- It should be noted that implementation of the conversion from one-way stop control to the all-way stop control at the I-8/Willows Road interchange would require review by the Department of Public Works Traffic Advisory Committee (TAC) and approval by the Board of Supervisors.

- Figure 2-5 in the EIR should be replaced with a figure that is consistent with Figure 10 in the traffic study. The conversion of ten existing 90-degree parking spaces to four parallel parking spaces on the northeast corner of Alpine Boulevard @ West Victoria Drive intersection must also be shown in the EIR figure.

- Section V (Pg.57) of the traffic study should include a discussion of the proposed restriping of Alpine Boulevard and refer to Figure 10.

- On page 57 (Section V) of the traffic study, the second paragraph regarding Alpine Boulevard should be revised. The paragraph should delete all descriptions of Alpine Boulevard as operating under urban conditions. Urban conditions as stated in the traffic study may be considered a vague and subjective description that is subject to debate. The paragraph should be revised to state that Alpine Boulevard between West Victoria Drive and Bay Meadows operates as an arterial system with considerable cross traffic and closely spaced intersections in which roadway segment LOS is dependent on intersection LOS.

- Section 2.1 (Transportation/Circulation-Pg. 2-2) of the EIR states that the traffic analysis is based on a summary of the Darnell & Associates traffic study dated August 28, 2001 The EIR should be revised to reflect to updated version of the project traffic study dated October 22, 2001.

If you have any questions concerning our comments, please call me at 694-3728.

Bob Goralka

BOB GORALKA
Project Manager

Cc: Ed Sinsay (DPW)

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

MEMORANDUM

DATE: January 4, 2002

TO: Bob Goralka, County of San Diego FAX: 858-694-8928

FROM: Vicki S. Root Vicki S. Root

D&A Ref. No: 990509
RE: Alpine Village Center/Albertsons Market (TP 9047) - Response to County Comments Dated December 26, 2001

Darnell & Associates, Inc. (D&A) has reviewed the December 26, 2001 County of San Diego's comments on the October 22, 2001 traffic analysis and has revised the traffic study accordingly. Below is summary of the specific responses to each comment.

Comment 1: In the EIR (Pg. 1-3) and in Appendix A, it is state that the proposed project will be required to convert the intersections of Willow Road with the I-8 eastbound ramps and Willows Road with the I-8 westbound ramps from one-way stop control to all-way stop control. The off-site mitigation measures related to the Willows Road/I-8 interchange are not identified in Table S-1 (Summary of Mitigation Measures) of the EIR and Section V (Recommended Traffic Mitigation Measures) of the traffic study. The overall LOS at the intersection is LOS C or better. The traffic study/EIR should identify if the project impacts a specific turn movement that would necessitate the conversion of the intersection controls. The EIR and the traffic study should be revised in order to consistently identify the recommended mitigation measures related to the Willows Road/I-8 interchange.

Response 1: The reference in the EIR in regards to converting the I-8/Willows Road interchange ramps from one-way to all way stop control was based on outdated analysis. Current analysis found that all turn movements operating at an acceptable LOS D or better at both the eastbound and westbound ramps under the existing one-way stop control. Therefore, it is not necessary to convert the intersection controls. The EIR will need to be modified to delete any reference to the traffic control conversion at the I-8/Willows Road interchange ramps. No revisions have been made to the traffic study.

P-3

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Comment 2: It should be noted that implementation of the conversion from one-way stop control to the all-way control at the I-8/Willows Road interchange would require review by the Department of Public Works Traffic Advisory Committee (TAC) and approval by the Board of Supervisors.

Response 2: See the response to Comment 1.

Comment 3: Figure 2-5 in the EIR should be replaced with a figure that is consistent with Figure 10 in the traffic study. The conversion of ten existing 90-degree parking spaces to four parallel parking spaces on the northeast corner of Alpine Boulevard @ West Victoria Drive intersection must also be shown in the EIR figure.

Response 3: This change needs to be made within the EIR. No revisions to the traffic study are required.

Comment 4: Section V (Pg. 57) of the traffic study should include a discussion of the proposed restriping of Alpine Boulevard and refer to Figure 10.

Response 4: Page 57 of the traffic study already provided a description of the restriping of Alpine Boulevard with a reference to Figure 10 in the fourth paragraph.

Comment 5: On page 57 (Section V) of the traffic study, the second paragraph regarding Alpine Boulevard should be revised. The paragraph should delete all descriptions of Alpine Boulevard as operating under urban conditions. Urban conditions as stated in the traffic study may be considered a vague and subjective description that is subject to debate. The paragraph should be revised to state that Alpine Boulevard between West Victoria Drive and By Meadows operates as an arterial system with considerable cross traffic and closely spaced intersections in which roadway segment LOS is dependent on intersection LOS.

Response 5: This revision has been completed on Page 57, paragraph 4 of the revised Traffic Study.

Comment 6: Section 2.1 (Transportation/Circulation -Pg. 2-2) of the EIR states that the traffic analysis is based on a summary of the Darnell & Associates traffic study dated August 28, 2001. The EIR should be revised to reflect the updated version of the project traffic study dated October 22, 2001.

Response 6: This change needs to be made within the EIR. No revisions to the traffic study are required.

If you have any questions concerning our responses, please feel free to contact the office.

cc: Yara Fisher, Cotton/Bridges/Associates — FAX: 858-625-0545
Larry Tucker, Grant Tucker Properties — FAX: 949-752-0885

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

November 14, 2000

Mr. Tim Gnibus
Cotton Beland & Associates
6336 Greenwich Drive, Suite F
San Diego, CA 92122-5922

D&A Ref. No: 990509

Subject: Proposed Albertson's in Alpine, California

Dear Mr. Gnibus:

We have been advised that Cotton Beland & Associates (CBA) is preparing an environmental impact report (EIR) for the proposed Albertson's anchored shopping center (the "Project") to be located at the southeast corner of Alpine Boulevard and South Grade Road (the "Proposed Location") in the community of Alpine, California. In connection with the EIR for the Project, we understand that CBA is analyzing alternative locations to the Proposed Project Location. CBA has asked that we comment upon the traffic impacts of the Project if it were to be located on either of two alternative sites. The alternative sites are both on the north side of and contiguous with Interstate 8 (I-8), one on the south side of Tavern Road, west of the Texaco station, and the other on the east side of Tavern Road. These two sites are locally known as the Shaw Property and the Dyke Property, respectively (the "Alternative Sites").

For purposes of this letter, we have assumed that the Alternative Sites would include the same amount of square footage, with the same types of uses as the Project, although we understand that the Alternative Sites may be somewhat larger parcels of land which, if developed for retail purposes, could result in larger developments with more trips than the Project.

As our traffic study dated April 7, 2000 sets forth, with the proposed mitigation measures, the roadway segments and intersections impacted by the Project will each operate at an acceptable level of service.

As noted in our Traffic Study, the impacts of the Project slightly raises the volume-to-capacity ratio on Tavern Road, north of Alpine Boulevard (i.e. on the bridge over I-8) by an amount which is not significant under the County's Threshold of Significance Guidelines. The Project also adds trips to three (3) currently failing intersections: Tavern Road/I-8 westbound ramp, Tavern Road/I-8 eastbound ramp, and Tavern Road/Arnold Way. Signalization is presently warranted at the I-8 ramps, as well as the Tavern Road/Arnold Way intersection, with or without the Project. The Traffic Study provides that the Project would be required to pay fair share fees in light of the contribution of traffic at these failing intersections.

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[illegible]
E-mail: [illegible]

If the 11,770 average daily trips (ADT) of the Project are generated from either of the Alternative Sites, the County's Threshold of Significance Guidelines will clearly be exceeded. The I-8 at Tavern Road intersections, and the intersection of Tavern Road at Arnold Way would be significantly impacted and the failure of those intersections and road segments will be materially worse than they would be with the Project at the Proposed Location. In our opinion, mitigation of the Tavern Road/I-8 interchange would require that the Tavern Road overcrossing be widened to its ultimate configuration of a 4-lane Major Road with appropriate turn lanes (equivalent of at least a 6-lane roadway). The I-8 eastbound and westbound ramps would require signalization and possible widening.

In conclusion, from a traffic standpoint, the Project in its Proposed Location is a superior environmental alternative to the location of the Project on the Alternative Sites.

Sincerely,

DARNELL & ASSOCIATES, INC.

Bill E. Darnell, P.E.

BED/bm
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Appendix C
Air Quality Report

Giroux & Associates
Environmental Consultants

AIR QUALITY IMPACT

ALBERTSON'S MARKET (ALPINE)

SAN DIEGO COUNTY, CALIFORNIA

Prepared for:

Grant Tucker Properties
Attn: Larry Tucker
P.O. Box 7974
Newport Beach, CA 92658

Date:

March 12, 2002

Prepared by:

Hans D. Giroux
Senior Analyst
Giroux & Associates

17744 Sky Park Circle, Suite 210, Irvine, California 92614 - Phone (949) 851-8609 - Fax (949) 851-8612

METEOROLOGY/CLIMATE

The climate of the Alpine area, as with much of Southern California, is largely controlled by the semi-permanent high pressure system near Hawaii and the moderating effects of the nearby oceanic thermal reservoir. The area's interior valley sub-climate of the prevailing Mediterranean type climate is characterized by warm summers, mild winters, infrequent rainfall, abundant sunshine, and comfortable humidities. The area is somewhat warmer than the county's coastal corridor in summer, but it correspondingly experiences less clouds and fog than along the ocean. Winds are generally light until mid-afternoon when the daily sea breeze reaches the project area. The breeze remains strong until late evening, especially in summer. Winds at night are normally very light.

Temperatures in Alpine average 63° F annually. Summer afternoons average in the low 90s, while winter mornings drop down into the upper 30s. Because of the moderating influence of the ocean, temperature extremes much over 100°F or much below freezing rarely, if ever, occur.

Rainfall in the project area varies considerably depending on the local exposure relative to any nearby elevated terrain. Rainfall measurements at nearby El Cajon indicate an annual precipitation average of 13.1 inches per year. Most of the rain falls from late November to early April when the fringes of mid-latitude storms pass through Southern California. A shift in the storm track from year to year can mean the difference between a very wet winter or a subsequent drought year.

Winds across the project area result mainly from temperature differences between the ocean to the west and the mountains and desert to the east. These winds are steered by local topography, but they are primarily onshore by day, especially in summer, and primarily offshore at night, especially in winter. Long-term local wind records show a very dominant onshore component from the SW-W in summer with moderate (8-12 mph) speeds. In winter, the onshore flow occurs less frequently, and is replaced by a light (3-5 mph) and persistent offshore flow from the NE. Local steering influences of local canyon topography may modify the dominant onshore-offshore wind distribution, but most local wind patterns retain their strongly bimodal dominance.

In addition to the winds that control horizontal transport processes in the region important for air pollution dispersion, the interior valleys of San Diego County also have numerous temperature inversions that control the vertical extent through which pollutants can be mixed. When the onshore flow of cool, marine air undercuts a large dome of warm, sinking air within the oceanic high

pressure area, it forms a marine/subsidence inversion. These inversions allow for good local mixing, but they act like a giant lid over the area. As air moves inland, sources add pollution from below without any dilution from above. The boundary between the cool air near the surface and the warm air aloft is a zone where air pollutants become concentrated. As the air moves inland and meets elevated terrain of inland foothill communities such as Alpine, these communities are exposed to many of the trapped pollutants within this most polluted part of the inversion layer.

A second inversion type forms when cool air drifts into lower valleys at night and pools on the valley floor. These radiation inversions are strongest in winter when nights are longest and air is coldest. They may lead to stagnation of ground-level pollution sources such as automobile exhaust near freeways or major parking facilities. While these radiation inversions are prevalent in the project area in winter, background pollutant levels are sufficiently low and the area is not intensely developed as to create enough air pollution to cause pollution "hot spots." Any local air pollution problems are, therefore, more related to the summer marine inversions and the occasional transport of polluted air into the local area rather than any winter microscale stagnation.

AIR QUALITY SETTING

Ambient Air Quality Standards (AAQS): In order to assess the air quality impact of development of the proposed Albertson's Market and associated commercial uses, that impact, together with baseline air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress or infection such as asthmatics, the very young, the elderly, people weak from other illness or disease, or persons in heavy work or exercise called "sensitive receptors". Healthy adults can tolerate occasional exposure to air pollution levels well above these standards before adverse health effects are observed. Recent research has shown, however, that long-term exposure to air pollution at levels equal to the standards may cause adverse health effects. Just meeting standards may not provide a sufficient health protection cushion for sensitive receptor populations.

The Clean Air Act Amendments of 1970 first established national AAQS with states retaining the option to adopt more stringent standards or to include other pollution species. Because California already had standards in existence before federal AAQS were established, and because of unique meteorological problems in California, there is considerable diversity between state and federal clean air standards. Those standards currently in effect in California are shown in Table 1.

The federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environmental Protection Agency (EPA) evaluate the appropriateness of all federal clean air standards in light of current information on air pollution health effects. EPA was mandated to promulgate new or modify existing standards, where necessary. After considerable analysis and debate, two new national AAQS were adopted in July, 1997. These include a standard for ultra-small diameter particulate matter, and an 8-hour exposure standard for ozone.

These standards were challenged by national trucking and manufacturing organizations as "states' rights" issues. On February 27, 2001, the U.S. Supreme Court unanimously confirmed EPA's right to adopt health-based standards without specific congressional concurrence, and without preparation of a cost versus benefit analysis. The Court did find that attainment schedules for "old" and "new" standards were inconsistent. The implementation of the new standards is stayed until the schedules are brought into

TABLE 1
AMBIENT AIR QUALITY STANDARDS[a]

Pollutant	Averaging Time	California Standards[b]		National Standards[c]			
				Primary[d]		Secondary[e]	
		ppm	µg/m³	ppm	µg/m³	ppm	µg/m³
Ozone	1 hour	0.09	180				
	8 hour			0.08		0.08	
Carbon Monoxide	8 hours	9.0	10,000	9.0	10,000	9.0	10,000
	1 hour	20.0	23,000	35.0	40,000	35.0	40,000
Nitrogen Dioxide	Annual			0.053	100	0.053	100
	1 hour	0.25	470				
Sulfur Dioxide[f]	Annual			0.03	80		
	24 hours	0.04	105	0.14	365		
	3 hours					0.5	1,300
	1 hour	0.25	655				
PM_{10}[g]	Annual		30		50		50
	24 hours		50		150		150
$PM_{2.5}$[g]	Annual				15		15
	24 hours				65		65
Lead[g]	Calendar quarter				1.5		1.5
	30-day avg		1.5				
Sulfate[g]	24 hours		25				
Hydrogen Sulfide	1 hour	0.03	42				
Vinyl Chloride	24 hours	0.010	26				
Visibility Reducing Particles	8 hours (10 a.m.-6 p.m.)	In sufficient amounts to reduce prevailing visibility to <10 miles when relative humidity is <70% w/equivalent instrument method					

[a] Standards first promulgated in ppm concentrations except where noted. Equivalent µg/m³ concentrations based on reference temperature of 25°C and reference pressure of 760 mm of mercury.

[b] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide, nitrogen dioxide, PM_{10}, and visibility reducing particles are values not to be exceeded.

[c] National standards, other than ozone and those based on annual averages, are not to be exceeded more than once a year.

[d] Designed to protect human health with an adequate margin of safety

[e] Designed to protect public welfare (i.e., prevent damage to vegetation, property, visibility)

[f] Federal standards first promulgated in µg/m³.

[g] Standards promulgated in µg/m³ only.

agreement. Therefore, no attainment plans/programs will be implemented for these new standards until the attainment schedule issues are resolved.

Baseline Air Quality: Ambient air quality monitoring is conducted in Alpine on Victoria Drive for ozone and for nitrogen dioxide (NO_2). The nearest air quality monitoring station operated by the San Diego County Air Pollution Control District (APCD) which measures other pollutants such as carbon monoxide (CO) or various types of particulate matter is in El Cajon.

Table 2 summarizes the monitoring data from the last six years closest to the project area. They show no violations of standards for locally generated carbon monoxide (CO), and nitrogen oxides (NOx) and a low frequency of violations for respirable (PM-10) particulates. There is, however, a somewhat higher frequency of violations for the state and federal standards for ozone (O3). Several species such as sulfur dioxide, particulate sulfates and particulate lead are far below their allowable levels because low sulfur fuels and unleaded gasoline are utilized by most fuel-burning sources in the San Diego Air Basin (SDAB).

An encouraging trend is seen in the hourly ozone data. Alpine has experienced a reduced number of violations of the federal and state ozone standards since the early '80s. The annual maximum levels have not exceeded the California First-Stage Episode Alert Level of 0.20 ppm for an hourly average since before 1990. The federal ozone standard was exceeded only twice in 1996 and once in 1997. In 1999, the federal ozone standard was met for the first time since monitoring began at the Alpine monitoring station, and this standard was again met in 2000 and 2001 (based on preliminary data). There were less than thirty days per year of violations of the State ozone standard in 1997 for the first time on record. With changing weather patterns from the El Niño condition to La Niña, ozone levels rose in 1998. There were 47 violations of the State ozone standard and 8 days exceeding federal standards at Alpine in 1998. Conditions returned more to "normal" in 1999 and 2000 with new "bests" for all ozone monitoring categories.

Some of the air quality improvement is due to a concurrent reduction in smog episodes in the Los Angeles Basin which often "bleed over" into San Diego County, and part of the improvement is due to generally better summer dispersion meteorology. Much of the better ozone air quality, however, is attributable to continued emissions control programs on stationary sources enforced by the APCD and ongoing emissions reductions from the retirement of older cars and mandatory smog checks and tune-ups of the current on-road travel fleet. Except for occasional intrusion of pollution from outside San Diego County, the entire county is expected to remain in compliance with the federal one-hour ozone standard throughout this decade.

TABLE 2

PROJECT AREA AIR QUALITY MONITORING SUMMARY
(Days Standards Were Exceeded and Indicated Maximum Concentrations)

Pollutant/Standard	1995	1996	1997	1998	1999	2000
Ozone: (A)						
1-Hour > 0.09 ppm	77	45	29	47	21	19
1-Hour > 0.12 ppm	9	2	1	8	0	0
8-Hour > 0.08 ppm	44	27	11	32	15	12
Max. 1-Hour Conc. (ppm)	0.15	0.14	0.14	0.16	0.12	0.12
Carbon Monoxide: (EC)						
1-Hour > 20. ppm	0	0	0	0	0	*
8-Hour > 9. ppm	0	0	0	0	0	*
Max. 1-Hour Conc. (ppm)	6.	6.	6.	5.	6.	*
Max. 8-Hour Conc. (ppm)	3.7	4.1	4.4	4.0	3.8	*
Nitrogen Dioxide: (A)						
1-Hour > 0.25 ppm	0	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.11	0.10	0.06	0.07	0.08	0.07
Respirable Particulates: (EC)						
24-Hour > 50 $\mu g/m^3$	6/61	2/63	1/58	1/59	4/59	2/61
24-Hour > 150 $\mu g/m^3$	0/61	0/63	0/58	0/59	0/59	0/61
Max. Daily Conc. ($\mu g/m^3$)	82.	67.	76.	54.	60.	69.
Ultra-Fine Particulates: (EC)						
24-Hour > 65 $\mu g/m^3$	X/XX	X/XX	X/XX	X/XX	0/321	1/292
Max. 24-Hour Conc. ($\mu g/m^3$)	XX.	XX.	XX.	XX.	47.0	65.5

* = CO monitoring discontinued

Source: (A) = Alpine (Victoria Drive),
(B) = El Cajon (Redwood Avenue) Air Monitoring Station.

Note: Entries expressed as ratios = samples exceeding standard/samples taken.

X/XX =New standard, measurements begun in 1999

Sources of Pollution: Nitrogen oxides (NO_x) and reactive organic gases (ROG) are the two precursors to photochemical smog formation. In San Diego County, 63% of the 239 tons per day of ROG emitted come from mobile (cars, ships, planes, heavy equipment, etc.) sources. For NO_x, 91% of the 234 tons emitted daily are from mobile sources (CARB, 2001; "2001 California Almanac"). Computer modeling of smog formation has shown that a reduction of another 10% each of NO_x and ROG would allow the San Diego Air Basin to continue to meet the federal ozone standard on days when there is no substantial transport of pollution from the South Coast Air Basin or other airshed.

Air Quality Management Planning: The continued violations of national AAQS in the SDAB, particularly those for ozone in inland foothill areas, requires that a plan be developed outlining the pollution controls that will be undertaken to improve air quality. In San Diego County, this attainment planning process is embodied in a regional air quality management plan developed jointly by the APCD and SANDAG. Several plans had been adopted in the late 1970s and early 1980s under the title Regional Air Quality Strategies (RAQS). Until recently, the 1982 RAQS was the last federally-approved (EPA) air quality plan for attainment of the federal ozone standard. More recent planning efforts have been modifications, improvements and updates of the earlier RAQS efforts.

The California Clean Air Act (AB-2595) required that a state clean air plan be developed to address meeting state standards as well as the often less stringent federal criteria. A basin plan was therefore developed and adopted in 1991 that predicted attainment of all national standards by the end of 1997 from pollution sources within the air basin, but little can be done about the problem of interbasin transport. Since the South Coast Air Basin is predicted to exceed the national ozone standard beyond the year 2000, the San Diego Air Basin will also not experience completely healthful air for the next several decades.

Specifically, a plan to attain the state standard for ozone as quickly as possible was developed in 1994 through an update of the 1991 RAQS. A Triennial Revision updating the RAQS was adopted by the San Diego County Air Pollution Control Board on August 8, 2001. Federally enforceable local rules are combined with those from all other California ozone non-attainment areas to create the California State Implementation Plan (SIP) which is actually the federal attainment plan. The SIP is adopted by the Air Resources Board (ARB) after public hearings and forwarded to the U. S. EPA for its approval. The SIP including all control measures needed for the California air basins to attain the national AAQS for ozone by respective attainment deadlines.

During the planning process and smog formation modeling, it was anticipated that the SDAB can meet the federal ozone standard by the year 1999 without the creation of any new control programs not already in progress. Airsheds demonstrating an ability to meet standards by 1999 (in the absence of transport from one basin to another) are classified as having a "serious" ozone problem instead of being classified as "severe". The SDAPCD requested that EPA reclassify the air basin from severe to serious. This request was subsequently approved.

All progress towards attainment, including offsetting the effects of growth, is expected to derive from existing local, state and federal rules and regulations. Controversial rules previously evaluated that were judged by some people as overly intrusive into personal lifestyles (mandatory trip reduction programs or minimum average vehicle occupancy goals) are not needed to predict attainment. Any violations of ozone standards in the year 2000 or beyond are forecast to occur only on days when transport from the Los Angeles Basin creates substantially elevated baseline levels upon which any local basin impacts would be superimposed.

The proposed Albertson's Market project relates to the RAQS/SIP through the land use and growth assumptions that are incorporated into the air quality planning document. If a proposed project is consistent with the County of San Diego General Plan, then the project presumably has been anticipated within the regional air quality planning process. With implementation of any RAQS-mandated trip/VMT reduction transportation and land use measures, a project will, therefore, not have an adverse regional air quality impact. If the change in vehicular emissions patterns due to the proposed project further does not create any unacceptable microscale impacts immediately adjacent to the proposed project site, then the project will have air quality impacts that should be considered less than significant.

AIR QUALITY IMPACTS

Standards of Significance

CEQA guidelines define a potentially significant air quality impact as one that:

a. creates violations of clean air standards,

b. contributes substantially to an existing violation, or,

c. exposes people to contaminants for which there are no presumed safe exposures.

For projects that create mainly automobile traffic whose emissions require complex photochemical reactions to reach their most harmful state, there is no way to directly measure the incremental impact to establish a "substantial contribution." Various air pollution control/management agencies have developed guidelines using total project emissions as a surrogate for determining regional impact potential. The San Diego APCD or San Diego County have not developed any numeric emissions-based significance thresholds.

In the absence of any locally adopted thresholds, San Diego County DPLU staff has recommended use of the South Coast Air Basin (SCAB) thresholds stated in the South Coast Air Quality Management District (SCAQMD) "CEQA Air Quality Handbook" (1993) for selected projects. For most recently reviewed air quality studies, staff has recommended use of the San Diego APCD Rule 20 AQIA (air quality impact analysis) thresholds. The AQIA thresholds are somewhat less stringent than the SCAQMD CEQA Handbook values. The better baseline air quality in San Diego than in the Los Angeles Basin supports the use of a less stringent significance threshold. However, as noted below, the proposed project will not cause the more restrictive SCAQMD-based thresholds to be exceeded. If a project creates insufficient emissions to significantly impact air quality in a degraded air quality environment such as the South Coast Air Basin, it will create a less-than-significant impact in the San Diego Air Basin with an even greater margin of safety.

The SCAQMD thresholds are expressed in terms of daily emissions, and they distinguish between short-term construction activities versus long-term operational emissions. Construction activity emissions are expressed as either a daily or a quarterly significant level. As noted above, because it is impossible to calculate the microscopic individual impact of any project on a regional scale, these thresholds are expressed in terms of project-related emission levels as follows:

	POLLUTANT				
Construction:	**ROG**	**NOx**	**CO**	**PM-10**	**SOx**
pounds/day	75	100	550	150	150
tons/quarter	2.5	2.5	24.75	6.75	6.75
Operations:					
pounds/day	55	55	550	150	150

To the extent that project-related emissions are "new" emissions in the airshed compared to existing conditions, the above threshold levels have been used to assess impact significance.

Sources of Impact

Impacts to air quality from the project will derive primarily through the vehicular traffic generated by increased site customer traffic. Mobile source impacts occur basically on two geographical scales. Regionally, site-related travel will add to regional trip generation and increase the vehicle miles traveled (VMT) within the overall airshed. Locally, project traffic, will be added to the San Diego County roadway system near the project site. If such traffic occurs during periods of poor atmospheric ventilation, is comprised of a large number of vehicles "cold-started" and operating at pollution inefficient speeds, and is driving on roadways already crowded with non-project traffic, there is a potential for the formation of microscale air pollution "hot spots" in the area immediately around points of congested traffic.

Secondary project-related atmospheric impacts derive from a number of other small, growth-connected emissions sources such as temporary emissions of dusts and fumes during project construction, increased fossil-fuel combustion in power plants, evaporative emissions at gas stations or from paints, thinners or solvents used in construction and maintenance, increased air travel from area visitors, dust from tire wear and re-suspended roadway dust, etc. All these emission points are either temporary, or they are so small in comparison to project-related automotive sources that their impact is negligible. They do point out, however, that growth engenders increased air pollution emissions from a wide variety of sources, and thus further inhibits the near-term attainment of all clean air standards in the region.

Construction Activity Impacts

Dust is normally the primary concern during site clearing and construction of new buildings and amenities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Regulatory agencies generally use one universal factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into mid-range average values. EPA's "Compilation of Air Pollutant Emission Factors" (AP-42, 1995) states that construction activity fugitive dust emissions are predicted to be around 110 pounds per day per acre disturbed in the absence of any dust control measures being applied.[1] Watering is generally assumed to reduce this rate by 50%, with bigger reductions possible through the use of chemical binders or other aggressive dust control measures.

The above factor is for total suspended particulates (TSP), while the ambient air quality standard is for inhalable 10-micron diameter particulate matter (PM-10) which makes up only a part of TSP. The South Coast AQMD, in its 1993 "CEQA Air Quality Handbook," estimates daily PM-10 emissions during construction to be 26.4 pounds per day per acre disturbed when "standard" required dust control procedures are used. Enhanced dust control procedures can further reduce the average daily PM-10 emission rate when a very comprehensive control program is implemented.

Use of "standard" daily PM-10 emission factors allows for the simultaneous disturbance of around 5.7 acres to generate a potentially significant emission level of 150 pounds per day ($150 \div 26.4 \approx 5.7$). This 150 pound per day threshold relates primarily to regional PM-10 levels. There may be localized effects in very close proximity to a construction site that could be significant even if the daily threshold is not exceeded. Such effects could include soiling of surfaces such as parked cars, outdoor furniture, drying laundry, etc. by deposition of heavier dirt particles.

[1]The EPA factor is stated as 1.2 tons/acre/month. For a 22-day work-month, this equates to 110 pounds/day.

The proposed site encompasses approximately 8.25 acres. Daily PM-10 emissions would total approximately 218 pounds per day when the SCAQMD dust generation factor is applied to the total site area. A generation rate of 218 pounds per day is above the identified 150 pound per day threshold of regional impact significance if the entire project site is under simultaneous grading disturbance. If grading were to occur for 65 days in a calendar quarter, a daily rate of 218 pounds per day would translate into a 7.1 ton per quarter PM-10 generation rate due to grading activities. This would slightly exceed the 6.75 ton per quarter threshold for PM-10.

Achieving a less than significant maximum daily PM-10 emission level requires either a reduction in the disturbance area, or a greater PM-10 emissions control level than the "default" 50 percent level used in the predictive emissions equation. Control of the disturbance footprint is difficult to achieve in practice. Implementation of an enhanced dust control program is the preferred mitigation strategy if the significance threshold is not to be exceeded. Components of such a program are identified in the Mitigation section of this discussion.

The California Air Resources Board, in the development of the statewide PM-10 inventory, assigns an emission factor of 10.2 pounds per day per acre disturbed when best available control measures (BACMs) are used (www.arb.ca.gov/emisinv/areasrc/one htm/one7-7.htm). The use of BACMs on an 8.25 acre site would produce the following emission levels:

Scenario	**Pound/Day**	**Tons/Quarter***
8.25 acres graded	84	2.73
Significance Level	150	6.75
Significant (?)	No	No

* = 65 days of grading/quarter

Construction activities may generate PM-2.5, ultra-fine diameter particulates with a federal clean air standard. PM-2.5, however, is generated from combustion processes or from the growth of microscopic particles in atmospheric chemical reactions. The "crustal" fraction of PM-2.5 samples is normally less than 5 percent. Abrasion of earth does not generate very much PM-2.5.

Any PM-2.5 thus derives primarily from possible equipment exhaust, but minimally from grading activity soil disturbance.

Qualitatively, the soil dust generated by construction activities is typically chemically inert and comprised mainly of large diameter particulates readily filtered by human or other animal breathing passages. Exposure to construction dust is also intermittent because it occurs mainly during limited periods of grading or excavation. With limited duration and with an equally limited impact to human health, such effects are generally considered as a possible soiling nuisance in very close proximity to the disturbance area but a less-than-significant impact. An enhanced program to control small diameter particulates (PM-10) will also reduce generation of larger material responsible for potential soiling nuisance.

In addition to PM-10 concerns, construction involves use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. Construction activity emissions were calculated for an assumed prototype equipment fleet with the heaviest emissions occurring during site grading. Peak grading activity was assumed to occur over a 6-week cycle with a fleet of scrapers (4), dozers (2), a loader, grader and water truck. The quarterly emissions associated with 240 hours of heavy grading equipment are as follows:

		EMISSIONS (tons/quarter)				
Equipment	**Power**	**CO**	**ROG**	**NOx**	**SOx**	**PM10**
Scrapers (4)	80%	0.48	0.10	1.47	0.18	0.16
Dozers (2)	50%	0.21	0.02	0.50	0.04	<0.01
Loader (1)	50%	0.03	0.02	0.11	0.01	0.01
Grader (1)	50%	<0.01	<0.01	0.02	<0.01	<0.01
Water Truck (1)	2000 mi	0.05	0.01	0.03	<0.01	<0.01
TOTAL		0.77	0.15	2.13	0.24	0.18
Signif. Threshold	----	24.75	2.5	2.5	6.75	6.75
Exceeds (?)	----	No	No	No	No	No

Total quarterly emissions will be below any level of potentially significant regional impact. With relatively low baseline levels of air pollution during daytime construction hours in the Alpine area, the small air pollution increment associated with project construction equipment will not measurably worsen local air quality.

Day-to-day construction activity equipment emissions will vary as a function of activity level. Peak daily emissions were assumed to possibly be as high as twice an average day. Estimated possible daily equipment exhaust emissions are as follows:

	EMISSIONS (pounds/day)				
Scenario	**CO**	**ROG**	**NOx**	**SOx**	**PM10**
Average Day 4	17	3	47	5	
Peak Day 8	34	7	95	11	
Signif. Threshold	550	75	100	150	150
Exceeds (?)	No	No	No	No	No

Peak daily NOx emissions may approach, but not exceed, the adopted significance threshold.

Construction activities are concentrated at the construction site, but they also spill over into the adjacent community. Vehicles track dirt off-site, lane closures create congestion on public roadways and construction worker vehicles and supply trucks compete with the general public for sometimes inadequate roadway capacity. Trucks are often left idling near off-site sensitive receptors while waiting to load or unload. As with the on-site impacts, a heightened level of impact mitigation will need to be assigned to the project because of close proximity to pollution sensitive land uses in order to maintain an overall acceptable level of impact from project construction.

While particulate matter from soil disturbance is primarily within a particle size larger than 2.5-microns, and is comprised mainly of crustal materials that have a low chemical/biological reactivity, diesel exhaust particulates are the exact opposite. Diesel exhaust particulate matter is mostly less than 2.5-microns in diameter, and therefore readily inhaled into deep lung tissue.

Diesel particulates are comprised of material that is highly carcinogenic, and prolonged exposure to elevated levels of diesel exhaust PM-2.5 has serious adverse health consequences.

Over the period of heavy site grading, 360 pounds of diesel PM-10 will be released. Although there is no adopted analysis methodology for assessing potential cancer risk, a screening analysis can be performed using some simple dispersion assumptions to assess the magnitude of any risk associated with grading equipment exhaust. Risk is expressed as a "dose relationship" over 70 years of exposure. The exposure resulting from grading is calculated as follows:

$$\text{RISK} = f(W) \times \frac{\text{EMISSIONS}}{\text{MIXING VOLUME}} \times 300 \times 10^{-6} \ / \ (\mu g/m^3)$$

where: f(W) = Greatest frequency of wind in any single direction (= 0.11 based upon NAS Miramar or Lindbergh Field data)

EMISSIONS are 360 pounds, or $163{,}300 \times 10^6$ µg

MIXING VOLUME is estimated as:

200 m (width) X 20 m (depth) X 3 m/sec (wind) X

3.14×10^7 sec/year X 70 years, or

2.63×10^{13} m^3 (in 70 years)

$$\text{RISK} = \frac{1.63 \times 10^{11} \times 300 \times 10^{-6} \times 0.11}{2.63 \times 10^{13}}$$

= 0.20 in one million

San Diego APCD Rule 1210 considers an excess cancer risk of one in one million to be a quantifiable risk. If the public health risk exceeds ten in one million, affected residents must be notified. Although Rule 1210 applies only to stationary source emissions, the risk guidelines from this rule would presumably be applicable to any source of toxics air emissions.

For diesel exhaust from project grading activities an excess cancer risk of less than one in a million is thus considered a negligible risk. A risk of more than 10 in a million would be considered significant. The maximum risk at the downwind edge of the project site is seen to be a de minimis risk, and well below significant. Had more sophisticated dispersion modeling been used, and had the risk been calculated at the nearest residences

instead of at the downwind project edge, the excess cancer risk from grading equipment exhaust emissions would be even lower. Excess cancer risk from diesel particulate matter (DPM) rom on-site grading equipment is less than significant.

Operational Impacts

Operation of a market and associated commercial services generates no direct air pollution emissions. Any potential air quality impacts derive primarily from project-related travel. Such travel would typically occur to some other commercial location if not to this proposed facility. Any potential "new" impacts would be those in the immediate vicinity of the project site as concentrations of vehicles arrive or depart.

Emissions calculations relative to the identified significance threshold were made based upon traffic projections prepared in the project traffic analysis. Project-related mobile source emissions wee calculated using the URBEMIS7G computer model for both existing shopping patterns and for the reduced travel distance associated with construction of a major grocery market closer to the East County market service area. The market survey has indicated that 70 percent of site traffic will come from the north, east or south. Their nearest current major supermarket option is approximately 8 miles farther west beyond the project site. Another 30 percent will come from the west. The travel distance differential from these customers is assumed relatively small.

"New" emissions relative to the existing baseline condition as the required CEQA analysis basis derive from the 30 percent of customers arriving from the west who have the option to access similar market opportunities at Las Coches Road/I-8 with a similar travel distance. The vehicles accessing the service station or fast-food outlets were assumed to be "new" trips. The marketing study shows that 70 percent will "save" travel mileage by shopping at the new store. "New" trips will thus be offset to some extent by the reduced travel distance for the customers intercepted by this closer store.

The comparison of existing conditions to the "with project" scenario was made by running the California Air Resources Board URBEMIS7G computer model in the urban mode for the shorter with-project trips, and in the rural mode for existing travel to farther supermarkets. The resulting comparison is shown in Table 3.

Emissions increases are minor for all pollution categories. The net "new" emissions associated with non-supermarket travel are partially offset by the interception of existing longer travel. Although the fast-food and gas station trips would also go to

similar facilities elsewhere, and are not "new" regional trips, the absence of a marketing study for these uses precludes assigning them an existing travel/path/distance for comparison purposes. However, for air quality purposes, the only potentially significant new impact is along the streets and driveways in the immediate project vicinity where project traffic does not now exist.

Emissions from cars entering or leaving the parking lots or idling at nearby intersections, in conjunction with possible stagnation meteorology, could increase localized air pollution exposure above safe limits. To test this possibility, a microscale dispersion analysis was conducted for any intersections where substantial congestion exists, or is forecast to occur due to the proposed project or pending/approved (cumulative) growth.

Carbon monoxide (CO) was used as an indicator of any local "hot spot" potential because cars emit ten times as much CO as any other pollutant. As noted above, most other exhaust pollutants also require a chemical transformation to reach an unhealthful stage while CO is already in the most unhealthful form. The analysis was performed using a Caltrans screening procedure for CO based upon the CALINE4 roadway emissions dispersion computer model.

The analysis procedure utilizes a screening level analysis similar to the methodology outlined in the Bay Area AQMD "CEQA Guidelines" (rev. Dec., 1999). The CO screening procedure in the most current Caltrans analysis protocol is based upon signalized intersections. The Alpine area intersections with maximum congestion are stop-sign controlled. A modified version of the Bay Area guideline procedures that accounts for variability delay times due to vehicle queuing was therefore selected. The analysis detail is included in the Appendix.

Two intersections were shown in the traffic study to possibly have congestion along one or more intersection legs (LOS=E or F). The intersection of Tavern Road and Arnold Way has an LOS=F on its southbound leg during the p.m. peak hour for existing, existing plus project, and existing plus project plus pending/ approved growth conditions. The Alpine Blvd./W. Victoria Drive intersection has LOS=E or F conditions in the p.m. peak hour for with-project and with cumulative growth conditions.

TABLE 3

PROJECT-RELATED REGIONAL POLLUTANT EMISSIONS
(pounds/day)

	ROG	NOx	CO	PM-10
Proposed Project:				
Supermarket	60.4	67.6	483.3	42.4
Fast Food	14.1	14.3	107.8	7.6
Gas Station	7.3	7.0	52.9	3.3
TOTAL	81.8	88.9	644.0	53.3
Existing Travel:				
Supermarket a.	50.1	59.6	415.7	40.6
b.	18.1	20.3	145.0	12.7
TOTAL	68.2	79.9	560.7	53.3
Net Change	+13.6	+9.0	+83.3	± 0.0
Significance Threshold	55.	55.	550.	150.

a. = 70% of traffic from N, E or S that travels farther to existing supermarkets (rural trips).

b. = 30% of traffic from W that experiences no significant travel reduction (urban trips)

Source: URBEMIS7G computer model; output in Appendix. Year = 2002

The CO concentrations (peak hour and 8-hour average) along the four quadrants of these intersections are shown in Table 4. The traffic movement detail is included in the Appendix.

CO concentrations in Table 4 are well within acceptable levels. These are worst-case estimates including the following conservative (over-predictive) assumptions:

(1) Alpine background CO levels are assumed the same as in El Cajon (they are probably less),

(2) Year 2002 background CO levels will be the same as in 1999 (they are declining),

(3) Maximum background levels in El Cajon will occur on the identical date/time as worst-case local stagnation conditions in Alpine (they are likely different).

Since predicted exposures are well below significance thresholds for multiple worst-case assumptions, CO "hot spot" potential is considered non-existent due to project implementation.

Some grocery delivery to Albertson's, gasoline delivery to the service station, and occasional deliveries of fast-food items may be with diesel-powered trucks. Such trucks will release diesel particulate matter (DPM) along project access roads. A risk screening analysis for diesel exhaust exposure from delivery trucks was calculated for an assumed 24 daily diesel truck-trips to the proposed project site based upon truck counts at an existing Albertson's store in Orange County to the proposed project site. The DPM generation rate for heavy-heavy duty diesel trucks in California is 0.35 gram/mile (EMFAC7G model).

The results of a roadway CO dispersion screening analysis were applied to DPM by adjusting the ratio of DPM to CO emissions with the results shown in Table 5. The excess cancer risk, assuming a local resident stands on his front porch 24 hours per day, 365 days per year, for the next 70 years, and assuming no change in diesel truck exhaust characteristics until the year 2072, is less than one in a million close to any site access roadways. Because the input dispersion assumptions are over-predictive, and because no person remains outside his home at one spot for 70 years, and because the Air Resources Board has adopted diesel engine exhaust standards that will substantially reduce DPM emissions, the true risk is much lower than the already less-than-significant risk calculated in Table 5.

TABLE 4

MICROSCALE AIR QUALITY IMPACT ANALYSIS
(CO concentrations in ppm at 25 feet from roadway edge)

(Year = 2002)

	<-- TAVERN @ ARNOLD -->			<-ALPINE @ W. VICTORIA->		
Quadrant	**Exist.**	**+ Proj.**	**+ Cum.**	**Exist.**	**+ Proj.**	**+ Cum.**
1-Hour Conc.*						
SW	7	7	8	7	8	9
NW	10	10	11	7	8	8
NE	10	11	11	8	9	9
SE	7	7	8	8	9	10
8-Hour Conc.**						
SW	4.5	4.5	5.0	4.5	5.0	5.0
NW	6.6	6.6	6.9	4.4	4.9	5.4
NE	6.6	6.7	7.0	4.8	5.8	5.9
SE	4.5	4.7	5.1	4.9	5.9	6.0

* = includes 5.8 ppm background conc., standard = 20 ppm.

** = includes 3.8 ppm background conc., standard = 9 ppm.

TABLE 5

DIESEL DELIVERY TRUCK RISK SCREENING ANALYSIS

	Distance to Roadway Edge				
Parameter	**25'**	**50'**	**100'**	**300'**	**500'**
1-Hr CO Exposure ($\mu g/m^3$) (per 100,000 gm/mile/hour)	8,162	6,296	4,431	1,866	1,049
Annual CO Exposure ($\mu g/m^3$) (assume annual = 0.1 X 1-Hr.)	816	630	443	187	105
Annual DPM Exposure (1 truck/hr X 0.35 g/mi X CO)	0.0029	0.0022	0.0016	0.0007	0.0004
Excess Cancer Risk/Million (annual DPM X 300/million)	0.86	0.66	0.47	0.20	0.11

Service Station Emissions

A gas station will require an SDAPCD "Authority to Construct" and "Permit to Operate." The regulations of the district require that such permits can only be granted to facilities that demonstrate use of best available control technology (BACT). BACT for gas stations requires use of submerged fill pipes, vapor balance systems between the delivery truck and the underground storage tanks, and vapor recovery nozzles on the dispensing pumps. These measures will be enhanced by the use of reformulated gasoline in California that reduces the percentage of benzene and other harmful contaminants in gasoline that could be released from small spills, over-filling, defective nozzle seals, etc.

The APCD is prohibited by law from issuing a permit to a source of emissions that creates a significant impact. CEQA Guidelines allow for the use of compliance with the rules and regulations of a responsible agency if the rule-making meets certain criteria. APCD rules meet such criteria. Compliance with such rules, i.e., use of BACT and compliance with all permit conditions, is adequate evidence of a less-than-significant air quality impact from proposed service station operations.

MITIGATION

Particulate (PM-10) emissions may exceed significance thresholds unless best available control measures (BACMs) are utilized. Construction activities must comply with APCD rules for dust control. The San Diego APCD, in SDAPCD Rule 50, limits the amount of visible emissions (including dust), that may be generated by an activity. Similarly, Rule 51 prohibits the discharge of air contaminants that cause injury, detriment, nuisance or annoyance to any considerable number of persons. Compliance with adopted rules is part of the project description and is not discretionary mitigation. Current (1998) CEQA Guidelines, in Appendix G at Section (h)(i)(CA) state as follows:

> "... a change in the environment is not a significant effect if the change complies with a standard that meets (specific criteria)."

A "standard" is defined as follows:

> "a quantitative, qualitative or performance requirement found in a statute, ordinance, resolution, rule, regulation..." and "adopted for the purpose of environmental protection."

Construction activity compliance with SDAPCD rules on visible emissions and nuisance prohibition meets the criteria that would allow for a finding of a less-than-significant impact. However, there are sometimes environmental conditions at a construction site that make compliance difficult unless extra care is taken to minimize the potential for such occurrences. Exhaust emission from construction equipment may also create an adverse impact because of already elevated ozone levels in the Alpine area even if significance thresholds are not exceeded. Mitigation measures are therefore specified below to insure that appropriate measures are identified, and the necessary equipment and materials will be on-site and available when needed, in order to maximize the probability of a less-than-significant air quality impact during construction.

Elements of such an enhanced construction activity impact mitigation program (i.e., BACMs) include:

- Contractors shall implement a high wind dust control program when wind gusts exceed 25 mph as indicated by visible dust clouds generated on any disturbed (cleared or graded) surfaces. High wind dust control would entail:

- Termination of operation of heavy equipment on unpaved surfaces until winds subside.

- Application of water hourly to any unpaved surface with vehicle or equipment operations.

- Application of water or other dust control material to any previously graded surface if sustained dust emanation is visible from such surface.

- Contractors shall utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and should wash or sweep the construction access points on a routine basis during any construction involving significant dirt track-out.

- Construction management procedures shall be implemented. Candidate procedures include:

  - Where feasible, on-road vehicles and off-road equipment should be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.

- Equipment shall be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and low-sulfur fuel will be used as required by State regulations.

CONCLUSIONS

Implementation of the identified construction activity mitigation measures will maintain construction activity impact potential at less-than-significant levels by insuring that procedures are established and equipment and supplies are available for use, to comply with all applicable impact abatement regulations.

Mobile source emissions relative to existing baseline conditions will not exceed adopted significance thresholds. The potential to reduce vehicle trips for supermarket customers through project-sponsored initiatives is minimal. The project is self-mitigating by intercepting existing longer shopping trips. Emissions will be reduced over time through continued improvements in vehicular emissions through the retirement of older, more polluting vehicles. Mobile source emissions increases, compared to baseline conditions, are less than significant.

There will be no "hot spots" of CO concentrations in the immediate vicinity of the proposed project. Local CO levels will be well within allowable criteria and the project impact to microscale air quality will be negligible.

Microscale air quality and operation of a filling station were shown to have no significant impacts requiring mitigation. The filling station owner/operator shall obtain all necessary permits, and comply with all applicable SDAPCD rules and regulations.

Air toxics risk exposure from diesel exhaust particulates during grading activities and during heavy-duty truck deliveries to on-site facilities were shown to be less-than-significant. The margin of safety between public health risk and adopted significance standards will increase as mandatory diesel exhaust emissions control programs are phased in during coming years.

APPENDIX

PROJECT-RELATED REGIONAL EMISSIONS (URBEMIS7G)

- Rural (existing) trip lengths
- Suburban trip lengths for 70% of shoppers

MICROSCALE IMPACT ANALYSIS DETAIL

- CO screening model
- Traffic input parameters

CO Screening Procedure for LOS=E or F Intersections

(25' from 2 lane X 2 lane intersection)

$$
\begin{aligned}
100{,}000 \times CO_1 &= 7.6 \times V_{in} \times EF\ (25\ mph) \\
&+ 7.6 \times V_{in}\ \text{SECONDS (LOS)} \times \text{IDLE} / 0.1\ mi \\
&+ 7.6 \times V_{out} \times EF\ (25\ mph) \\
&+ 2.7 \times VV_{in} \times EF\ (25\ mph) \\
&+ 2.7 \times VV_{in} \times \text{SECONDS (LOS) IDLE}/0.1\ mi \\
&+ 2.7 \times VV_{out} \times EF\ (25\ mph)
\end{aligned}
$$

where V = hourly volume in the higher volume direction

VV = hourly volume in the lower volume direction

SECONDS (LOS) = seconds delayed for inbound volume

EF (25 MPH) = emission factor for unimpeded traffic

IDLE = emission factor (in grams/second) for idling traffic

SECONDS (LOS):

LOS	Delay
A	2.5
B	10.
C	20.
D	32.5
E	50.
F	75.

EF (25 mph) = 11.6

IDLE = 0.072 g/second

$CO_8 = CO_1 \times 0.6$ (persistence)

CO Analysis Traffic Input Parameters

	< -- TAVERN & ARNOLD -->			<--ALPINE & W. VICTORIA-->		
Direction	**Exist.**	**+ Proj.**	**+ Cum.**	**Exist.**	**+ Proj.**	**+ Cum.**
NB - in	273	301	495	248	281	301
NB - out	436	460	510	235	266	276
EB - in	185	208	212	369	406	457
EB - out	294	315	340	255	289	310
SB - in	797	797	853	98	128	142
SB - out	509	509	676	92	120	143
WB - in	354	399	399	431	524	547
WB - out	370	421	424	564	664	718

Level of Service

NB	C	C	D	B	C	C
EB	C	C	C	C	E	F
SB	F	F	F	B	B	C
WB	B	C	C	D	F	F

Appendix D
Noise Report

DUDEK
& ASSOCIATES, INC.
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Fax 760.632.0164

26 July 2001

2242-01

Mr. Jeff Dierck
Albertsons Inc.
1421 South Manhattan Avenue
Fullerton, CA 92831

PROJECT: ***Alpine Village Center***
RE: ***Preliminary Environmental Noise Study***

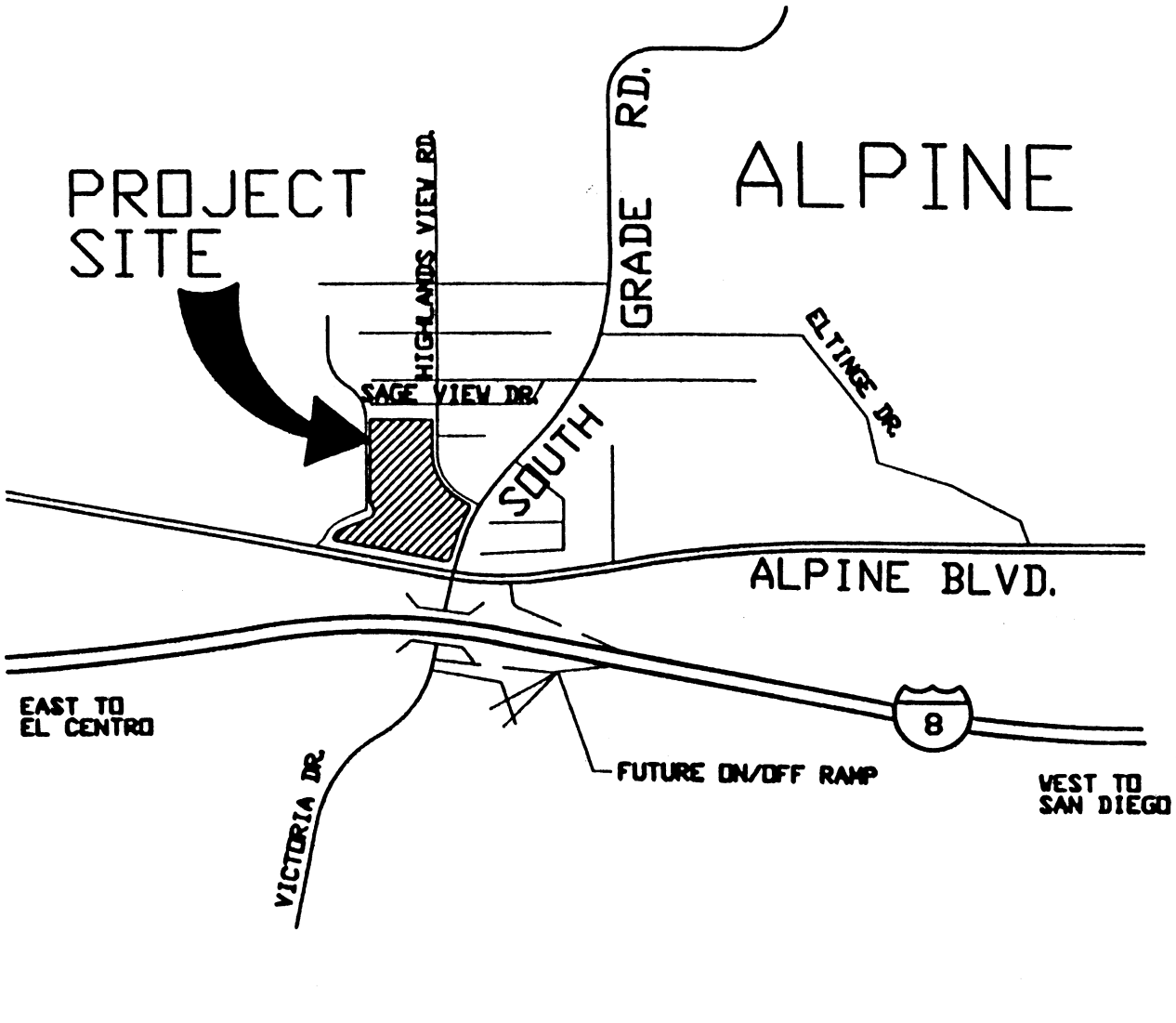
Dear Mr. Dierck:

This report contains our assessment of the noise associated with the Alpine Village Center project located in the County of San Diego. In summary, potential noise impacts associated with the parking lot cleaning activities, idling and maneuvering delivery trucks, and outdoor mechanical equipment would result in significant noise impacts. Proposed mitigation measures include constructing a 19-foot high screen wall along the loading dock, a 4- to 6-foot high wall along a portion of the eastern property boundary, not allowing power blowers to be used to clean the parking lot, and constructing a minium 6-foot high parapet along the top of the roof of the fast food restaurant. With the implementation of these mitigation measures, the project would comply with the County's noise criteria.

1.0 EXISTING CONDITIONS

1.1 Project Setting

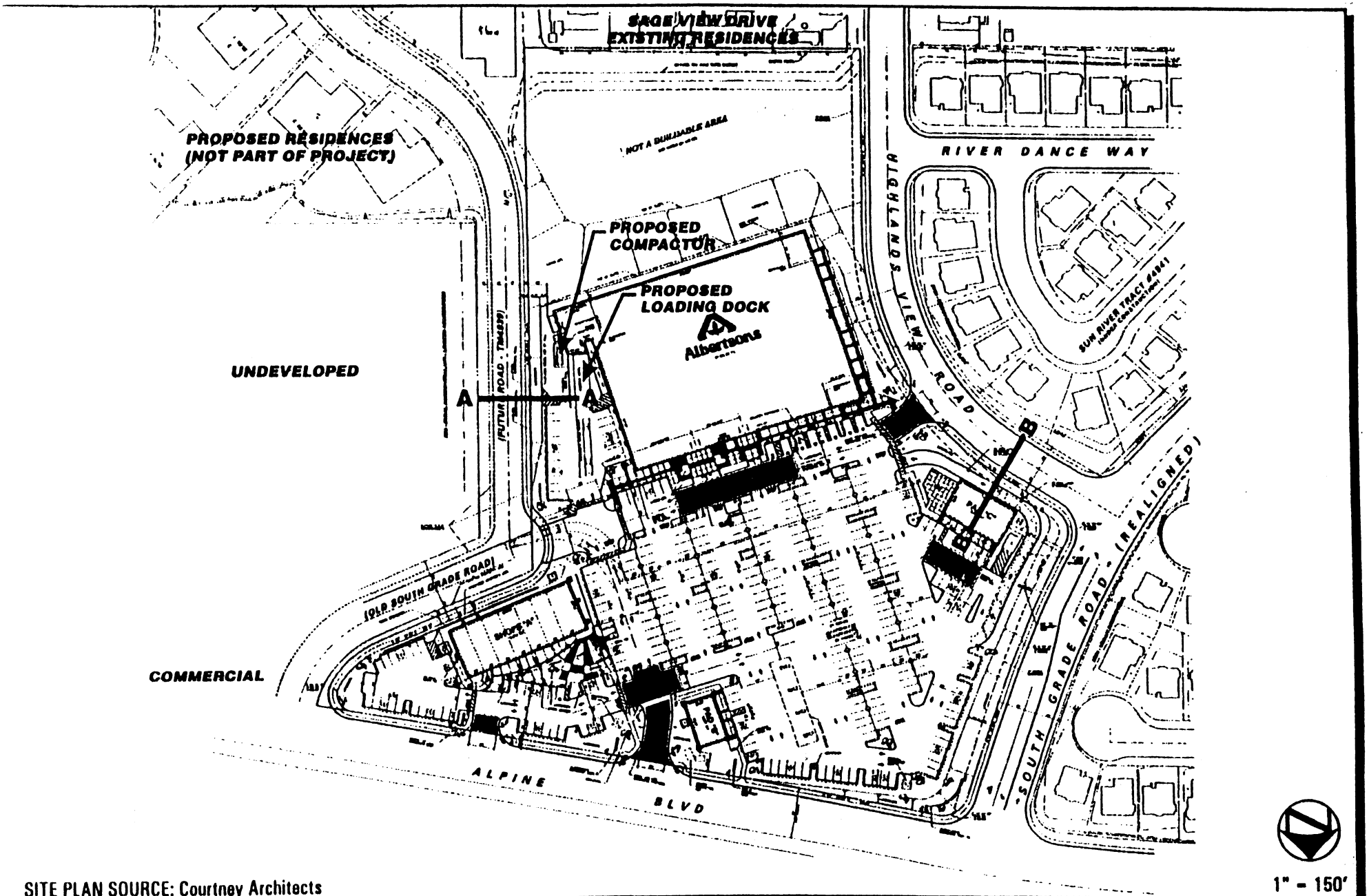
Alpine Village Center would be constructed on the south side of the intersection of Alpine Boulevard and South Grade Road (realigned) in the Community of Alpine (*Figure 1*). The primary noise source at the site is traffic noise along Interstate 8, Alpine Boulevard and South Grade Road. The project would develop the approximate 9.7-acre site with an approximate 58,000 square foot Albertsons market, shops (Pad A), a gas service station (Pad B), and a fast food restaurant (Pad C) *(Figure 2)*. A parking lot containing approximately 340 stalls would be located in the northern portion of the site. Mechanical equipment would be located outside on the roofs of the buildings. A trash compactor would be located adjacent to a loading dock area at the Albertsons market. The facility is proposed to be operated 24 hours per day with the exception of the shops which are proposed to be operated from 9:00 AM to 12:00 AM.



Alpine Village Center - Acoustical Assessment Report

Vicinity Map

FIGURE 1



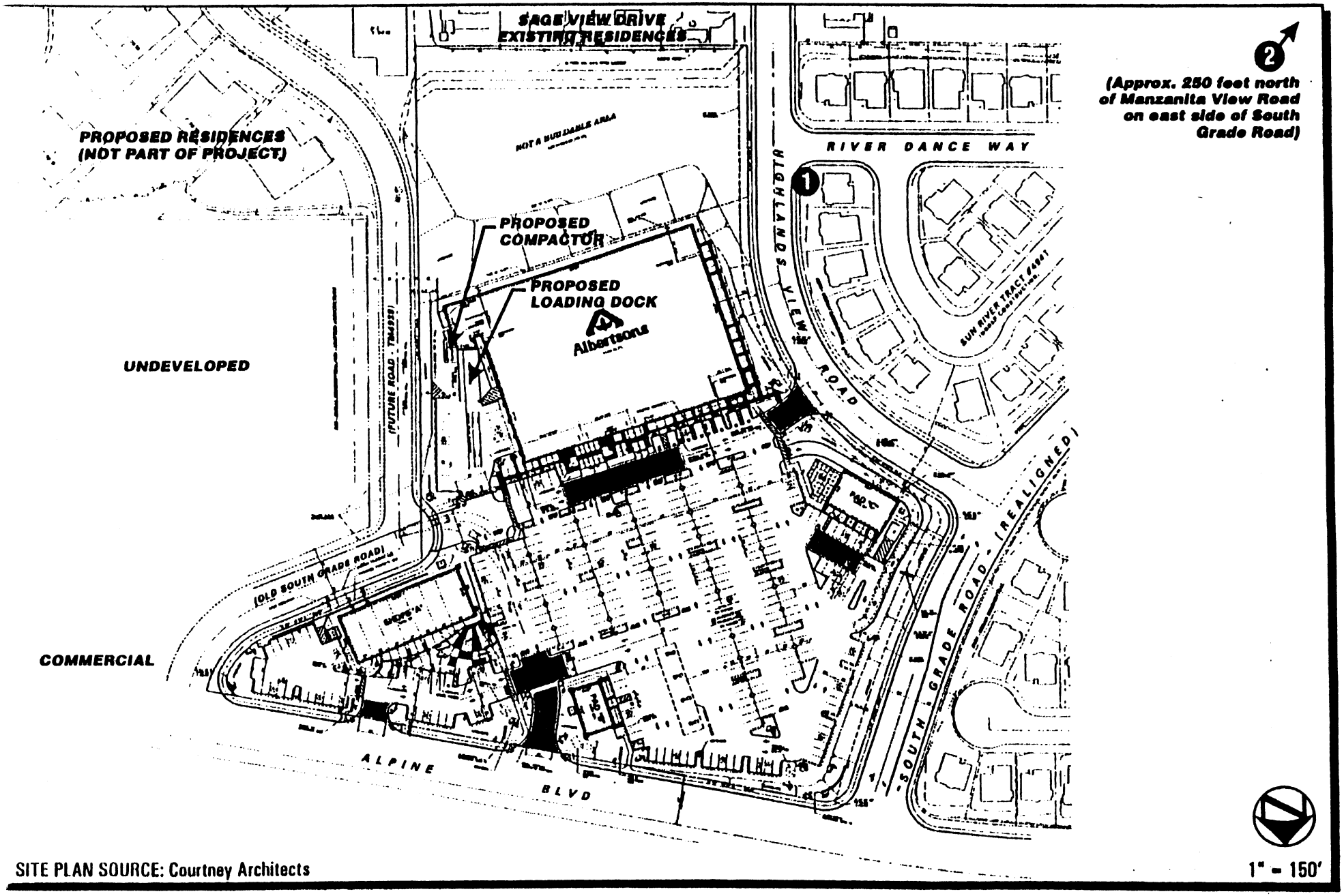
SITE PLAN SOURCE: Courtney Architects

1" = 150'

Alpine Village Center - Acoustical Assessment Report

Site Plan

FIGURE 2



SITE PLAN SOURCE: Courtney Architects

Alpine Village Center - Acoustical Assessment Report

Noise Measurement Locations

FIGURE 3

Existing noise sensitive receivers adjacent to the site consist of four residences located south of the site along Sage View Drive (*Figure 2*). A single family subdivision is located on the west side of the site along Highlands View Road and the realigned segment of South Grade Road. Immediately east of the site is undeveloped land zoned RR2/A70. Alpine Boulevard forms the northern boundary of the site.

1.2 Community Noise Criteria

County of San Diego Noise Ordinance Standards: The County of San Diego has adopted a quantitative noise ordinance to control excessive noise generated in the County. The ordinance limits are in terms of a one-hour average sound level. The allowable noise limits depend upon the County's zoning district and time of day. The project site is zoned C36. The residences located south of the site are within a RS4 residential zone. The homes under construction, west of the site, are within a RU24 zone. The undeveloped land east of the site is within RR2/A70 zones. The allowable exterior noise limits for various land use categories are depicted in *Table 1*. The sound level limits apply at any point on or beyond the boundaries of the property on which the sound is produced. If the location is on the boundary between two zoning districts, the limiting sound level is the arithmetic mean of the limits for the two districts. Also, if the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level shall be the ambient noise level.

TABLE 1
COUNTY OF SAN DIEGO NOISE ORDINANCE SOUND LEVEL LIMITS

Zone	Time	Applicable Limit One-Hour Average Sound Level (Decibels)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7:00 AM to 10:00 PM 10:00 PM to 7:00 AM	50 45
R-RO, R-C, R-M, C-30, S-86, R-V and R-U. Use Regulations with a density of 11 or more dwelling units per acre.	7:00 AM to 10:00 PM 10:00 PM to 7:00 AM	55 50
S-94 and all other commercial zones.	7:00 AM to 10:00 PM 10:00 PM to 7:00 AM	60 55
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones	Anytime	75

Construction activities are limited to the hours of 7:00 AM to 7:00 PM Monday through Saturdays. In addition, the equipment shall not exceed 75 dB for more than eight hours during any 24-hour period at adjacent residential properties.

County General Plan Noise Element Standards: The County of San Diego General Plan Noise Element criteria are in terms of community noise equivalent level (CNEL). CNEL is a 24-hour average equivalent A-weighted sound level with a ten decibel (dB) "penalty" added to noise during the hours of 10:00 p.m. to 7:00 a.m., and a five dB penalty added to the evening hours of 7:00 p.m. to 10:00 p.m. The five and ten dB penalties are applied to account for increased noise sensitivity during the evening and nighttime hours. The A-weighted scale measures noise levels corresponding to the human frequency response. Attachment 1 contains definitions of acoustical terms used in this report. All sound levels in this report are presented as A-weighted sound levels.

The County's noise exposure guidelines applicable to this project are summarized as follows:

- For residences, the exterior noise level should not exceed a CNEL of 60 dB within noise sensitive areas. A noise sensitive area is defined as the building site where quiet is an important attribute of the environment.

1.3 Ambient On-Site Noise Monitoring

Noise measurements were conducted at roads adjacent to nearby existing residences to determine the traffic noise level associated with the roads. The noise measurements were made on Tuesday, May 25, 1999 and Tuesday, June 29, 1999. The noise measurements were made using a Larson-Davis Laboratories Model 700 (S.N. 2132) integrating sound level meter equipped with a Bruel & Kjaer Type 4176 ½-inch pre-polarized condenser microphone with pre-amplifier. When equipped with this microphone, the sound level meter meets the current American National Standards Institute standard for a Type 1 precision sound level meter. The noise measurement locations are depicted in *Figure 3*.

The measured average noise levels were 55 dB at Site 1 and 57 dB at Site 2. *Table 2* depicts the results of the noise level measurements and corresponding traffic counts.

TABLE 2
NOISE MEASUREMENTS AND CONCURRENT TRAFFIC VOLUMES

Site	Location	Date/Time	Average Sound Level	Cars	Medium Trucks	Heavy Trucks
1	35' to center line of Highlands View Road	5/25/99 5:10-5:30 pm	55 dB	34	0	0
2	55' to center line of South Grade Road	6/29/99 5:00-5:20 pm	57 dB	40	0	0

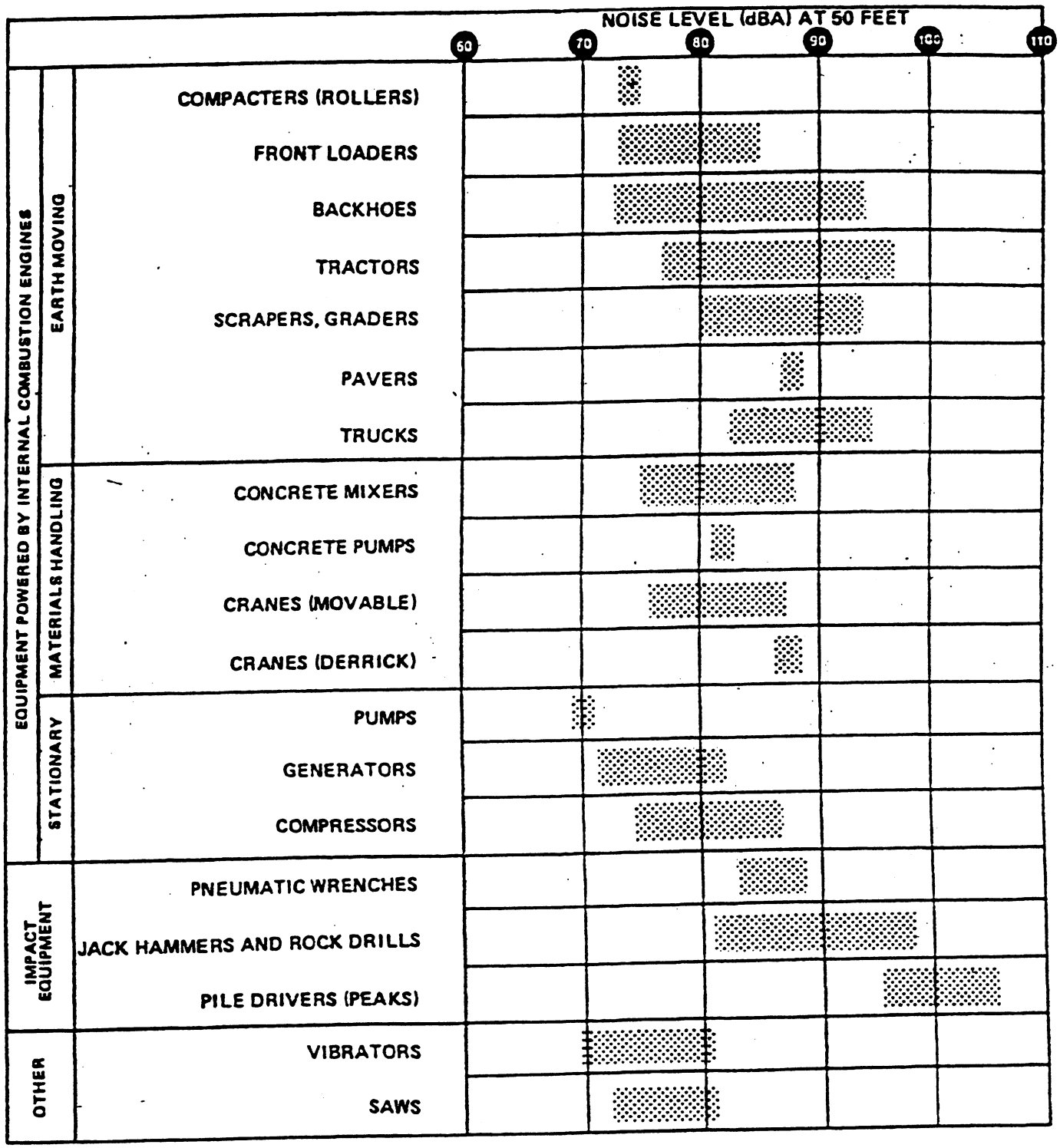
2.0 FUTURE CONDITIONS

2.1 Project Impacts

Construction Activities

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed and the condition of the equipment. The average sound level of the construction activity also depends upon the amount of time that the equipment operates and the intensity of the construction during the time period

Construction would involve several phases including clearing and grubbing, grading, foundation construction and finish construction. Based on a preliminary construction equipment list it is anticipated that the equipment would include two dozers, two loaders, four scrapers, one water truck, two backhoes, two excavators and a compactor. The maximum noise level ranges for various pieces of construction equipment at a distance of 50 feet are depicted in *Figure 4*. Note that these are maximum noise levels, not the average sound level. The average sound level at construction sites is typically less than the maximum noise level because the equipment operates in alternating cycles of full power and low power. Also, the equipment rotates in various directions (i.e., noisiest side of the equipment to quieter sides of the equipment), and moves around the construction site, especially during clearing, grubbing and grading activities. Thus, the average noise levels produced are less than the maximum level.



NOTE: Based on limited available data samples.

SOURCE: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

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FIGURE 4

Typical Construction Equipment Noise Generation Levels

The closest homes are generally located along western and northern and a portion of the eastern property boundaries. Construction noise in a well defined area typically attenuates at approximately 6 dB per doubling of distance. This assumes a direct line-of-sight from the receiver to the construction area. The homes to the north would be partially shielded by an intervening slope that would attenuate the noise at some of the adjacent residences to less than its theoretical maximum.

The construction equipment (graders, bulldozers, backhoes and forklift) would be brought to the site using heavy trucks. The equipment would be unloaded at the site and later hauled out using heavy trucks at the end of construction. The majority of heavy truck trips would, however, result from the delivery of building materials such as concrete, lumber, pipes, etc. It is anticipated that delivery of building materials would generate approximately two delivery trips per day or approximately 175 one-way truck trips during the duration of the project (Eleven Western Builders 2001). An average of approximately two delivery trips or 4 one-way truck trips would occur each day to deliver materials. Cut and fill is balanced at the site so no import or export of dirt is anticipated. The anticipated haul route would be east on Interstate 8 to Willows Road, south to Alpine Boulevard, west on Alpine Boulevard to South Grade Road. The noise level associated with the construction traffic is calculated to be less than 50 dB CNEL at a distance of 50 feet from the centerline of the roads. The short-term construction traffic noise impact would be less than significant because: (1) construction traffic noise impacts would occur over a relatively short time period, (2) the relatively low volume of heavy truck trips (i.e., an average of approximately four truck trips per day to deliver building materials), (3) resulting noise level, and (4) the net increase to the existing CNEL at the neighboring residences located along Highland View Road, South Grade Road and Alpine Boulevard would be one dB or less.

When the construction equipment is operating, the existing residences could be disturbed by the activities. The County's noise ordinance limits construction activities to the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday. Construction activities at the site are expected to comply with the permitted hours of operation, therefore, the construction noise impact would be less than significant.

Loading Dock Activities

At any one location, the hourly average sound level associated with loading dock noise is difficult to predict due to the many variables involved. These factors include the variations

in truck engine power and idling times, the way loads are placed on hand trucks and pallet forks, and the number of operating minutes in any hour. However, to determine the approximate noise levels that would be generated at the loading dock area, noise measurements that were conducted at similar grocery store loading docks in Vista and Encinitas, CA were used. Based on these measurements, during unloading activities, the one-hour average sound level would vary from approximately 50 to 55 dB at 100 feet from the loading docks.

According to the applicant, the delivery routine would be similar to Albertsons store in San Marcos. This store has approximately 10 to 15 Albertsons truck deliveries each week. The delivery schedule is based on product demand, however, Albertsons delivery trucks are staggered to avoid simultaneous deliveries at the loading lock. Deliveries could occur between 6:00 a.m. and 12:00 midnight. However, most deliveries are completed by 10:00 p.m. Vendor truck deliveries typically occur five days per week with 10 to 20 truck deliveries per day. Almost all the vendor trucks are medium trucks. The vendor trucks typically deliver between 6 AM. and 11 AM.

The proposed loading dock area would be located near the southeast corner of the site and oriented with the loading dock doors facing to the north. The undeveloped land to the east of the site would be the area most affected by the loading dock noise. The property line of the undeveloped property located east of the site would be located approximately 90 feet from the loading docks and across a proposed future road associated with another project. The loading dock one-hour average noise level would be approximately 56 dB at the eastern residential property line. This noise level would exceed the County's daytime noise ordinance standards by one dB and the nighttime by six dB.

Based on noise measurements we have conducted, heavy trucks idling generate maximum noise levels of approximately 65 to 70 dB at 50 feet from the truck exhaust stack. Some of the Albertsons delivery trucks are equipped with Carrier diesel refrigeration units, and some vendor trucks would have refrigeration units. Noise level information provided by the refrigeration unit manufacturer indicates that the refrigeration units generate a noise level of approximately 72 dB at 40 feet (Carrier 1996). Based on our observations of unloading activities, the truck engines and refrigeration units are turned off while unloading. However, if the delivery truck is waiting to unload, the refrigeration engine is turned on to keep the product cold.

The project applicant has provided information regarding delivery truck parking as the trucks wait to unload (Albertsons 1999). Albertsons schedules deliveries so that Albertsons trucks do not arrive at the same time. All delivery vehicles are typically unloaded within one-half hour or less. It is Albertsons intent that trucks do not park within the parking lot area because this would impede customer traffic. It should also be noted that there are two loading docks, therefore, in the event that two heavy trucks arrive at the same time, both trucks could park in the loading dock area. Based on these reasons, it is assumed that idling trucks would be located within the loading dock area.

If two trucks idle or two refrigerated units operate for 30-minutes each during a one-hour time period in the loading dock area, the one-hour average sound level would be approximately 64 dB at the adjacent undeveloped property located east of the site. This noise level would exceed the County's daytime noise ordinance limits by 9 dB and nighttime by 14 dB.

Upon entering the parking lot area, the heavy trucks would be required to conduct a U-turn maneuver and back-up into the loading dock area. DUDEK conducted several noise measurements of these similar types of maneuvers for heavy trucks at a distance of approximately 70 feet from the maneuver area. The sound exposure level varied from 83 to 90 dB for these maneuvers. The eastern residential property line would be located approximately 120 feet from the maneuver area. At this distance the sound exposure level would range up to approximately 85 dB. Assuming two heavy truck maneuvers occur in one-hour and generate sound exposure levels of 85 dB for the maneuvers prior to unloading, and then drive directly out after unloading, the one-hour average sound level would be approximately 55 dB at the adjacent eastern property line. This noise level would exceed the County's nighttime noise ordinance limits by five dB and comply with the daytime limits.

Compactor

A Marathon compactor would be located adjacent to the loading dock area. A similar compactor was measured at the Albertsons store in Encinitas. The measured noise level varies depending on orientation to the unit. The worst-case measured maximum noise level was 61 dB at 65 feet from the compactor's motor. This noise level included noise reflecting from the back wall of the building where the motor was located.

The property line of the undeveloped land located east of the site would be approximately 80 feet from the compactor. The maximum noise level at 80 feet from the compactor would be approximately 59 dB. The compactor would typically be operated for no more than two cycles per hour, or approximately two to three minutes per hour. The one-hour average sound level would be approximately 46 dB at a distance of 80 feet. This noise level would comply with the County's noise ordinance criteria.

Parking Lot Noise

Customer Vehicle Drive-Bys and Delivery Truck Drive-Bys

Previous noise measurements that we have conducted for cars and delivery trucks traveling within various parking lots were used to determine the one-hour average noise level associated with parking lot activities. The noise measurements were conducted in parking lots having lengths ranging from approximately 300 to 340 feet. These lengths are similar to the length of the project's proposed parking lot. Noise measurements were conducted approximately 50 feet from the center line of the nearest driving lane, five feet above the ground and perpendicular to the center of the parking lot. There were no intervening obstructions between the sound level meter and the vehicles. The typical maximum noise level for cars was approximately 58 dB. The typical maximum noise level generated by the heavy trucks was approximately 80 dB.

The traffic study prepared for the project determined that the p.m. peak hour would generate the greatest hourly traffic volume. During this time period, approximately 1,090 trips would occur (Darnell & Associates 2001). Approximately 39 percent of the cars would access the parking lot from Highlands View Road. The remaining vehicles would access the site via along Alpine Boulevard.

Parking lot noise is difficult to quantify because of the many variables involved. However, assuming: (1) the average vehicle travels at approximately 15 miles per hour (mph) within the parking lot; (2) vehicles generate maximum noise levels as reported above; (3) four heavy truck delivery trips occur; and (4) 1,090 car trips are evenly distributed throughout the primary portion of the parking lot (i.e., the six rows of in front of the Albertsons market and Pad C) the peak hour noise level associated with the proposed parking lot was determined.

Based on these assumptions, vehicles traveling within the parking lot during the peak traffic hour would generate a one-hour average noise level of approximately 51 dB at the closest noise sensitive receivers (i.e., the residences located on the west side of Highlands View Road). This noise level would be 4 dB less than the County's allowable daytime noise ordinance limit. The project related traffic volume would be substantially less during the nighttime hours. Thus, the one-hour average noise level associated with the parking lot would less than 50 dB during the nighttime hours and would be within the allowable nighttime noise ordinance limits.

Parking Lot Cleaning/Sweeper

The parking lot is proposed to be swept daily. According to the applicant, the cleaning activities would occur during the early morning hours, but no earlier than 6:00 AM. To determine the noise level associated with parking lot cleaning activities, noise measurements were conducted at an Albertsons store in Encinitas. The noise measurement was conducted at a distance of approximately 100-feet to the closest parking spaces. The noise measurement position was located so that the distance to both ends of the parking lot was equal. Cleaning equipment used during the noise measurement included a parking lot sweeper and two gas-powered blowers. The operators of the two blowers first cleaned the parking lot for approximately ten-minutes. The parking lot sweeper followed a little later and completed sweeping the lot in approximately six-minutes. The measured noise levels were 66 dB during use of the blowers and 58 dB during the six-minutes of sweeping. Based on the noise measurements, the calculated one-hour average noise level for the parking lot cleaning activities is 59 dB at 100 feet. The approximate distance between the proposed parking spaces and the property line of the closest residence located along Highlands View Road is approximately 130 feet. At a distance of 130 feet the parking lot cleaning activities would generate a one-hour average noise level of approximately 57 dB. Assuming the proposed project operates in a manner similar to the Albertsons store in Encinitas, the proposed project would exceed the County's noise ordinance limits by seven dB during the nighttime hours and two dB during the daytime hours.

It should also be noted that the Albertsons store in Encinitas is located within a commercial shopping center, and is much larger than the proposed parking lot. However, the length of the parking lot is similar to the proposed parking lot. To account for the larger area, the noise measurements were stopped after the equipment completed cleaning five parking rows. This is approximately equivalent to the area of the proposed parking lot.

Offsite Traffic

Based on the project related traffic distribution depicted in the project's traffic report, the project would generate approximately 4,067 ADT along Highlands View Road to the project's entrance via South Grade Road to Alpine Boulevard. Most of the project trips would occur between the hours of 7:00 a.m. and 10:00 p.m. According to the project's traffic engineer, less than approximately five percent of the project's ADT would occur outside these hours (Darnell & Associates 1999b).

The closest noise sensitive receivers would be residences located directly west of the site along Highlands View Road and South Grade Road. The usable area of the backyards of the homes would be located a minimum of approximately 40 feet from the center line of Highlands View Road. The proposed project would generate a CNEL of approximately 56 dB at a distance of 40 feet from the center line of Highlands View Road between the project entrance on Highlands View Road and South Grade Road. The existing noise level plus the traffic noise associated with the project would result in a CNEL of approximately 59 dB. This noise level would meet the County's 60 dB CNEL noise guideline. Therefore, the project's traffic noise along Highlands View Road would result in a less than significant noise impact at the adjacent residences.

The residences located along South Grade Road have sound walls constructed along the backyards . The sound walls have been designed to mitigate anticipated traffic volume of 7,300 ADT along South Grade Road (County of San Diego 1998). The existing plus project ADT is anticipated to range up to 6,029 ADT. Therefore, the project's traffic noise impact would be mitigated by the proposed sound wall.

There are several existing homes along South Grade Road north of Manzanita View Road, that have backyards facing South Grade Road. The existing CNEL at the closest backyards is approximately 61 dB. The project would generate approximately 2,673 ADT along this segment of South Grade Road. With the traffic associated with the project as well as other projects, the CNEL would be approximately 64 dB at the closest backyards facing South Grade Road. Typically, a three dB change in community noise is considered to be a just slightly perceptible change in the noise level. A noise level increase of up to 3 dB is generally not considered significant.

Roof-Top Mechanical Equipment

Mechanical equipment would be located outside on the roofs of the stores. The roof-top mechanical equipment at the Albertsons market would include packaged heating ventilation and air conditioning (HVAC) units, air conditioners, exhaust fans and compressors. Mechanical equipment for the shops, gas service station and fast food restaurant have not been determined at this time. However, packaged units and air conditioning systems are typically used for these types of uses. The gas service station would not result in noise impacts because the facility would be located approximately 350 feet from the nearest residence. The only outdoor equipment anticipated for the gas service station is packaged HVAC unit Carrier Model 50TJQ-007 (Heatcraft Refrigeration Products, 2001). This equipment has a sound power rating of 82 dB which would result in a sound level of 33 dB @ 350 feet. A car wash is not proposed. The noise impacts associated with the Albertsons market, shops and fast food restaurant are evaluated below.

Albertsons Market

A preliminary roof-top mechanical equipment plan has been prepared for the Albertsons market. The primary noise generating equipment would include three air conditioning units, two air cooled condensers, two condensers and an exhaust outlet for a fan located inside the building. According to the project's architect, a 3.5 to 7-foot high parapet would be constructed along the edge of the building (Courtney Architects 1999).

With the exception of the interior fan, manufacturer's data was used to determine the noise level at the adjacent eastern, western and southern property lines associated with the mechanical equipment. The noise level at the roof-top exhaust outlet of the interior fan was determined based on a noise measurement by DUDEK of a similar fan at an Albertsons store on Lake Murray Boulevard in La Mesa. The measured noise level associated with the fan was 64 dB at a distance of ten feet from the roof-top exhaust outlet.

The one-hour average noise level associated with the mechanical equipment at the Albertsons market is calculated to be approximately 45 dB at the eastern undeveloped property boundary, 40 dB at the western residential property boundary and 41 dB at the southern residential property boundary. The calculations assume the construction of a 3.5-foot high parapet along the edge of the roof and that all the equipment would be operating continuously during a one-hour time period. These noise levels comply with the County's noise ordinance criteria.

Shops (Pad A)

Building Pad A would consist of up to 8 shops. Based on preliminary design information provided by the project's architect, each of the shops would have a packaged unit. The package units would most likely be Bryant Models 581D060 and Model 581D072, or equivalent. These units have manufacturer's sound power level ratings of 80 dB and 82 dB, respectively. The one-hour average noise level associated with the shops is calculated to be approximately 45 dB at the eastern property boundary. This calculation assumes the construction of a 3.5-foot high parapet along the edge of the building and that all the equipment would operate continuously during a one-hour period and have a sound power level of 82 dB. This noise level complies with the County's noise ordinance criteria.

Fast Food Restaurant (Pad C)

A tenant has not been identified for the fast food restaurant that would be located at Pad C, therefore, building design plans have not been prepared. The applicant anticipates that the height of the roof would be approximately 18 feet above the ground with a 3.5 to 7-foot high parapet constructed along the edge of the roof.

Packaged units, exhaust fans and a freezer compressor are typically the primary rooftop noise generating equipment at fast food restaurants. The noise level at the adjacent property has been determined based on rooftop mechanical equipment that have previously been measured for a typical fast food restaurant (i.e., McDonald's at 9440 Scranton Road, San Diego) as well as sound ratings associated with typical packaged units. Assuming the mechanical equipment would consist of four packaged units, five exhaust fans and one freezer compressor, the one-hour noise level at the adjacent residential property line west of the site would be approximately 50 dB. This noise level would comply with the County's noise ordinance criteria. The noise level outside the second floor of the home would be approximately 51 dB. This noise level would exceed the County's nighttime noise criteria by one dB. The calculations assume that the equipment would be setback 15 feet from the edge of the building and that each of the four packaged units would generate a sound power level of 88 dB. Also, each exhaust fan would generate a noise level of 64 dB at ten feet and a freezer compressor would generate a noise level of 75 dB at ten feet.

The fast food restaurant would have an outdoor menu board speaker. A typical menu board speaker sound level (such as a McDonald's Restaurant) is designed for approximately 73 dB at a distance of 4 feet. Based on the above noted typical design criteria, speaker noise levels

at the western residential property boundary (80 feet from the speaker) would generate a maximum sound level of approximately 47 dB. This noise level would result in a less than significant noise impact.

CUMULATIVE

The future CNEL at the backyards of the closest homes located along Highlands View Road would be approximately 59 dB CNEL. The noise level would comply with the County's 60 dB CNEL noise guideline. This noise level includes the existing plus project traffic along Highlands View Road, as well as parking lot noise and mechanical equipment noise. Also, along Highlands View Road, there is an existing approximate five-foot high wooden fence. Wooden fences typically provide a modest amount of noise attenuation (i.e., approximately 2-3 dB).

3.0 MITIGATION

The proposed project would result in significant noise impacts associated with the following:

3.1 Delivery Truck Idling and Loading Dock Activity Noise Impact at Property Line of Undeveloped Parcel East of the Site

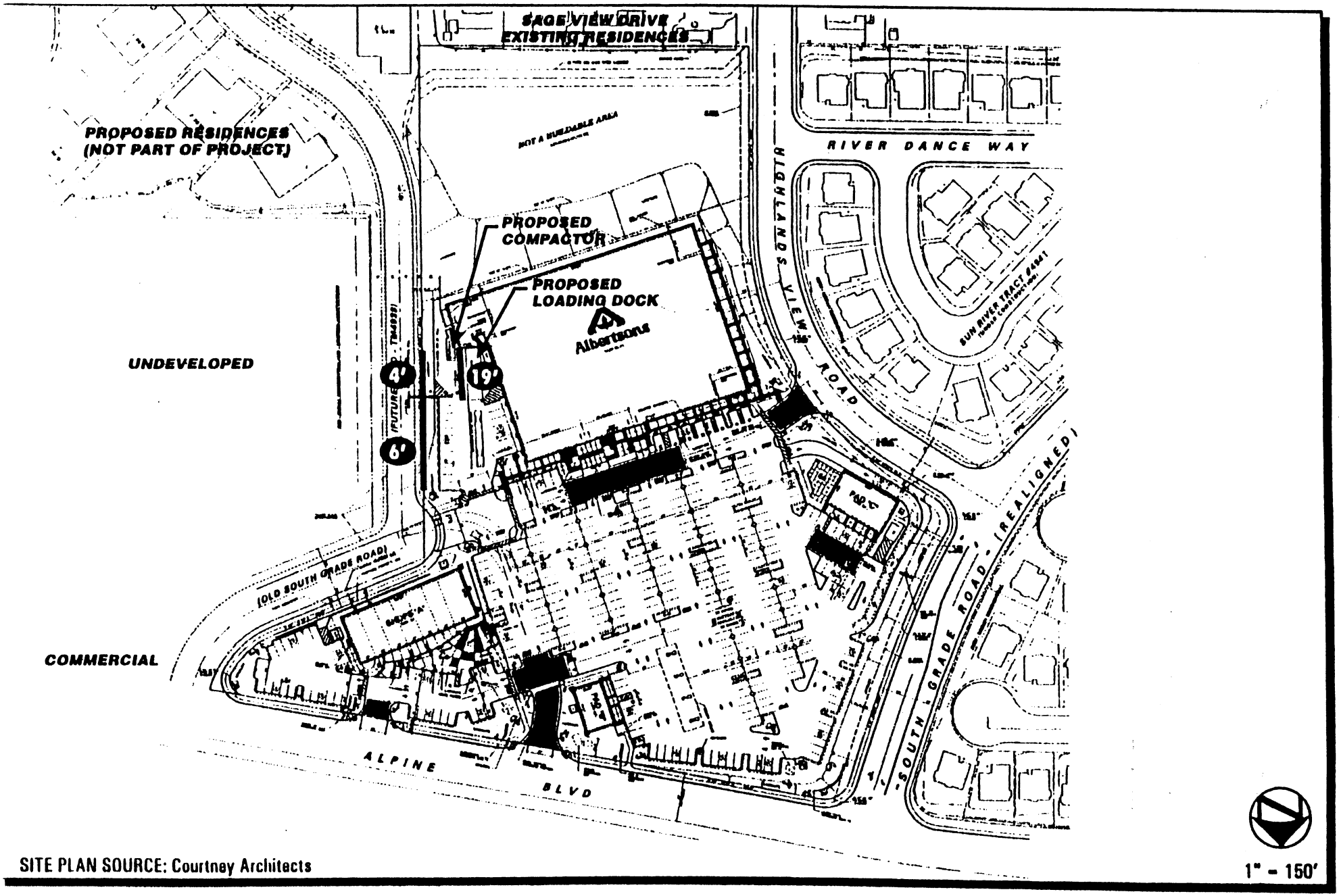
To mitigate the noise to comply with the County's noise ordinance criteria would require a 19-foot high screen wall located along the eastern side of the loading dock area (*Figure5*).

3.2 Delivery Truck Movement Noise Impact at Property Line of Undeveloped Parcel East of the Site

To mitigate the noise impact would require a four- to six-foot high barrier along the top of slope of the eastern property boundary (*Figure 5*).

3.3 Parking Lot Cleaning at Property Line of Residence West of the Site

Power blowers shall not be operated at the site. Assuming only the parking lot sweeper is operated, the one-hour average noise level associated with the parking lot cleaning activities would be approximately 46 dB at the property line of the closest residence located west of the site. This noise level would comply with the County's noise ordinance limits during the daytime and nighttime hours.



SITE PLAN SOURCE: Courtney Architects

Alpine Village Center - Acoustical Assessment Report

Sound Wall Heights & Locations

FIGURE 5

3.4 Mechanical Equipment at the Fast Food Restaurant (Pad C)

The noise impact associated with the mechanical equipment on the roof of the fast food restaurant could be mitigated by constructing a minimum six-foot high parapet along the west, north and south sides of the roof. With this measure it is anticipated that the noise level would comply with the County's noise ordinance limits during the daytime and nighttime hours.

When mechanical equipment plans are prepared they should be reviewed to ensure that the noise level will not exceed the County's noise ordinance limits.

This concludes our noise assessment. If you have any questions please call me.

Very truly yours,

DUDEK & ASSOCIATES, INC.

Mike Komula, Acoustician

MK/tsf
w/att.

REFERENCES

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County of San Diego, February 12, 1998. *Conditions of Approval TM 4941 RPL.*

Heatcraft Refrigeration Products, May 30, 2001. *Letter to Mr. Jeff Rubenstein of Albertson's Inc.*

Darnell & Associates, May 15, 2001. *Traffic Study for Albertsons Market and Associated Commercial Uses in the County of San Diego.*

Darnell & Associates, June, 1999b. *Telephone Conversation with Mr. Steve Denny.*

Courtney Architects, June 1999. *Telephone Conversation with Mr. Brian Diederich.*

ATTACHMENT 1
DEFINITIONS

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level, (dB[A]) (Symbol L_A)	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level, (CNEL)	CNEL is the A-weighted equivalent continuous sound exposure level for a 24-hour period with a ten dB adjustment added to sound levels occurring during nighttime hours (10 pm to 7 am) and a five dB adjustment added to the sound levels occurring during the evening hours (7 pm to 10 pm).
Decibel, (dB)	A unit for measuring sound pressure level, equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.
Maximum A-Weighted Sound Level, (MXFA) (Symbol L_{max})	The greatest sound level measured on a sound level meter during a designated time interval or event using fast time-averaging (125-ms) and A-weighting.
Time-Average Sound Level, (TAV) Symbols L_{AT} and L_{AeqT})	The sound level corresponding to a steady state (sound level containing the same total energy as a time varying signal over a given sample period. TAV is designed to average all of the loud and quiet sound levels occurring over a specific time period.

ATTACHMENT 2
Noise Model Input and Validation

(Site 1)

Parameter	Existing Hourly Equivalent During Measurement	
Vehicles Per Hour	102	
Speed (mph)	32	
Medium Truck Percentage	0	
Heavy Truck Percentage	0	
Median Width	0 feet	
Number of Lanes	2	
Angle of View (degrees)	-90/90	
Center Line to Receiver Distance	35 feet	
Modeled Hourly Leq	55 dB	
Measured Leq	55 dB	
CNEL[1]		56dB

[1] Assumes 87% daytime, 13% nighttime; Source: Wyle 1973.
Note: SOUND32 Noise Model

(Site 2)

Parameter	Existing Hourly Equivalent During Measurement	
Vehicles Per Hour	120	
Speed (mph)	43	
Medium Truck Percentage	0	
Heavy Truck Percentage	0	
Median Width	0 feet	
Number of Lanes	2	
Angle of View (degrees)	-90/90	
Center Line to Receiver Distance	55 feet	
Modeled Hourly Leq	57 dB	
Measured Leq	57 dB	
Calculated CNEL[1]		61 dB

[1] Assumes 87% daytime, 13% nighttime; Source: Wyle 1973.
Note: SOUND32 Noise Model

ATTACHMENT 3

Traffic Noise Level Calculations

(At residence directly across from entrance on Highlands View Road)

Parameter	Highlands View Road	Highlands View Road
ADT (existing)	1,026	
ADT (project)		4,067
Speed (mph)	32	32
Medium Truck Percentage	0	0
Heavy Truck Percentage	0	0
Median Width	0 feet	0 feet
Number of Lanes	2	2
Angle of View (degrees)	-90/90	-90/0
Center Line to Receiver Distance	40 feet	40 feet
CNEL (hard site)	55dB[1]	56dB[2]

[1] 87% daytime, 13% nighttime. Source: Wyle 1973

[2] Assumes 95% daytime, 5% nighttime; Source: Darnell & Associates 1998

ATTACHMENT 4

Traffic Noise Level Calculations

(At existing residence located at South Grade Road)

Parameter	South Grade Road	South Grade Road
ADT (existing)	3,356	
ADT (project)		2,673
Speed (mph)	43	43
Medium Truck Percentage	0	0
Heavy Truck Percentage	0	0
Median Width	0 feet	0 feet
Number of Lanes	2	2
Angle of View (degrees)	-90/90	-90/90
Center Line to Receiver Distance	55 feet	55 feet
CNEL (hard site)	61 dB[1]	60 dB[2]

[1] Assumes 87% daytime, 13% nighttime; Source: Wyle 1973.

[2] Assumes 95% daytime, 5% nighttime; Source: Darnell & Associates 1998.

ATTACHMENT 5
Idling Truck or Refrigerated Unit

Source Noise Level Idling Truck = 70 dB at 50 feet
or 64 dB at 105 feet (eastern undeveloped property line from loading dock bay No. 1)
or 63 dB at 115 feet (eastern undeveloped property line from loading dock bay No. 2)

Source Noise Level Refrigeration Unit = 72 dB at 40 feet.
or 64 dB at 105 feet (eastern undeveloped property line from loading dock bay No. 1)
or 63 dB at 115 feet (eastern undeveloped property line from loading dock bay No. 2)

Barrier Calculation--Idling Truck or Refrigeration Unit

Source Elevation	Source Height	Receiver Elevation	Receiver Height	Source to Barrier	Barrier to Receiver	Barrier Elevation	Barrier Height	Fresnel @500 HZ	Attenuation[1]
2051 ft.	11.5 ft.[2]	2062 ft.	5 ft.	15 ft.	90 ft.	2051 ft.	19 ft.	1.54	15 dB
2051 ft.	11.5 ft.[2]	2062 ft.	5 ft.	25 ft.	90 ft.	2051 ft.	19 ft.	0.95	13 dB

[1] Attenuation at 500 Hz is assumed to be equivalent to overall A-Weighted sound attenuation.

[2] Assumes noise source is refrigeration unit at 11.5 feet above ground.

ATTACHMENT 6
Heavy Truck Parking Maneuvers and Passby

Event	Distance	SEL	[illegible]	L[illegible]
Parking Maneuver	120 ft.	85	2	52.4
Passby	120 ft.	84	2	51.4
Noise Level @ Eastern Undeveloped Property Line				**55 dB**

Barrier Calculation

Source Elevation	Source Height	Receiver Elevation	Receiver Height	Source to Barrier	Barrier to Receiver	Barrier Elevation	Barrier Height	Fresnel @ 500 Hz	Attenuation[1]
2053 ft.	8 ft.[2]	2,058 ft.	5 ft.	75 ft.	45 ft.	2058 ft.	6 ft.	.05	5 dB

[1] Attenuation at 500 Hz is assumed to be equivalent to overall A-Weighted sound attenuation.

[2] Assumes equivalent source height of moving heavy truck used by Caltrans, FHWA and other jurisdictions.

ATTACHMENT 7
Parking Lot Noise

$L_{eq(h)}$	=	SEL + 10 log N -35.6
N	=	Number of pass-bys
SEL	=	L_{max} + 10 log $_t$
t	=	The duration in seconds that the noise level is within 10 dB of L_{max}. (maximum t = 310/22 = 14.1
L_{max} (ht)	=	80 dB at 50 feet
L_{max} (autos)	=	58 dB at 50 feet
Parking lot speed	=	15 mph or 22 ft./sec
Drive-By Distance		
Length of parking lot	=	310 feet

Residence at Highlands View Road (Property Line)

Drive-by Distance	SEL	(t)	N	Leq(h)	CNEL
140 ft.	60.5	14.1	181 (autos)	47.5	
210 ft.	57.0	14.1	181 (autos)	44.0	
270 ft.	54.8	14.1	181 (autos)	41.8	
340 ft.	52.8	14.1	181 (autos)	39.8	
400 ft.	51.4	14.1	181 (autos)	38.4	
470 ft.	50.0	14.1	181 (autos)	37.0	
470 ft.	72.0	14.1	4 (ht)	42.4	
			1,090 (total trips)		
Peak hour noise level at eastern property line				51 dB	
					50 dB[1]

[1] Total project trips = 11,620 (Darnell & Assoc. 2001); 95% day; 5% night (Darnell & Assoc. 1998)

ATTACHMENT 8

Combined CNEL at Closest Residence on Highlands View Road Adjacent to Site

(Sun River Tract 4941)

Source		CNEL (dB)
Parking Lot		50
Highlands View Road (existing)		55
Highlands View Road (w/project)		56
Mechanical Equipment (Pad C)		46
	CNEL	59 dB

ATTACHMENT 9

Mechanical Equipment Source Noise Levels

Noise Source	Sound Power Level or Sound Pressure Level (dBA)
Albertsons Market	
Lennox LGA 072 A/C (AC1)	Lw 82
Lennox CHP-16-261 A/C (AC2)	Lw 80
Lennox GCS 20-060-100 A/C (AC3)	Lw 82
Frigid Coil VCB-172 Air Cooled Condenser (ACC1)	Lp 83 dB at 5 ft.
Frigid Coil BVF-045 Air Cooled Condenser (ACC2)	Lp 81 dB at 5 ft.
Frigid Coil VCB-043 Condenser (CD1, CD2)	Lp 78 dB at 5 ft.
Cook ACRU-B365 9RB Interior Exaust Fan Measurement at Exterior Exhaust Outlet	Lp 64 dB at 10 ft.
Shops (Pad A)	
Bryant 581D060 Package Unit	Lw 80
Bryant 581D072 Package Unit	Lw 82
Fast Food Restaurant	
Packaged Units (4)	Lw 88
Exhaust Fans (5)	Lp 64 at 10 ft.
Freezer Compressor	Lp 75 at 10 ft.

ATTACHMENT 10

Noise Level at Eastern Property Boundary

(Albertsons Market Mechanical Equipment)

Noise Source	Source Height (ft.)	Receiver Height (ft.)	Source to Barrier (ft.)	Barrier to Receiver (ft.)	Barrier Height (ft.)	Fresnel @ 500 HZ	Noise Level (dB)
AC1	2,082.0	2,072.0	280.0	130.0	2,082.5	0.27	23.5
AC2	2,082.0	2,072.0	80.0	85.0	2,082.5	0.31	29
AC3	2,082.0	2,072.0	115.0	145.0	2,082.5	0.17	28.5
ACC1	2,083.5	2,072.0	140.0	80.0	2,082.5	0.35	40.8
ACC2	2,083.5	2,072.0	120.0	80.0	2,082.5	0.32	39.9
CD1	2,084.0	2,072.0	155.0	85.0	2,082.5	0.32	35.4
CD2	2,084.0	2,072.0	160.0	85.0	2,082.5	0.32	35.1
EF	2,081.5	2,072.0	155.0	85.0	2,082.5	0.41	26.6
Noise Level							45

Notes: Roof elevation = 2079
Receiver pad elevation = 2067

ATTACHMENT 11

Noise Level at Southern Property Boundary

(Albertsons Market Mechanical Equipment)

Noise Source	Source Height (ft.)	Receiver Height (ft.)	Source to Barrier (ft.)	Barrier to Receiver (ft.)	Barrier Height (ft.)	Fresnel @ 500 HZ	Noise Level (dB)
AC1	2,082.0	2,082.0	265.0	170.0	2,091.0	0.35	22.2
AC2	2,082.0	2,082.0	105.0	215.0	2,091.0	0.51	21.7
AC3	2,082.0	2,082.0	220.0	195.0	2,091.0	0.35	22.6
ACC1	2,083.5	2,082.0	100.0	195.0	2,091.0	0.43	37.6
ACC2	2,083.5	2,082.0	100.0	200.0	2,091.0	0.43	35.5
CD1	2,084.0	2,082.0	100.0	190.0	2,091.0	0.40	33.0
CD2	2,084.0	2,082.0	115.0	190.0	2,091.0	0.37	32.8
EF	2,081.5	2,082.0	90.0	190.0	2,091.0	0.64	23.7
Noise Level							41

Notes: Roof elevation = 2079
Receiver elevation = 2077
Barrier is intervening topography

ATTACHMENT 12

Noise Level at Second Floor at Residence on Sage View Road

(Albertsons Market Mechanical Equipment)

Noise Source	Source Height (ft.)	Receiver Height (ft.)	Source to Barrier (ft.)	Barrier to Receiver (ft.)	Barrier Height (ft.)	Fresnel @ 500 HZ	Noise Level (dB)
AC1	2,082.0	2,092.0	265.0	190.0	2,091.0	0.04	25.5
AC2	2,082.0	2,092.0	105.0	235.0	2,091.0	0.21	23.7
AC3	2,082.0	2,092.0	220.0	215.0	2,091.0	0.06	25.5
ACC1	2,083.5	2,092.0	100.0	215.0	2,091.0	0.15	39.8
ACC2	2,083.5	2,092.0	100.0	220.0	2,091.0	0.15	37.6
CD1	2,084.0	2,092.0	100.0	210.0	2,091.0	0.13	34.6
CD2	2,084.0	2,092.0	115.0	210.0	2,091.0	0.10	35.1
EF	2,081.5	2,092.0	90.0	210.0	2,091.0	0.28	25.7
Noise Level							**44**

Notes: Roof elevation = 2079
Receiver elevation = 2077
Barrier is intervening topography

ATTACHMENT 13

Noise Level at Property Boundary of Residences Adjacent to Highlands View Road

(Fast Food Restaurant Mechanical Equipment)

Noise Source	Source Height (ft.)	Receiver Height (ft.)	Source to Barrier (ft.)	Barrier to Receiver (ft.)	Barrier Height (ft.)	Fresnel @ 500 HZ	Noise Level (dB)
Package AC (4 units)	2,072.5	2,053.0	15.0	85.0	2,075.0	1.0	47.5
Exhaust Fans (5 units)	2,071.0	2,053.0	15.0	85.0	2,075.0	1.53	34.5
Freezer Condenser	2,072.5	2,053.0	15.0	85.0	2,075.0	1.0	46.2
Noise Level							**50**

Notes:

1 Roof elevation = 2069

2 Receiver elevation = 2048

3 With mitigating 6' parapet

ATTACHMENT 14

Noise Level at Second Floor of Residences Adjacent to Highlands View Road

(Fast Food Restaurant Mechanical Equipment)

Noise Source	Source Height (ft.)	Receiver Height (ft.)	Source to Barrier (ft.)	Barrier to Receiver (ft.)	Barrier Height (ft.)	Fresnel @ 500 HZ	Noise Level (dB)
Package AC (4 units)	2,072.5	2,075.0	15.0	120.0	2,075.0	0.16	46.3
Exhaust Fans (5 units)	2,071.0	2,075.0	15.0	120.0	2,075.0	0.42	38.5
Freezer Condensor	2,072.5	2,075.0	15.0	120.0	2,075.0	0.16	45.0
Noise Level							49

Notes: Roof elevation = 2069
Receiver elevation = 2060
With mitigating 6' parapet

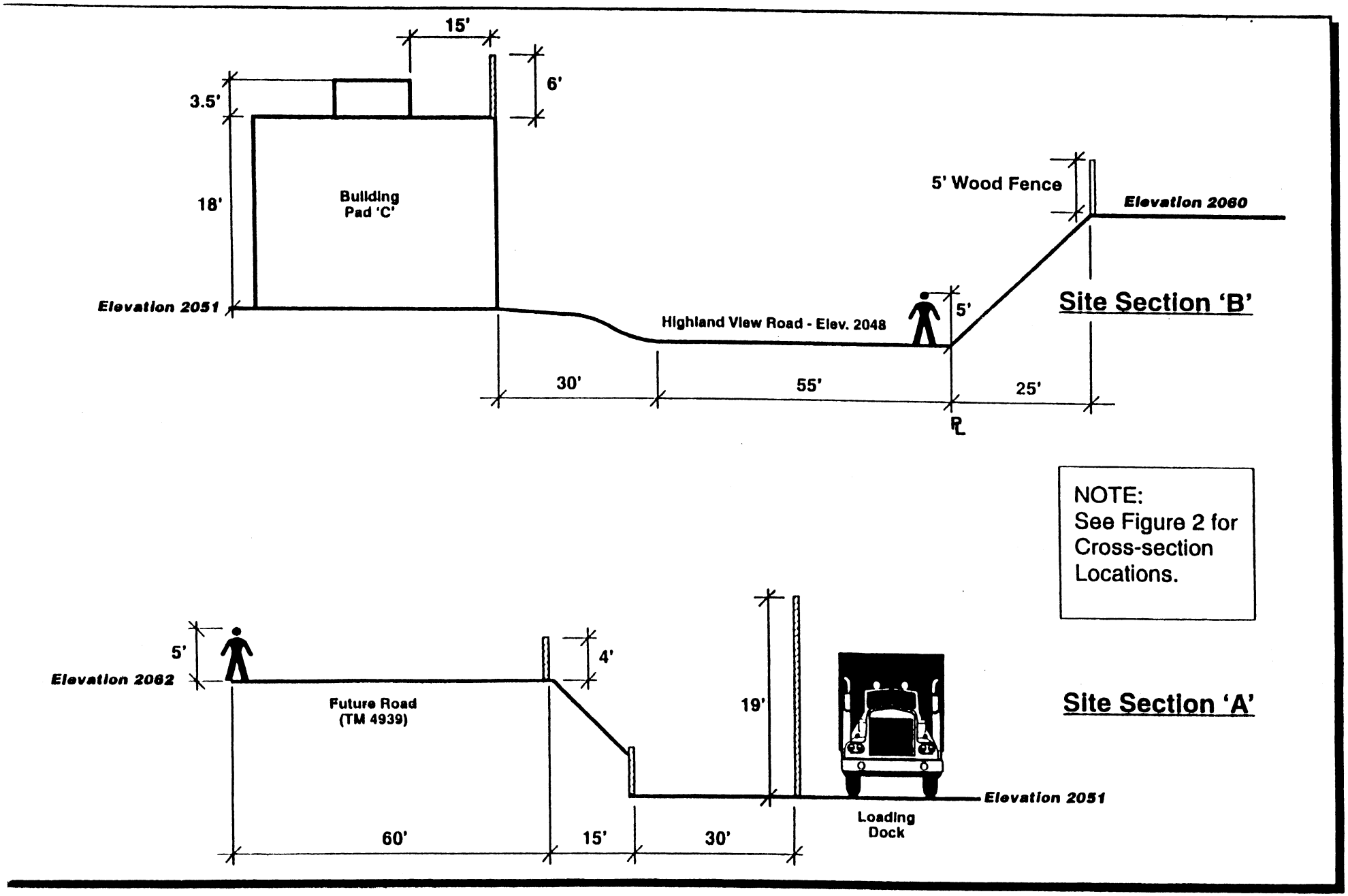
ATTACHMENT 15

Noise Level at Eastern Undeveloped Land Property Boundary

(Shops Mechanical Equipment)

Noise Source	Source Height (ft.)	Receiver Height (ft.)	Source to Barrier (ft.)	Barrier to Receiver (ft.)	Barrier Height (ft.)	Fresnel @ 500 HZ	Noise Level (dB)
Bryant Packaged AC Unit	2,077.0	2,063.0	20.0	115.0	2,077.0	0.11	35.8
AC Unit	2,077.0	2,063.0	20.0	105.0	2,077.0	0.13	36.1
AC Unit	2,077.0	2,063.0	20.0	100.0	2,077.0	0.14	36.3
AC Unit	2,077.0	2,063.0	15.0	85.0	2,077.0	0.15	37.7
AC Unit	2,077.0	2,063.0	15.0	90.0	2,077.0	0.14	37.5
AC Unit	2,077.0	2,063.0	20.0	105.0	2,077.0	0.13	36.1
AC Unit	2,077.0	2,063.0	20.0	110.0	2,077.0	0.12	35.9
AC Unit	2,077.0	2,063.0	20.0	115.0	2,077.0	0.11	35.8
Noise Level							**45**

Notes: Roof elevation = 2073.5
Receiver elevation = 2058



Alpine Village Center - Acoustical Assessment Report

Site Section 'A' & 'B'

A-1

Appendix E
Drainage/Hydrology Report

Civil Engineering/Surveying/Planning
STUART ENGINEERING
PEACE ENGINEERING, INC.,
A CALIFORNIA CORPORATION
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DRAINAGE ANALYSIS

SITE PLAN S99-047
ALBERTSON'S CENTER, ALPINE

This project proposes development of a 9.8-acre site as a commercial center including a grocery store, fast food restaurant, service station and shops (the "Site"). The Site was mapped as a future commercial area with the 70 unit Sun River residential subdivision which has been constructed to the west across South Grade Road (SA370) and Highlands View Road. These roads were constructed in their entirety with the residential projects. Subsequently, the Site was made a legal parcel pursuant to a recorded Certificate of Compliance.

To the north is Alpine Boulevard which will be widened with the proposed project. Immediately to the east is the access road to a new 14 lot residential subdivision. Beyond the access road is vacant land which eventually could be developed as large lot residential. To the south is an existing residential development.

Currently 8.7 acres of the Site drains to a 36-inch storm drain with headwall near South Grade Road (SA370) at the northwest corner of the Site. The southern 1.1 acres of the Site drains to a different drainage basin. A 24-inch storm drain outlets onto the southwest corner of the Site from Highlands View Road. Water from the east collects in the newly constructed residential access road, outlets onto Old South Grade Road (RS582), then flows overland through the Site until it is concentrated at the 36 inch storm drain previously mentioned.

Approximately two acres at the south end of the Site will be left undisturbed or be in a 2:1 ratio slope, including the 1.1 acres draining to another drainage basin. Together with landscaping, more than 35% of the Site will not contain buildings or be paved. The remainder of the Site will be buildings and pavement.

The Sun River Subdivision's drainage report concluded 48.5 cubic feet per second (cfs) of water will be entering the 36 inch storm drain at South Grade Road (SA370) from the drainage area including a majority of this project. This conclusion was based upon the Site remaining in its present undeveloped state. Accordingly, any increase above 48.5 cfs would be attributable to the addition of impervious material at the Site.

To determine this additional flow, Stuart Engineering did a rational method hydrology study using AES software. The developed Site will drain to a storm drain system which connects to the aforementioned 36-inch storm drain extending from South Grade Road (SA370).

The results of our analysis are that approximately 57 cfs of runoff will enter the aforementioned 36-inch storm drain at South Grade Road (SA370) during a 100 year event; an additional 8.5 cfs. The existing public storm drain system downstream has the capacity to convey the additional 8.5 cfs generated by development of the Site. However, to avoid any potential impacts from this increased flow, the proposed onsite storm drain system will be designed so that no more than the previously designed 48.5 cfs will enter the downstream storm drain system. The retention needed to reduce the storm flow by 8.5 cfs will be designed into an oversized storm drain system with outlet controls. In other words, the same amount of storm runoff as if the Site were undeveloped will be allowed to flow downstream, even though the developed runoff increase would be insignificant due to the large size of the basin involved.

Thomas M. Henry, RCE 2470

REGISTERED PROFESSIONAL ENGINEER
THOMAS M. HENRY
No. 24760
Exp. 12-31-01
CIVIL
STATE OF CALIFORNIA

961-99-06
July 27, 2000
F:\ADMIN\961\CL3370

EXISTING CONDITION

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****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-94 Advanced Engineering Software (aes)
          Ver. 1.5A  Release Date: 3/16/94  License ID 1402

                        Analysis prepared by:

                          Stuart Engineering
                  7525 Metropolitan Drive   Suite 308
                     San Diego, California   92108
                           (619) 296-1010

 ************************** DESCRIPTION OF STUDY **************************
 * ALBERTSON'S ALPINE                                                     *
 * 10 YEAR - 6 HOUR STORM                                                 *
 * EXISTING CONDITION                                                     *
 ****************************************************************************

  FILE NAME: 961EXIST.DAT
  TIME/DATE OF STUDY: 13: 8  12/21/2000
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  1985 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED


****************************************************************************
  FLOW PROCESS FROM NODE   800.00 TO NODE   802.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SOIL CLASSIFICATION IS "D"
  MULTI-UNITS DEVELOPMENT RUNOFF COEFFICIENT = .7000
  USER SPECIFIED Tc(MIN.) =   20.500
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.333
  SUBAREA RUNOFF(CFS) =      16.33
  TOTAL AREA(ACRES) =      10.00   TOTAL RUNOFF(CFS) =      16.33


****************************************************************************
  FLOW PROCESS FROM NODE   802.00 TO NODE   500.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION =   2064.00
  DOWNSTREAM NODE ELEVATION =   2021.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   950.00
  CHANNEL SLOPE =   .0453
  CHANNEL FLOW THRU SUBAREA(CFS) =      16.33
  FLOW VELOCITY(FEET/SEC) =   6.04 (PER PLATE D-6.1)
  TRAVEL TIME(MIN.) =   2.62   TC(MIN.) =  23.12
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  23.12
 RAINFALL INTENSITY(INCH/HR) =   2.16
 TOTAL STREAM AREA(ACRES) =   10.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.33

****************************************************************************
 FLOW PROCESS FROM NODE   900.00 TO NODE   902.00 IS CODE =  22
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 SOIL CLASSIFICATION IS "D"
 MOBILE HOME DEVELOPMENT RUNOFF COEFFICIENT = .6500
 USER SPECIFIED Tc(MIN.) =   10.000
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.707
 SUBAREA RUNOFF(CFS) =       5.78
 TOTAL AREA(ACRES) =       2.40   TOTAL RUNOFF(CFS) =       5.78

****************************************************************************
 FLOW PROCESS FROM NODE   902.00 TO NODE   500.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   2056.00
 DOWNSTREAM NODE ELEVATION =   2021.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00
 CHANNEL SLOPE =   .0583
 CHANNEL FLOW THRU SUBAREA(CFS) =       5.78
 FLOW VELOCITY(FEET/SEC) =   5.27 (PER PLATE D-6.1)
 TRAVEL TIME(MIN.) =   1.90   TC(MIN.) =  11.90

****************************************************************************
 FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.90
 RAINFALL INTENSITY(INCH/HR) =   3.31
 TOTAL STREAM AREA(ACRES) =    2.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.78

****************************************************************************
 FLOW PROCESS FROM NODE  1000.00 TO NODE   500.00 IS CODE =  22
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 SOIL CLASSIFICATION IS "D"
 RURAL DEVELOPMENT RUNOFF COEFFICIENT = .4500
 USER SPECIFIED Tc(MIN.) =   13.200
```

```
SUBAREA RUNOFF(CFS) =      11.99
TOTAL AREA(ACRES) =       8.60   TOTAL RUNOFF(CFS) =      11.99

****************************************************************************
FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  13.20
RAINFALL INTENSITY(INCH/HR) =   3.10
TOTAL STREAM AREA(ACRES) =    8.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.99

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1       16.33     23.12      2.159        10.00
    2        5.78     11.90      3.314         2.40
    3       11.99     13.20      3.099         8.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc       INTENSITY
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
    1       27.64     11.90      3.314
    2       28.78     13.20      3.099
    3       28.45     23.12      2.159

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     28.78   Tc(MIN.) =   13.20
TOTAL AREA(ACRES) =     21.00
============================================================================
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) =     28.78   Tc(MIN.) =   13.20
TOTAL AREA(ACRES) =     21.00
============================================================================
END OF RATIONAL METHOD ANALYSIS
```

DEVELOPED CONDITION

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                     1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-94 Advanced Engineering Software (aes)
          Ver. 1.5A  Release Date: 3/16/94  License ID 1402

                        Analysis prepared by:

                          Stuart Engineering
                 7525 Metropolitan Drive   Suite 308
                    San Diego, California   92108
                          (619) 296-1010

 ************************** DESCRIPTION OF STUDY **************************
 * ALBERTSON'S ALPINE                                                     *
 * 10 YEAR - 6 HOUR STORM                                                 *
 * STORM DRAIN CALCULATIONS                                               *
 ****************************************************************************

  FILE NAME: 961A-400.DAT
  TIME/DATE OF STUDY: 14: 7  12/21/2000
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  1985 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED


****************************************************************************
  FLOW PROCESS FROM NODE   408.00 TO NODE   407.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  20.50   RAIN INTENSITY(INCH/HOUR) =  2.33
  TOTAL AREA(ACRES) =    10.00   TOTAL RUNOFF(CFS) =     16.30


****************************************************************************
  FLOW PROCESS FROM NODE   407.00 TO NODE   407.00 IS CODE =   8
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.333
  SOIL CLASSIFICATION IS "D"
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA AREA(ACRES) =      .42   SUBAREA RUNOFF(CFS) =      .83
  TOTAL AREA(ACRES) =    10.42   TOTAL RUNOFF(CFS) =   17.13
  TC(MIN) =  20.50


****************************************************************************
  FLOW PROCESS FROM NODE   407.00 TO NODE   403.00 IS CODE =   3
----------------------------------------------------------------------------
```

```
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.2 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =  17.5
 UPSTREAM NODE ELEVATION =  2056.00
 DOWNSTREAM NODE ELEVATION =  2047.90
 FLOWLENGTH(FEET) =    85.00   MANNING'S N =  .013
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =     17.13
 TRAVEL TIME(MIN.) =    .08    TC(MIN.) =  20.58

**************************************************************************
 FLOW PROCESS FROM NODE   403.00 TO NODE   403.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  20.58
 RAINFALL INTENSITY(INCH/HR) =  2.33
 TOTAL STREAM AREA(ACRES) =   10.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.13

**************************************************************************
 FLOW PROCESS FROM NODE   406.00 TO NODE   406.00 IS CODE =  22
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
 SOIL CLASSIFICATION IS "D"
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
 USER SPECIFIED Tc(MIN.) =    6.000
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.153
 SUBAREA RUNOFF(CFS) =       2.06
 TOTAL AREA(ACRES) =        .47   TOTAL RUNOFF(CFS) =      2.06

**************************************************************************
 FLOW PROCESS FROM NODE   406.00 TO NODE   405.00 IS CODE =   3
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.8 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =   4.5
 UPSTREAM NODE ELEVATION =  2050.00
 DOWNSTREAM NODE ELEVATION =  2049.00
 FLOWLENGTH(FEET) =   100.00   MANNING'S N =  .013
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =      2.06
 TRAVEL TIME(MIN.) =    .37    TC(MIN.) =   6.37

**************************************************************************
 FLOW PROCESS FROM NODE   405.00 TO NODE   405.00 IS CODE =   8
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.959
 SOIL CLASSIFICATION IS "D"
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
 SUBAREA AREA(ACRES) =      .12   SUBAREA RUNOFF(CFS) =      .51
```

```
TC(MIN) =   6.37

****************************************************************************
FLOW PROCESS FROM NODE   405.00 TO NODE   404.00 IS CODE =   3
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
----------------------------------------------------------------------------
DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.2 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   5.2
UPSTREAM NODE ELEVATION =  2049.00
DOWNSTREAM NODE ELEVATION =  2048.00
FLOWLENGTH(FEET) =    80.00   MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =      2.56
TRAVEL TIME(MIN.) =    .26    TC(MIN.) =   6.63

****************************************************************************
FLOW PROCESS FROM NODE   404.00 TO NODE   404.00 IS CODE =   8
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
----------------------------------------------------------------------------
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.833
SOIL CLASSIFICATION IS "D"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
SUBAREA AREA(ACRES) =      .06   SUBAREA RUNOFF(CFS) =      .25
TOTAL AREA(ACRES) =       .65   TOTAL RUNOFF(CFS) =    2.81
TC(MIN) =   6.63

****************************************************************************
FLOW PROCESS FROM NODE   404.00 TO NODE   403.00 IS CODE =   3
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
----------------------------------------------------------------------------
DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.4 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   4.8
UPSTREAM NODE ELEVATION =  2048.00
DOWNSTREAM NODE ELEVATION =  2047.90
FLOWLENGTH(FEET) =    10.00   MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =      2.81
TRAVEL TIME(MIN.) =    .03    TC(MIN.) =   6.66

****************************************************************************
FLOW PROCESS FROM NODE   403.00 TO NODE   403.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
----------------------------------------------------------------------------
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.66
RAINFALL INTENSITY(INCH/HR) =   4.82
TOTAL STREAM AREA(ACRES) =      .65
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.81

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER
```

```
    1        17.13     20.58       2.327          10.42
    2         2.81      6.66       4.817            .65

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
    1         11.09      6.66       4.817
    2         18.49     20.58       2.327

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     18.49   Tc(MIN.) =   20.58
  TOTAL AREA(ACRES) =     11.07


****************************************************************************
  FLOW PROCESS FROM NODE   403.00 TO NODE   402.00 IS CODE =   3
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPEFLOW VELOCITY(FEET/SEC.) =   7.7
  UPSTREAM NODE ELEVATION =  2047.90
  DOWNSTREAM NODE ELEVATION =  2047.40
  FLOWLENGTH(FEET) =    50.00   MANNING'S N =  .013
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPEFLOW THRU SUBAREA(CFS) =     18.49
  TRAVEL TIME(MIN.) =    .11    TC(MIN.) =  20.69


****************************************************************************
  FLOW PROCESS FROM NODE   402.00 TO NODE   402.00 IS CODE =   8
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.319
  SOIL CLASSIFICATION IS "D"
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA AREA(ACRES) =     .07   SUBAREA RUNOFF(CFS) =     .14
  TOTAL AREA(ACRES) =    11.14   TOTAL RUNOFF(CFS) =   18.63
  TC(MIN) =  20.69


****************************************************************************
  FLOW PROCESS FROM NODE   402.00 TO NODE   401.00 IS CODE =   3
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.3 INCHES
  PIPEFLOW VELOCITY(FEET/SEC.) =   7.7
  UPSTREAM NODE ELEVATION =  2047.40
  DOWNSTREAM NODE ELEVATION =  2046.90
  FLOWLENGTH(FEET) =    50.00   MANNING'S N =  .013
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPEFLOW THRU SUBAREA(CFS) =     18.63
  TRAVEL TIME(MIN.) =    .11    TC(MIN.) =  20.80


****************************************************************************
```

```
----------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.311
  SOIL CLASSIFICATION IS "D"
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA AREA(ACRES) =      .04   SUBAREA RUNOFF(CFS) =      .08
  TOTAL AREA(ACRES) =    11.18   TOTAL RUNOFF(CFS) =   18.71
  TC(MIN) =  20.80


**********************************************************************
  FLOW PROCESS FROM NODE   401.00 TO NODE   400.00 IS CODE =   3
----------------------------------------------------------------------
  >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.2 INCHES
  PIPEFLOW VELOCITY(FEET/SEC.) =  10.0
  UPSTREAM NODE ELEVATION =  2046.90
  DOWNSTREAM NODE ELEVATION =  2040.00
  FLOWLENGTH(FEET) =   340.00   MANNING'S N =  .013
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPEFLOW THRU SUBAREA(CFS) =     18.71
  TRAVEL TIME(MIN.) =    .56    TC(MIN.) =  21.36
======================================================================
  END OF STUDY SUMMARY:
  PEAK FLOW RATE(CFS) =     18.71   Tc(MIN.) =   21.36
  TOTAL AREA(ACRES) =     11.18
======================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                      Analysis prepared by:

                        Stuart Engineering
                 7525 Metropolitan Drive   Suite 308
                    San Diego, California   92108
                          (619) 296-1010

 ************************* DESCRIPTION OF STUDY *************************
* ALBERTSON'S ALPINE                                                    *
* 10 YEAR - 6 HOUR STORM                                                *
* STORM DRAIN CALCULATIONS                                              *
 ************************************************************************

  FILE NAME: 961A-500.DAT
  TIME/DATE OF STUDY: 14:12  12/21/2000
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  1985 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED


 ************************************************************************
  FLOW PROCESS FROM NODE   503.00 TO NODE   503.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SOIL CLASSIFICATION IS "D"
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
  USER SPECIFIED Tc(MIN.) =    6.000
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.153
  SUBAREA RUNOFF(CFS) =       1.93
  TOTAL AREA(ACRES) =        .44   TOTAL RUNOFF(CFS) =       1.93


 ************************************************************************
  FLOW PROCESS FROM NODE   503.00 TO NODE   502.00 IS CODE =   3
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.5 INCHES
  PIPEFLOW VELOCITY(FEET/SEC.) =   4.4
  UPSTREAM NODE ELEVATION =  2050.00
  DOWNSTREAM NODE ELEVATION =  2049.00
  FLOWLENGTH(FEET) =   100.00   MANNING'S N =  .013
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PRESSURE FLOW AVERAGE CFS =        1.93

  TRAVEL TIME [illegible] =   [illegible]   [illegible]
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   502.00 TO NODE   502.00 IS CODE =   8
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.955
 SOIL CLASSIFICATION IS "D"
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
 SUBAREA AREA(ACRES) =      .35   SUBAREA RUNOFF(CFS) =     1.47
 TOTAL AREA(ACRES) =       .79   TOTAL RUNOFF(CFS) =     3.40
 TC(MIN) =   6.38

****************************************************************************
 FLOW PROCESS FROM NODE   502.00 TO NODE   501.00 IS CODE =   3
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.5 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =   6.6
 UPSTREAM NODE ELEVATION =  2049.00
 DOWNSTREAM NODE ELEVATION =  2047.00
 FLOWLENGTH(FEET) =   100.00   MANNING'S N =  .013
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =      3.40
 TRAVEL TIME(MIN.) =    .25    TC(MIN.) =   6.63

****************************************************************************
 FLOW PROCESS FROM NODE   501.00 TO NODE   501.00 IS CODE =   8
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.833
 SOIL CLASSIFICATION IS "D"
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
 SUBAREA AREA(ACRES) =      .44   SUBAREA RUNOFF(CFS) =     1.81
 TOTAL AREA(ACRES) =      1.23   TOTAL RUNOFF(CFS) =     5.21
 TC(MIN) =   6.63

****************************************************************************
 FLOW PROCESS FROM NODE   501.00 TO NODE   500.00 IS CODE =   3
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =   4.7
 UPSTREAM NODE ELEVATION =  2047.00
 DOWNSTREAM NODE ELEVATION =  2045.50
 FLOWLENGTH(FEET) =   250.00   MANNING'S N =  .013
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =      5.21
 TRAVEL TIME(MIN.) =    .89    TC(MIN.) =   7.52
============================================================================
 END OF STUDY SUMMARY:
 PEAK FLOW RATE(CFS) =      5.21   TC(MIN.) =    7.52
 TOTAL AREA(ACRES) =      1.23
----------------------------------------------------------------------------
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                        Analysis prepared by:

                          Stuart Engineering
                   7525 Metropolitan Drive   Suite 308
                      San Diego, California   92108
                            (619) 296-1010

 ************************** DESCRIPTION OF STUDY **************************
 * ALBERTSON'S ALPINE                                                     *
 * 10 YEAR - 6 HOUR STORM                                                 *
 * STORM DRAIN CALCULATIONS                                               *
 ****************************************************************************

  FILE NAME: 961A-600.DAT
  TIME/DATE OF STUDY: 14:19  12/21/2000
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  1985 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED

****************************************************************************
  FLOW PROCESS FROM NODE   606.00 TO NODE   606.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.40   RAIN INTENSITY(INCH/HOUR) =  3.61
  TOTAL AREA(ACRES) =     2.40   TOTAL RUNOFF(CFS) =      3.71

****************************************************************************
  FLOW PROCESS FROM NODE   606.00 TO NODE   601.00 IS CODE =   3
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
  PIPEFLOW VELOCITY(FEET/SEC.) =  12.7
  UPSTREAM NODE ELEVATION =  2050.00
  DOWNSTREAM NODE ELEVATION =  2046.75
  FLOWLENGTH(FEET  =    30.00   MANNING'S N =  .013
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPEFLOW THRU SUBAREA(CFS) =      3.71
  TRAVEL TIME(MIN.  =    .04    TC(MIN.) =  10.44

****************************************************************************
```

```
FLOW PROCESS FROM NODE   601.00 TO NODE   601.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  10.44
RAINFALL INTENSITY(INCH/HR) =   3.61
TOTAL STREAM AREA(ACRES) =    2.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.71

**********************************************************************
FLOW PROCESS FROM NODE   605.00 TO NODE   605.00 IS CODE =  22
----------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
SOIL CLASSIFICATION IS "D"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
USER SPECIFIED Tc(MIN.) =     6.000
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.153
SUBAREA RUNOFF(CFS) =        .44
TOTAL AREA(ACRES) =        .10   TOTAL RUNOFF(CFS) =        .44

**********************************************************************
FLOW PROCESS FROM NODE   605.00 TO NODE   604.00 IS CODE =   3
----------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO  8.000
DEPTH OF FLOW IN   8.0 INCH PIPE IS   2.8 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   4.0
UPSTREAM NODE ELEVATION =  2051.00
DOWNSTREAM NODE ELEVATION =  2050.80
FLOWLENGTH(FEET) =    10.00   MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =   8.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =        .44
TRAVEL TIME(MIN.) =    .04    TC(MIN.) =   6.04

**********************************************************************
FLOW PROCESS FROM NODE   604.00 TO NODE   604.00 IS CODE =   8
----------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.130
SOIL CLASSIFICATION IS "D"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
SUBAREA AREA(ACRES) =      .24   SUBAREA RUNOFF(CFS) =    1.05
TOTAL AREA(ACRES) =       .34   TOTAL RUNOFF(CFS) =    1.48
TC(MIN) =   6.04

**********************************************************************
FLOW PROCESS FROM NODE   604.00 TO NODE   603.00 IS CODE =   3
----------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
DEPTH OF FLOW IN   8.0 INCH PIPE IS   4.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   6.4
UPSTREAM NODE ELEVATION
```

```
DOWNSTREAM NODE ELEVATION =  2049.50
FLOWLENGTH(FEET) =    110.00    MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =    9.00     NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =       1.48
TRAVEL TIME(MIN.) =     .29     TC(MIN.) =   6.33

****************************************************************************
FLOW PROCESS FROM NODE   603.00 TO NODE   603.00 IS CODE =   8
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.978
SOIL CLASSIFICATION IS "D"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
SUBAREA AREA(ACRES) =      .08   SUBAREA RUNOFF(CFS) =      .34
TOTAL AREA(ACRES) =       .42   TOTAL RUNOFF(CFS) =    1.82
TC(MIN) =   6.33

****************************************************************************
FLOW PROCESS FROM NODE   603.00 TO NODE   602.00 IS CODE =   3
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   6.1
UPSTREAM NODE ELEVATION =  2049.50
DOWNSTREAM NODE ELEVATION =  2048.00
FLOWLENGTH(FEET) =     60.00   MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =    9.00     NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =       1.82
TRAVEL TIME(MIN.) =     .16     TC(MIN.) =   6.49

****************************************************************************
FLOW PROCESS FROM NODE   602.00 TO NODE   602.00 IS CODE =   8
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.898
SOIL CLASSIFICATION IS "D"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
SUBAREA AREA(ACRES) =      .08   SUBAREA RUNOFF(CFS) =      .33
TOTAL AREA(ACRES) =       .50   TOTAL RUNOFF(CFS) =    2.16
TC(MIN) =   6.49

****************************************************************************
FLOW PROCESS FROM NODE   602.00 TO NODE   601.00 IS CODE =   3
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.2 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   6.2
UPSTREAM NODE ELEVATION =  2048.90
DOWNSTREAM NODE ELEVATION =  2046.75
FLOWLENGTH(FEET) =     45.00   MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =    9.00     NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =       2.16
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   601.00 TO NODE   601.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.58
 RAINFALL INTENSITY(INCH/HR) =   4.85
 TOTAL STREAM AREA(ACRES) =      .50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.16

 ** CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
    1         3.71     10.44       3.605         2.40
    2         2.16      6.58       4.854          .50

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF      Tc       INTENSITY
 NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1         4.91      6.58       4.854
    2         5.31     10.44       3.605

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      5.31   Tc(MIN.) =   10.44
 TOTAL AREA(ACRES) =      2.90


****************************************************************************
 FLOW PROCESS FROM NODE   601.00 TO NODE   500.00 IS CODE =   3
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.8 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =   7.1
 UPSTREAM NODE ELEVATION =  2046.75
 DOWNSTREAM NODE ELEVATION =  2045.50
 FLOWLENGTH(FEET) =    70.00   MANNING'S N =  .013
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =      5.31
 TRAVEL TIME(MIN.) =    .16    TC(MIN.) =  10.60
============================================================================
 END OF STUDY SUMMARY:
 PEAK FLOW RATE(CFS) =      5.31   Tc(MIN.) =   10.60
 TOTAL AREA(ACRES) =      2.90
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                        Analysis prepared by:

                          Stuart Engineering
                 7525 Metropolitan Drive   Suite 308
                    San Diego, California   92108
                          (619) 296-1010

 ************************** DESCRIPTION OF STUDY **************************
 * ALBERTSON'S ALPINE                                                     *
 * 10 YEAR - 6 HOUR STORM                                                 *
 * STORM DRAIN CALCULATIONS                                               *
 ****************************************************************************

  FILE NAME: 961A-700.DAT
  TIME/DATE OF STUDY:  9:10  12/20/2000
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  1985 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED


****************************************************************************
  FLOW PROCESS FROM NODE   700.00 TO NODE   700.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SOIL CLASSIFICATION IS "D"
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
  INITIAL SUBAREA FLOW-LENGTH =   500.00
  UPSTREAM ELEVATION =   2054.00
  DOWNSTREAM ELEVATION =   2043.00
  ELEVATION DIFFERENCE =     11.00
  URBAN SUBAREA OVERLAND TIME OF FLOW(MINUTES) =    7.737
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.374
  SUBAREA RUNOFF(CFS) =     19.33
  TOTAL AREA(ACRES) =      5.20   TOTAL RUNOFF(CFS) =     19.33


****************************************************************************
  FLOW PROCESS FROM NODE   700.00 TO NODE   400.00 IS CODE =   3
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
  PIPEFLOW VELOCITY FEET/SEC.  =   8.8
  UPSTREAM NODE ELEVATION = [illegible]
  DOWNSTREAM NODE ELEVATION = [illegible]
```

```
FLOWLENGTH(FEET) =    110.00    MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =      19.33
TRAVEL TIME(MIN.) =     .21    TC(MIN.) =   7.95
==================================================================
END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) =      19.33   Tc(MIN.) =     7.95
TOTAL AREA(ACRES) =       5.20
==================================================================
END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-94 Advanced Engineering Software (aes)
          Ver. 1.5A  Release Date: 3/16/94  License ID 1402

                        Analysis prepared by:

                          Stuart Engineering
                   7525 Metropolitan Drive   Suite 308
                      San Diego, California   92108
                            (619) 296-1010

 ************************** DESCRIPTION OF STUDY **************************
 * ALBERTSON'S ALPINE                                                     *
 * 10 YEAR - 6 HOUR STORM                                                 *
 * STORM DRAIN CALCULATIONS                                               *
 ****************************************************************************

  FILE NAME: 961A-ALL.DAT
  TIME/DATE OF STUDY: 14:30  12/21/2000
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  1985 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED
  NOTE: ONLY PEAK CONFLUENCE VALUES CONSIDERED


****************************************************************************
  FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SOIL CLASSIFICATION IS "D"
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8500
  USER SPECIFIED Tc(MIN.) =    6.000
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.153
  SUBAREA RUNOFF(CFS) =        .96
  TOTAL AREA(ACRES) =        .22   TOTAL RUNOFF(CFS) =        .96


****************************************************************************
  FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.00
  RAINFALL INTENSITY(INCH/HR.) =    5.15
  TOTAL STREAM AREA(ACRES) =      .22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =        .96


****************************************************************************
```

```
FLOW PROCESS FROM NODE   601.00 TO NODE   500.00 IS CODE =   7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
----------------------------------------------------------------------------
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) =  10.60   RAIN INTENSITY(INCH/HOUR) =  3.57
TOTAL AREA(ACRES) =     2.90   TOTAL RUNOFF(CFS) =      5.31

****************************************************************************
FLOW PROCESS FROM NODE   601.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
----------------------------------------------------------------------------
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  10.60
RAINFALL INTENSITY(INCH/HR) =   3.57
TOTAL STREAM AREA(ACRES) =    2.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.31

****************************************************************************
FLOW PROCESS FROM NODE   501.00 TO NODE   500.00 IS CODE =   7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
----------------------------------------------------------------------------
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) =   7.52   RAIN INTENSITY(INCH/HOUR) =  4.45
TOTAL AREA(ACRES) =     1.23   TOTAL RUNOFF(CFS) =      5.21

****************************************************************************
FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
----------------------------------------------------------------------------
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   7.52
RAINFALL INTENSITY(INCH/HR) =   4.45
TOTAL STREAM AREA(ACRES) =    1.23
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.21

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
   1          .96     6.00       5.153          .22
   2         5.31    10.60       3.570         2.90
   3         5.21     7.52       4.455         1.23

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
   1         9.15     6.00       5.153
   2        10.30     7.52       4.455
   3        10.15    10.60       3.570

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS)
```

```
TOTAL AREA(ACRES) =      4.35

****************************************************************************
FLOW PROCESS FROM NODE   500.00 TO NODE   400.00 IS CODE =   3
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.0 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   7.5
UPSTREAM NODE ELEVATION =  2045.50
DOWNSTREAM NODE ELEVATION =  2040.00
FLOWLENGTH(FEET) =   390.00   MANNING'S N =  .013
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =     10.30
TRAVEL TIME(MIN.) =    .86    TC(MIN.) =   8.38

****************************************************************************
FLOW PROCESS FROM NODE   400.00 TO NODE   400.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   8.38
RAINFALL INTENSITY(INCH/HR) =   4.15
TOTAL STREAM AREA(ACRES) =    4.35
PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.30

****************************************************************************
FLOW PROCESS FROM NODE   700.00 TO NODE   400.00 IS CODE =   7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) =   7.95   RAIN INTENSITY(INCH/HOUR) =  4.30
TOTAL AREA(ACRES) =     5.20   TOTAL RUNOFF(CFS) =     19.33

****************************************************************************
FLOW PROCESS FROM NODE   400.00 TO NODE   400.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   7.95
RAINFALL INTENSITY(INCH/HR) =   4.30
TOTAL STREAM AREA(ACRES) =    5.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.33

****************************************************************************
FLOW PROCESS FROM NODE   401.00 TO NODE   400.00 IS CODE =   7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) =  21.36   RAIN INTENSITY(INCH/HOUR) =  2.27
[illegible]
```

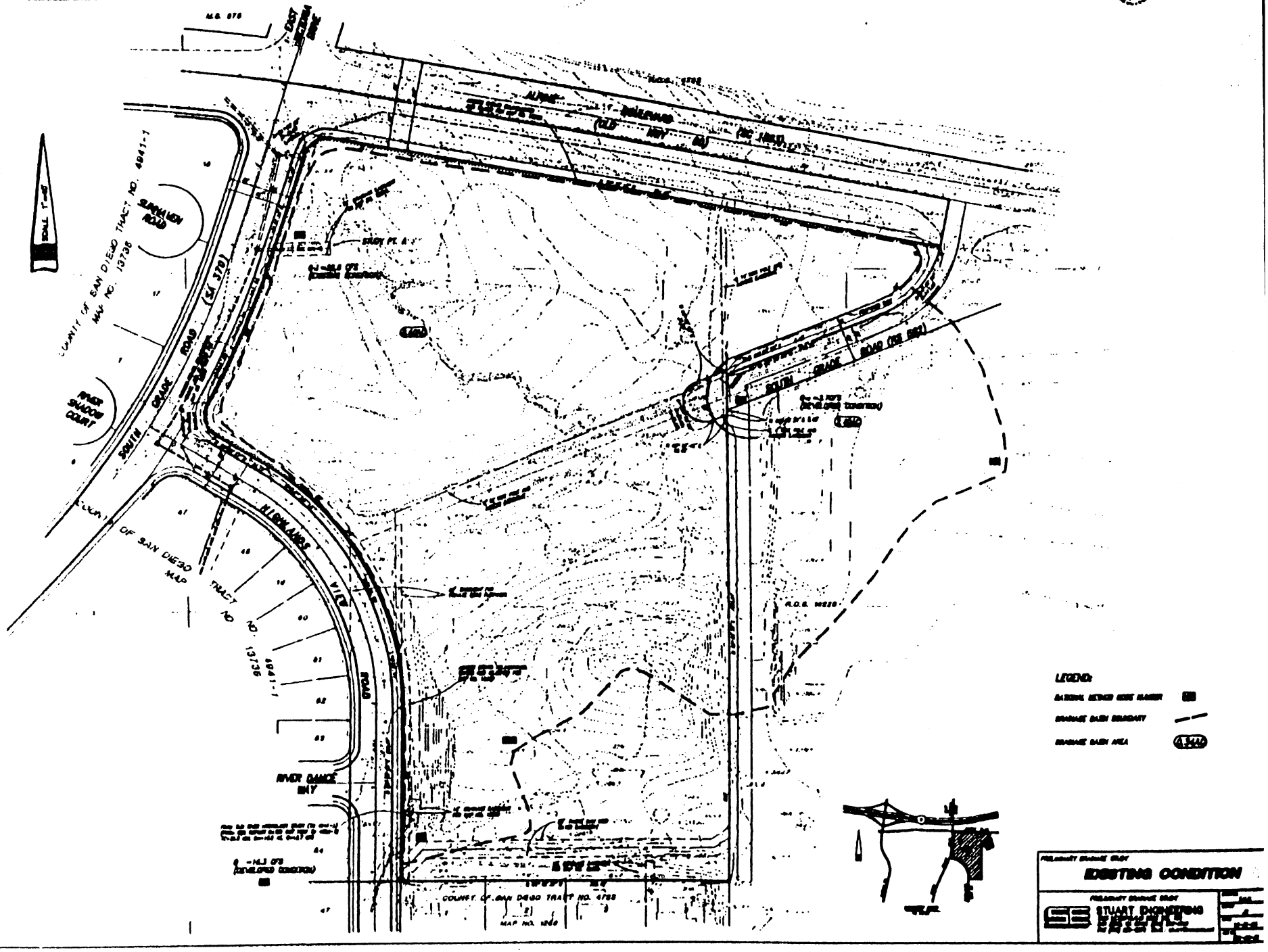
```
****************************************************************************
 FLOW PROCESS FROM NODE   400.00 TO NODE   400.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  21.36
 RAINFALL INTENSITY(INCH/HR) =   2.27
 TOTAL STREAM AREA(ACRES) =   11.18
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.71

 ** CONFLUENCE DATA **
 STREAM      RUNOFF      Tc       INTENSITY      AREA
 NUMBER       (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        10.30     8.38       4.154         4.35
    2        19.33     7.95       4.298         5.20
    3        18.71    21.36       2.272        11.18

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM      RUNOFF      Tc       INTENSITY
 NUMBER       (CFS)    (MIN.)   (INCH/HOUR)
    1        39.17     7.95       4.298
    2        39.21     8.38       4.154
    3        34.56    21.36       2.272

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     39.21   Tc(MIN.) =    8.38
 TOTAL AREA(ACRES) =     20.73
============================================================================
 END OF STUDY SUMMARY:
 PEAK FLOW RATE(CFS) =     39.21   Tc(MIN.) =    8.38
 TOTAL AREA(ACRES) =     20.73
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

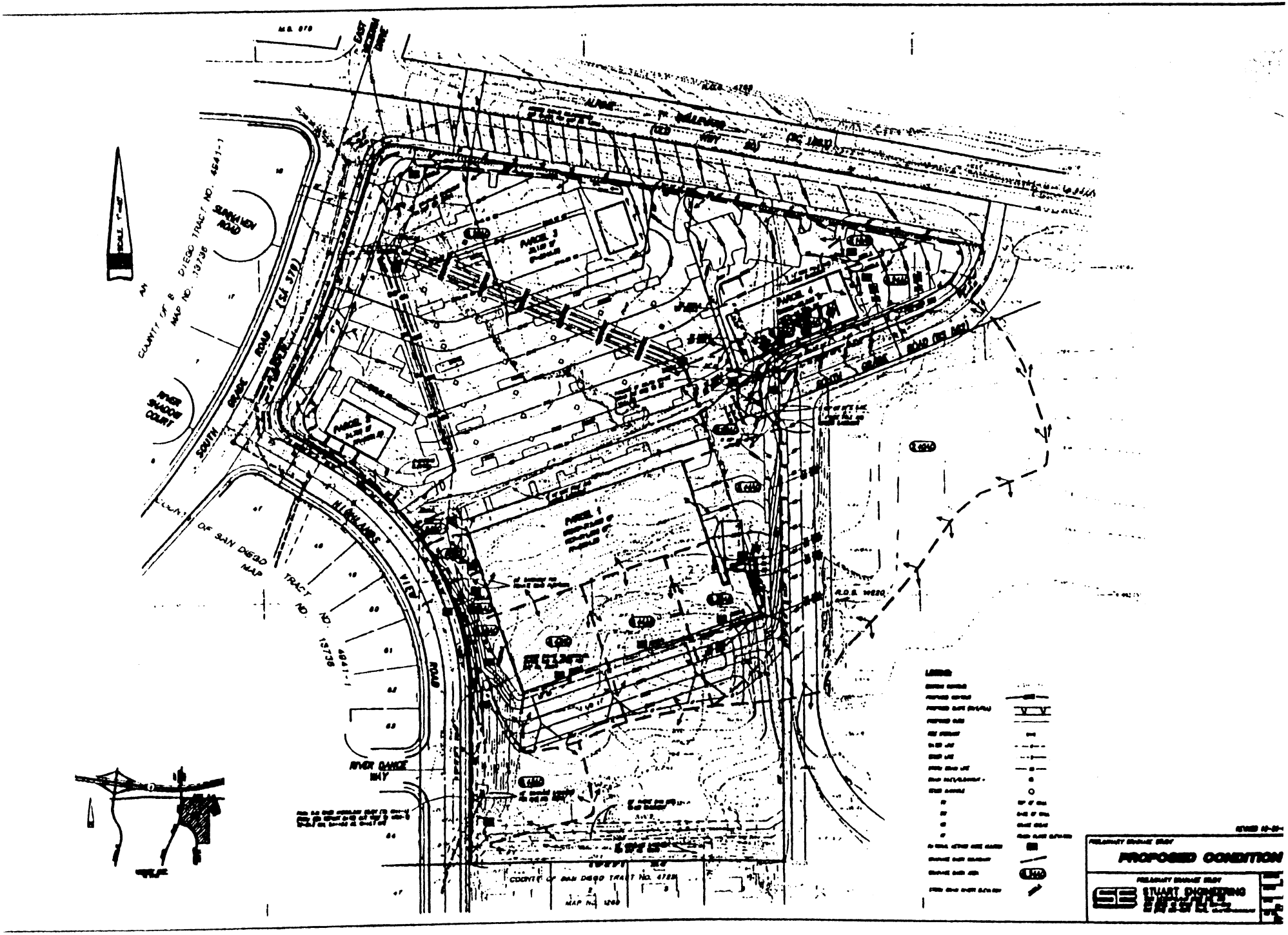


PRELIMINARY DRAINAGE STUDY

EXISTING CONDITION

PRELIMINARY DRAINAGE STUDY

STUART PIONEERING



SOUTH GRADE ROAD (SA 379)
SUNHAVEN ROAD
RIVER SHADOW COURT
COUNTY OF SAN DIEGO TRACT NO. 4941-1
MAP NO. 13736
HIGHLANDS VIEW ROAD
RIVER DANCE WAY
PARCEL 1
PARCEL 2
PARCEL 3
PARCEL 4
LEGEND
PROPOSED CONDITION
STUART ENGINEERING

Civil Engineering/Surveying/Planning
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PEACE ENGINEERING, INC.,
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January 11, 2002 961-99-01

Mr. Larry Tucker
Grant Tucker Properties
PO Box 7974
Newport Beach, CA 92658

SUBJECT: ALPINE VILLAGE CENTER POST CONSTRUCTION STORM WATER MANAGEMENT PROGRAM

Dear Larry,

Attached is the Post Construction Storm Water Management Program developed for Alpine Village Center. The program addresses the applicable provisions of Section G of the draft Stormwater Standard Manual. Stuart Engineering has provided the professional analysis of the runoff characteristics and measures taken to address their impacts. Many of the design features referred to in the program are shown on the plans of Courtney Architects and Studio Five Landscape Architects (as modified by the Alpine Design Review Board). The operational information was provided by Albertson's, Inc., and Grant Tucker Properties, the applicant and the project developer respectively. We are confident, based on this input, that the solutions proposed are both feasible and effective.

Sincerely,

STUART ENGINEERING

Thomas M. Henry

Thomas M. Henry, Vice President
RCE 24760

REGISTERED PROFESSIONAL ENGINEER
THOMAS M. HENRY
No. 24760
Exp. 12-31-05
CIVIL
STATE OF CALIFORNIA

TMH/mph

Enclosure
F:\ADMIN\961\CL3918.DCC

Alpine Village Center
Post Construction Storm Water Management Program

This Post Construction Storm Water Management Program (the "Program") is prepared to implement, to the maximum extent practicable ("MEP"), the applicable provisions of Section G of the Stormwater Standard Manual (the "Guidelines") promulgated pursuant to the County of San Diego Watershed Protection, Storm Water Management and Discharge Control Ordinance for Alpine Village Center.

1. The Project:

Alpine Village Center is a proposed 72,275 square foot retail commercial project to be located on 9.65 net acres of real property at the southeast corner of Alpine Blvd and South Grade Road in the community of Alpine, California (the "Project"). As such, the Project will constitute a Priority Development Project under the Guidelines. The Project will include a 57,961 square foot Albertson's/Sav-on supermarket drug store combination store, a 9,000 square foot multi-tenant shop building, a 3,285 square foot fast food pad, with a drive through lane and an eight (8) pump gasoline service station with a 2,029 square foot mini mart. The site will have a parking lot with 325 parking spaces, a depressed loading dock/trash area for the Albertson's and approximately three (3) paved trash enclosures for the other users. The site will have approximately (i) 2.2 acres of landscaping (ii) 1.2 acres of area which will not be disturbed during or after construction of the Project, and (iii) 6.25 acres of buildings, parking areas, sidewalks or other impervious surfaces. The Project is located at or near the top of the watershed into which most of the Project drains. About an acre of the Project (the natural areas) drains into the adjoining watershed. The site slopes from south to northwest. Post development drainage will be generally maintained in the present pattern. Presently existing in the northwest portion of the site is an inlet to a 36" storm drain which was constructed by Reynolds Communities in connection with the development of the adjoining residential Sun River project per Map No. 13736. Storm water from the Project which accumulates into runoff will drain directly to the 36" storm drain inlet except storm water which falls on perimeter slopes.

2. Watershed; Receiving Water:

The portion of the Project to be graded and developed is at the upper end of the Alpine Creek watershed as shown in the San Diego County Flood Control District Recommended Flood Control and Drainage Plan dated December 1990, (Zone No. 2, Alpine Creek) (the "Master Plan"). Alpine Creek outlets into the southerly end of San Vicente Reservoir approximately five (5) miles west of the Project. The 100-year storm anticipated flow where Alpine Creek crosses under Interstate Highway 8 (approximately 3.8 miles west of the Project) is shown as 6,282 cubic feet per second (cfs) in the Master Plan.

The Project discharges runoff at one point (the 36" inlet referred to in Paragraph 1 above) into a tributary of Alpine Creek. This tributary flows in and out of five (5) separate pipe systems for approximately 3,500 feet until it joins with another tributary north of Alpine Boulevard and east of Marshall Road. These tributaries create a major tributary of Alpine Creek which flows south in a box culvert under Alpine Boulevard (approximately .7 miles west of the Project). The 100 year storm flow at this location is 1,248 cfs per the Master Plan. This major tributary flows another approximately two (2) miles before combining with another major tributary of Alpine

Creek from the north.

Each of these major tributaries is considered Alpine Creek, which is the receiving water for the Project. Alpine Creek is identified as hydrologic unit basin number 907.32 in the most recent version of the Water Quality Control Plan for the San Diego Basin, prepared by the San Diego Regional Water Quality Control Board. Alpine Creek is not listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act.

3. Pollutants of Concern:

Attachment G-1 of the Guidelines provides that the following are potential pollutants which could be generated by the Project ("Pollutants of Concern"): sediments, nutrients, organic compounds, trash and debris, oxygen demanding substances, oil and grease, bacteria and viruses, and pesticides. The analysis below considers the likelihood of these Pollutants of Concern being generated by the Project, and the manner in which Best Management Practices ("BMPs") of the Project will be used to reduce runoff of storm water with Pollutants of Concern to the MEP.

a. Sediments. All slope areas created by the Project, including those susceptible to soils erosion, will be covered with a naturalizing drought tolerant wildflower hydroseed mix. Sediment from slope erosion should thus be minimal. Other landscaped areas will have irrigated ground cover. As described in paragraph 7(a) below, sediment generating materials which do find their way to the parking lot will be swept six (6) days per week.

b. Nutrients. Mainly fertilizers, which will be used sparingly, only enough to allow landscaping to take hold and remain healthy in order to perform its desired function (primarily for erosion control and secondly for aesthetics).

c. Metals. Metals would be negligible. The Project will avoid fuels, adhesives, paints and other coatings with metal components, to the MEP.

d. Organic Compounds. Organic compounds would be negligible. The Project will avoid using solvents, hydrocarbons and other organic compounds to the MEP.

e. Trash and Debris. As noted in paragraph 7c, trash and debris will be removed from the Project almost daily.

f. Oxygen Demanding Substances. Insignificant amounts are expected to be generated by the Project.

g. Oil and Grease. As noted in paragraph 5a, oil and grease in the parking areas which is picked up by flowing water will be absorbed by filters or collected by the oil and grease separator. As noted in paragraphs 7a and 7b, the pavement will be swept six (6) days a week, and cleaned semi annually.

h. Bacteria and Viruses. Insignificant amounts are expected to be generated by the Project. Garbage will be removed periodically as described in Paragraph 7(c) below and will be in water tight containers. Animal and human waste are not expected in the Project.

i. Pesticides. These will be used very sparingly, if at all. Plant materials susceptible to disease and pests will be avoided.

4. Site Perviousness:

The Project site was designed to minimize impervious surfaces to the MEP. The Alpine Highlands Specific Plan requires 25% of the site, or 2.41 acres, to be either left in its natural condition or landscaped ("Open Areas"). The site has been designed to have 3.4 acres in Open Areas, or 35% of the Project site, in order to concentrate development and reduce building density as encouraged by Sections 3.5.1(i) and 3.7.1(a) of the Guidelines. This results in 40% more Open Areas being included in the Project than that which is required by the Alpine Highlands Specific Plan. Of the 3.4 acres of Open Areas, approximately 1.2 acres of this area (almost 12.5% of the site) is left in a natural undisturbed condition as encouraged by Sections 3.7.1(a) and (b) of the Guidelines.

The size of the parking lot could not be reduced by providing compact car spaces as suggested by Section 3.5.1(d) of the Guidelines, since the County does not recognize compact car spaces in its required parking count. However, in order to maximize Open Areas and minimize the size of the parking lot, no extra parking spaces were provided in the Project beyond those required by County Ordinances governing parking. At 4.5 spaces for every 1000 square feet of building area, the site is required to have 325 spaces, which is the amount which is provided.

5. Site Design BMPs:

The Project will have 6.25 acres of area which is other than Open Areas. The roof areas will be approximately 1.66 acres. The remaining 4.59 acres of the site will be primarily parking lots and sidewalks. The following design features will be incorporated in the Project:

a. Storm water from the parking lot (which is not diverted as described in Paragraph 5(b) or 5(c) below) will either drain to a catch basin or an inlet. All catch basins and inlets will be designed to treat runoff by filtration from a 24-hour 85th percentile storm event. All catch basins and inlets on the site will have filter inserts to absorb site pollutants and capture minor sized debris. A centrifugal separator will be used to collect loose trash, if deemed necessary. The separator will also include absorbent materials.

b. The main parking field in front of the supermarket will be designed with 4-foot wide pervious strips running down the middle of each parking row, to the extent such design may be accomplished without undue risk of such strips leading to future breakdowns of the parking lot due to heavy traffic or water infiltration (i.e. to the MEP). The area covered by the pervious strips is approximately 4,000 square feet in area. The 4-foot strips would incorporate permeable materials for the parking lot as contemplated by Section 3.5.1(b) of the Guidelines. The run off in the main parking lot will be directed to flow over the pervious strips, with a portion percolating through the soil to a French drain system, which then will exit to the storm drain system. These trenches will treat surface flow, and will reduce the surface flow which ultimately continues to the filters in the catch basins and inlets of the Project.

c. Storm water which does not collect in the pervious strips will be directed towards the larger planters in the supermarket parking field. Those planters in this parking field will be designed with a 6" curb with slots on the upstream and downstream sides. The dirt in these planters will be approximately 2" below the bottom of the curb. The 6" downstream curbs will have slots which will allow flows which rise

to the bottom of the curb and which do not drain over the top of the curb, to drain slowly out of the slots. This will result in water ponding in vegetative areas as contemplated by the Guidelines, rather than being directed immediately toward the storm drain system by curbing.

d. A trench drain will be used to intercept water before it enters the Albertsons depressed truck dock and trash compactor area. Rainfall landing in the dock/trash compactor area, and incidental runoff which accumulates in the dock/trash compactor area will go through an oil and grease separator before it enters the storm drain system. No water from this area will be discharged directly into the storm drain, without going through a filter.

e. The other trash enclosure areas in the Project will be paved with impervious surfaces, designed not to allow run-on from adjoining areas and will be walled to prevent off site transport of trash. Water in the enclosures will enter a drain in the Project with a filter inlet before entering the storm drain system. No water from these areas will be discharged directly into the storm drain, without going through a filter.

f. Most of the storm water in the Project will be treated by filters. The size of an inlet will be calculated to accommodate the appropriate size of the filter. Filters are designed to treat a certain amount of water (approximately .4 cfs per lineal foot of filter), and storm flows beyond that design capacity will accordingly result in some water not being treated. Reducing storm flows to a filter will increase the percentage of water that is treated by a filter. The initial runoff from a storm is the most polluted runoff and will be the runoff which is treated to the greatest extent by the filters, because runoff starts at lower volumes and then increases as a storm persists.

In order to increase the amount of storm flow in parking areas which is treated, the pollutants in storm water gathering on, and exiting from, roofs of buildings (including the service station canopy as described in Paragraph 6 below) will be treated with filters. The pollutants on roofs should be minimal, as they will consist primarily of wind or rain borne pollutants. As the water from the roofs exits the filtration system from the building, it will be routed directly to the underground storm drain system, thereby reducing the volume of run off in the parking and landscaped areas. This will result in the run off in parking and landscaped areas of the site being smaller in volume, thereby increasing the percentage of flow from storm events which is able to be treated by filters.

It should be noted that Section 3.5.1(a) of the Guidelines suggests that rooftop runoff be directed to pervious areas, but presumably this requirement exists to treat this runoff after it leaves the buildings runoff system, and before it enters a storm drain. The Project approach described above accomplishes the same purpose by treating the water before it enters the storm drain system, and assures that remaining water on the ground is treated to a higher extent than if roof water were also treated by parking lot filtration methods. The potential for sediment creation in landscaped areas will also be thereby reduced by having less peak flows directed to landscaped areas. This approach is possible since erosion is not a condition of concern based upon the analysis set forth in Paragraph 10 below.

6. Service Station:

The service station will have a canopy structure. The area under the canopy will be used to dispense fuel. This area is known as the pump island area. The canopy's minimum dimensions will be equal to or greater than the area within the pump island area. The canopy will not drain onto the pump island area and the downspouts from the canopy will be routed to the storm drain system, after filtration. This will prevent drainage across the pump island area. Any runoff generated from the pump island area will be collected in a trench drain which will direct the flow to an oil and grease separation treatment facility before it enters the storm drain. The pump island area will be paved with Portland cement concrete (or equivalent smooth impervious surface). Asphalt will not be used in the pump island area.

The paving in the pump island area will have a 1% to 2% slope to prevent ponding, and will be separated from the rest of the site by a grade break that prevents run-on of runoff from the remainder of the Project. At a minimum, the pump island area will extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

7. Source Control (Operational) Post Construction BMPs:

The following operational characteristics will be required under the Project's recorded Declaration of Restrictions and Common Area Maintenance Agreement (the "Declaration") to assure Pollutants of Concern are minimized or filtered or removed to the MEP:

a. The parking lot will be swept six (6) days a week. Trash on the ground whether inside or outside of the trash enclosures will be picked up six (6) days a week as part of the sweeper's scope of work. The lease of the restaurant pad will require the operator to pick up any of its packaging materials from the common area of the Project on a daily basis.

b. The parking lot of the Project will be cleaned on a semi-annual basis. The cleaning of the parking lot will be performed in such a fashion that any water used in connection with the cleaning process will be collected and appropriately processed for disposition to the MEP.

c. The trash bins will have a lid to prevent trash from blowing from the walled trash enclosures. Trash cans outside of businesses will be emptied periodically before overflowing. Trash in bins will be collected at least five days a week for all uses in the shopping center, except the 9,000 square feet of shops will have trash pick up service at least 4 days a week, and the supermarket trash will be picked up when the compactor becomes nearly full.

d. The shopping center will prohibit heavier industrial like uses and no spills of pollutants are anticipated in the loading dock areas.

e. Irrigation requirements will be professionally analyzed to reduce irrigation and eliminate runoff to the MEP.

f. Fertilizers will be applied under a professionally determined schedule to avoid over application. Pesticides will be used sparingly, if at all.

g. Rain shut off devices will be employed to prevent unnecessary irrigation after precipitation.

h. Flow reducers or shut off valves triggered by a pressure drop will be used to control water loss in the event of broken sprinkler heads or lines, to the MEP.

i. Prohibitive language will be stenciled on all storm drain inlet structures and signs will be posted in the Project common area prohibiting illegal dumping.

8. Landscaping Design:

Plant materials shown in the Plant Palette for the Project were selected for temperature hardiness and low water use requirements. Turf or lawn areas will be held to a minimum. A layer of mulch (except in the planters described in paragraph 5c above) will be installed to reduce water evaporation between irrigation periods, lessening the amount of irrigation water, sediment and soil nutrients which could run off the site. The landscaping for the Project dictated by the Alpine Design Review Board ("ADRB"), in accordance with its guidelines, includes a condition that an additional 100 trees be planted along the perimeter of the site and that the Project utilize manzanitas and other natives as significant plants in the Plant Palette, which requirements for additional trees and native materials are consistent with the suggestions of Section 3.7.1(c) of the Guidelines. All disturbed slopes will be vegetated with drought tolerant native vegetation to assure stability and reduce erosion, per Section 3.4.3(f) of the Guidelines and ADRB conditions.

9. Maintenance of BMP Operational Facilities:

The Declaration will include an operation and maintenance plan ("O & M"), which will among other things designate a responsible party to maintain the BMP's, establish a maintenance schedule, and specify maintenance activities. The O & M will require the periodic maintenance/replacement of all filters and other BMP's located in the Project at least annually, and the maintenance of all landscaping, irrigation facilities and equipment and ground cover in good condition and repair. The portions of the Declaration which sets forth the requirements which address water quality issues will be subject to the written approval of the County, will run with the ownership of the Project, and will remain in effect until the Project is redeveloped. The County will be named a third party beneficiary to the Declaration with the right to enforce the water quality related provisions of the Declaration. The water quality provisions of the Declaration could not be amended without the prior written consent of the County.

10. Erosion:

The primary potential condition of concern from the hydrologic regime resulting from development of the Project is downstream erosion.

As stated in the drainage report for the Project, 8.5 cubic feet per second (cfs) of additional flow during a 100-year event will be produced as a result of the development of the Project.

All the site water (except in the adjoining watershed and which falls on perimeter slopes), along with a modest amount of upstream runoff, will flow to an existing 36" public storm drain located in Alpine Boulevard. The outlet is at the westerly boundary of the Sun River residential development which constructed the storm drain system. The flow exiting this 36" pipe will be approximately 97 cfs during a 100-year event. A field reconnaissance revealed that this flow is discharged into a riprap energy dissipater, after which it flows in a natural channel which is about 255 feet long, until the flow again enters another storm drain system. No erosion undercutting was observed in the portion of the natural channel which would be affected by the addition of flow from the Project. Low flow erosion was noted, but any increases in low flow runoff from the Project would be insignificant.

This short natural channel is heavily vegetated and has an average slope of 5.56 percent. No vegetative stress was noted in the channel. The average velocity of 97 cfs through this channel is 6.16 feet per second (f/s). In the predeveloped condition with 88.4 cfs, the average velocity is 6.06 f/s.

Depending on the vegetation of a natural channel, an overall peak flow velocity of 6.16 f/s could potentially be erosive. In this case, however, the well established native vegetation of the channel in question appears to have adequately protected the banks from peak flow erosion in the past. Since there is only 0.10 f/s increase in the velocity of the 100-year event due to the added flow of the Project (+/- 1.6%), no affect on downstream peak flow erosion should result from the insignificant increase in volume and velocity of flow from the Project.

Further, the runoff, after flowing through this short natural channel, is contained in an underground system for approximately one-quarter mile before it again flows on the surface. At that point, the change in velocity due to the Project will be undetectable, and as such will have no erosive effect. The runoff flows a few hundred feet on the surface in natural areas, and then again flows into another underground pipe system. As noted in Paragraph 2 above, the flow from the Project travels in and out of five (5) separate pipe systems for about 3500 feet until it reaches Alpine Blvd.

The post development peak storm water runoff discharge rates and velocities will not increase predevelopment downstream erosion, and will have no affect on any stream habitat which may exist further downstream, based upon the modest increase in volume and velocity of peak flow from the Project, the site location at the upper end of the larger watershed, and the natural vegetative and infrastructure drainage features already in place which can accommodate storm water flows from the Project. Accordingly, the environmental performance standards required by Section 2 of the Guidelines will be achieved by the Project design and operational BMP's, without the need for any additional BMP's under section 3.9 of the Guidelines.

11. Conclusion:

Based upon (i) the reduction of building density below that which could be developed on the site (ii), the minimization of impervious surfaces at the Project, (iii) the design BMP's to be incorporated in the Project, (iv) the source control BMP's to be used at or implemented by the Project and (v) the insignificant affects of downstream erosion which would result from the Project, it is our opinion that increases of post development runoff from the Project and discharges of Pollutants of Concern from the Project, have been reduced to the MEP.

SUMMARY OF EXISTING CONDITIONS AND RECOMMENDED IMPROVEMENTS

Sub-basin No.	Facility No	Plate No.	Location	Drainage Area (SQ. MI.)	Reach Length (FT)	Existing Conditions	Existing Cost (X 1000)	Capacity (CFS) Exist	Required 1990 50 YR	Required 1990 100 YR	Associated Problems	Recommended Improvements	Installation Cost (X 1000)	Pri
3	43	2&3	E. of Marshall Rd. s. of Alpine Blvd.	1.6	600	Natural Channel				1698	Innundation of channel & adj. property	Flood plain management	2.2	
3	44	2&3	Alpine Blvd. E. of Marshall Rd.	1.2	50	5' x 6' RCB		340		1248	Overflows road	Replace with 2-10'x6' RCB	76.2	
3	45	2&3	N. of Alpine Blvd. e. of Marshall Rd.	0.8	1000	Natural Channel			670		Req'd for future development	Trap. channel, rock lined 8'x5'	163.6	
3	46	2&3	Vista Alpine Rd. n. of Alpine Blvd.	0.2	100	2-42" CMP	29.0	200	153		Adequate	None		
3	47	2&3	I-8 at Alpine Mobile Home Park	0.2	300	84" CMP with energy dissipator	97.2	650	153		Adequate	None		
3	47a	2&3	Victoria Meadows W. of Shooting Star Pl.		104	48" CMP	20.7							
3	48	2&3	Vista Alpine Rd. n. of Alpine Blvd.	0.6	90	Triple 48" CMP	43.0	960	517		Adequate	None		

SUMMARY OF EXISTING CONDITIONS AND RECOMMENDED IMPROVEMENTS

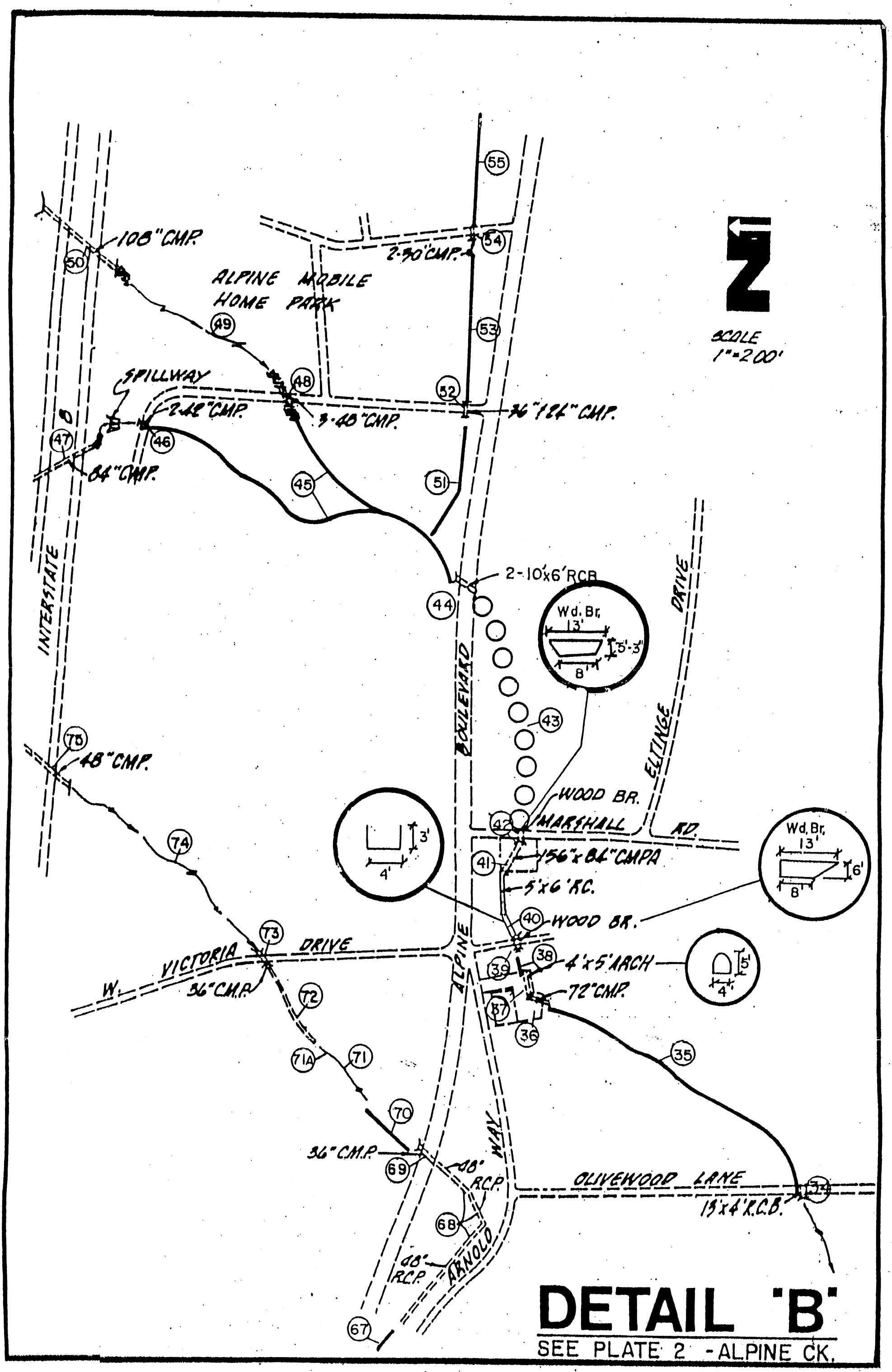
Sub-basin No.	Facility No.	Plate No.	Location	Drainage Area (SQ. MI.)	Reach Length (FT)	Existing Conditions	Existing Cost (X 1000)	Capacity (CFS) Exist	Required 1990 50 YR	Required 1990 100 YR	Associated Problems	Recommended Improvements	Installation Cost (X 1000)	Priority
3	49	2&3	Vista Alpine Rd. n. of Alpine Blvd.	0.6	600	Portions natural channel & rock lined channel			517		Adequate	None		
3	50	2&3	I-8 at Alpine Mobile Home Park	0.6	300	108" CMP with energy dissipator	127.5	1250	517		Adequate	None		
3	50a	2&3	Victoria Meadows W. of Shooting Star Pl.		170	48" CMP	33.8							
3	50b	2&3	Victoria Circle W. of Shooting Star Pl.		173	42" CMP	31.3							
3	51	2&3	N. of Alpine Blvd. w. of Alpine Vista Rd.	0.2	500	Natural Channel			218		Req'd for future	54" RCP	80.7	3
3	52	2&3	Alpine Vista Rd. n. of Alpine Blvd.	0.2	60	36" CMP & 24" CMP	13.0	90	218		Inadequate capacity	54" RCP	12.3	3

SUMMARY OF EXISTING CONDITIONS AND RECOMMENDED IMPROVEMENTS

Basin No.	Facility No.	Plate No.	Location	Drainage Area (SQ. MI.)	Reach Length (FT)	Existing Conditions	Existing Cost (X 1000)	Capacity (CFS) Exist	Required 1990 50 YR	Required 1990 100 YR	Associated Problems	Recommended Improvements	Installation Cost (X 1000)	Priority
3	53	2&3	E. of Alpine Vista Rd. n. of Alpine Blvd.	0.2	450	Natural Channel			218		Req'd for future development	54" RCP	71.7	3
3	54	2&3	E. of Alpine Vista Rd. n. of Alpine Blvd.	0.2	48	2-30" CMP	10.6	80	218		Inadequate capacity	54" RCP	9.0	3
3	55	2	E. of Alpine Vista Rd. n. of Alpine Blvd.	0.2	2000	Natural Channel			165		Req'd for future development	42" RCP	246.5	3
3	55a	2	Alpine Blvd at Terrace Knoll		871	30" CIPP								
3	55b	2	Alpine Blvd at Rock Terrace		193	30" CMP								
3	55c	2	Alpine Blvd at Rock Terrace		100	42" RCP	24.1							
3	55d	2	Alpine Blvd at Rock Terrace		276	2-42" CIPP	106.5							

SUMMARY OF EXISTING CONDITIONS AND RECOMMENDED IMPROVEMENTS

Sub basin No.	Facility No.	Plate No.	Location	Drainage Area (SQ. MI.)	Reach Length (FT)	Existing Conditions	Existing Cost (X 1000)	Capacity (CFS) Exist	Required 1990 50 YR	Required 1990 100 YR	Associated Problems	Recommended Improvements	Installation Cost (X 1000)	Priority
3	55c	2	Alpine Blvd at Rock Terrace		243	36" CMP	51.0							
3	56	2	I-8 w. of Tavern Rd.	0.3	500	48" CMP	99.5	140	313		Minor ponding	None		
3	57	2	N. of I-8 sw. of Tavern Rd.	0.1	900	Natural Channel			90		Adequate	None		
3	58	2	Tavern Rd. n. of I-8	0.1	40	48" CMP	8.0	140	89		Adequate	None		
3	59	2	N of I-8 sw. of Tavern Rd.	0.1	900	Natural Channel			90		Adequate	None		
3	60	2	Tavern Rd. n of I-8	0.1	40	42" CMP	7.2	100	98		Adequate	None		
3	61	2	Alpine Blvd. w. of Tavern Rd.	0.6	60	8' x 8' RCB	66.5	921	586		Adequate	None		
3	62	2	N. of Alpine Blvd. w. of Tavern Rd.	0.6	700	Natural Channel			586		Adequate	None		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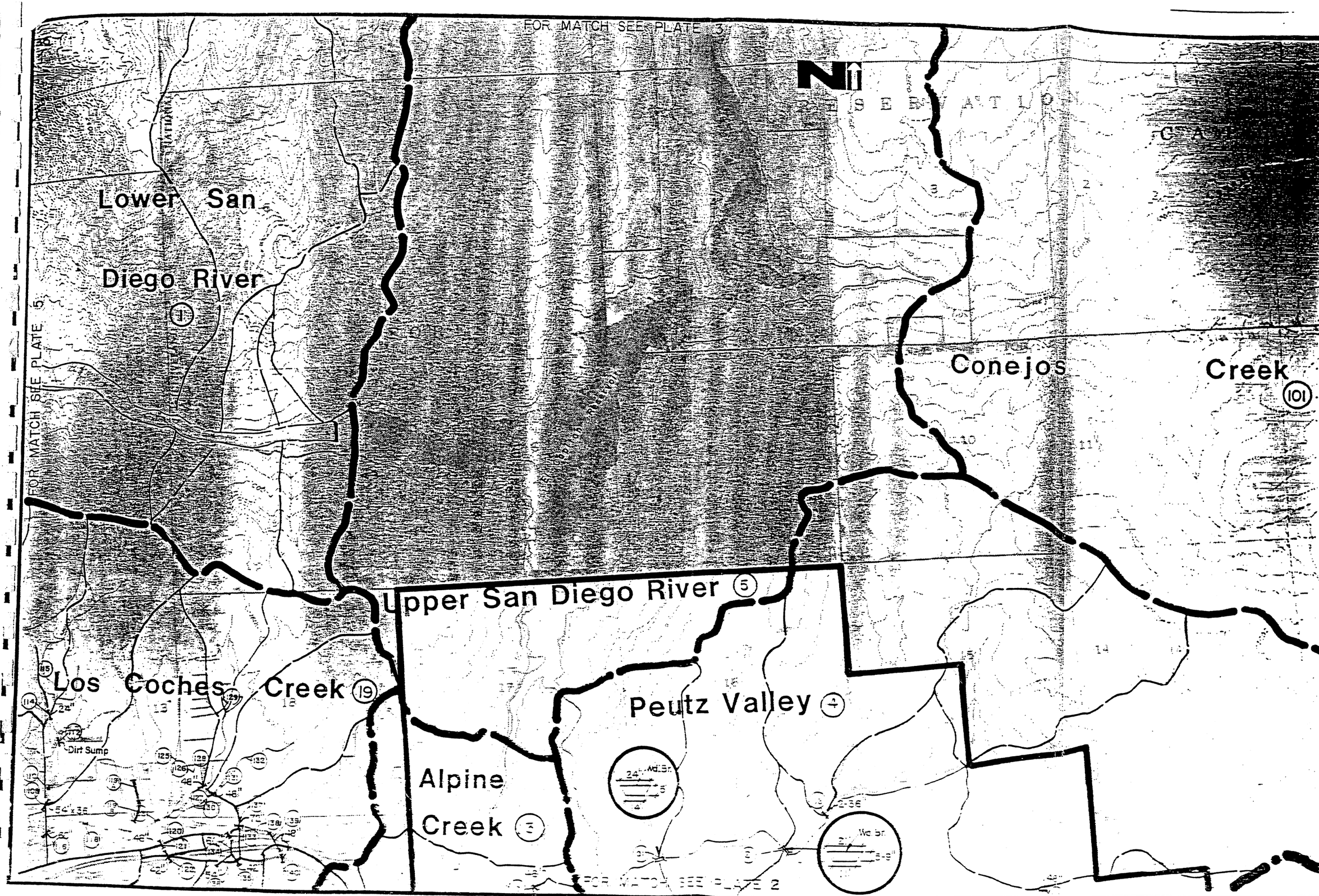
1"=200'
108" CMP.
ALPINE MOBILE
HOME PARK
2-90" CMP.
SPILLWAY
2-48" CMP.
3-48" CMP.
36" 124" CMP.
84" CMP.
INTERSTATE
2-10'x6' RCB
Wd. Br.
13'
5'-3'
8'
BOULEVARD
DRIVE
ELTINGE
48" CMP.
WOOD BR.
MARSHALL
RD.
3'
4'
56" x 84" CMPA
5'x6' RC.
Wd. Br.
13'
6'
8'
WOOD BR.
VICTORIA
DRIVE
W.
36" C.M.P.
ALPINE
4'x5' ARCH
5'
4'
72" CMP.
36" C.M.P.
48" R.C.P.
OLIVEWOOD LANE
15'x4' R.C.B.
48" R.C.P.
ARNOLD
DETAIL "B"
SEE PLATE 2 - ALPINE CK.



SCALE: 1"=2000

DATE: DEC.,1990

BSI Consultants, Inc.
18680 W Bernardo Dr.
San Diego, CA 92127
(619) 451-8100

RECOMMENDED FLOOD CONTROL & DRAINAGE PLAN

ALPINE – SDA 7

SAN DIEGO COUNTY FLOOD CONTROL DISTRICT

PLATE

1

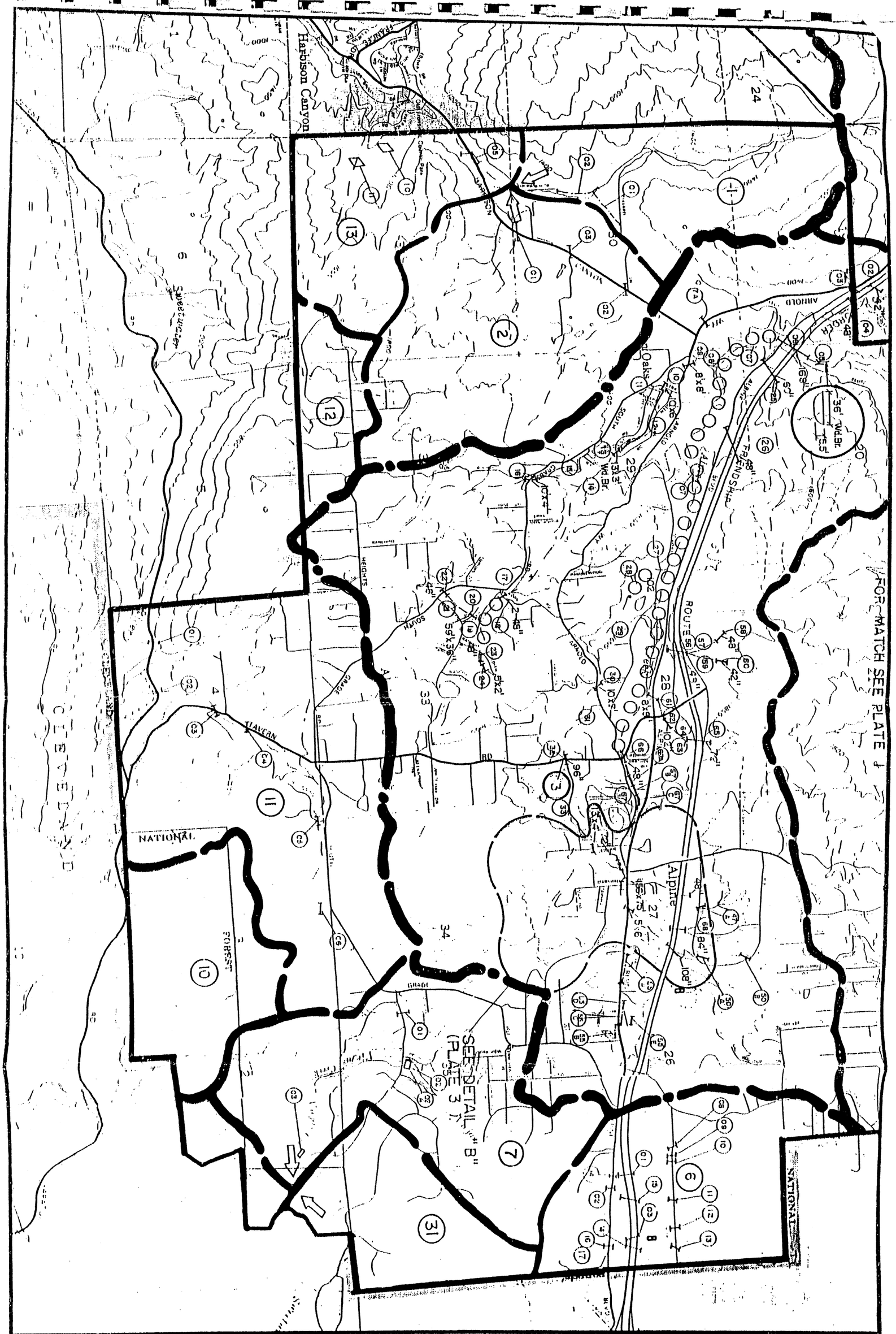
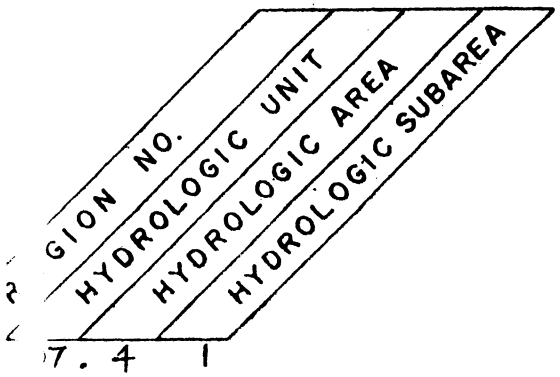


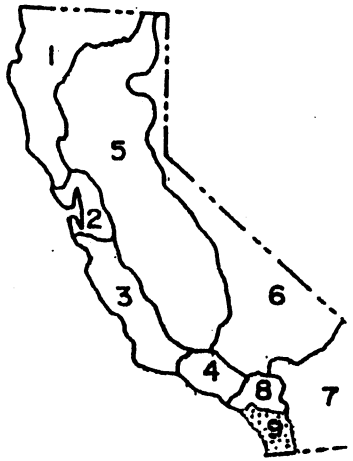
PLATE 2	RECOMMENDED FLOOD CONTROL & DRAINAGE PLAN ALPINE - SDA 7 SAN DIEGO COUNTY FLOOD CONTROL DISTRICT	BSI Consultants, Inc. 16880 W Bernardo Dr. San Diego, CA 92127 (619) 451-6100	SCALE: 1"=2000 DATE: DEC.,1990



April 1973
Revised: July 1976
Revised: August 1986
State Water Resources Control Board
Surveillance and Monitoring Section
T.E. Lavenda, P.E.

Revised: April 1995
Regional Water Quality Control Board - San Diego Region
Water Quality Standards Unit
D.F. Hojrup Jr.

KEY TO REGION



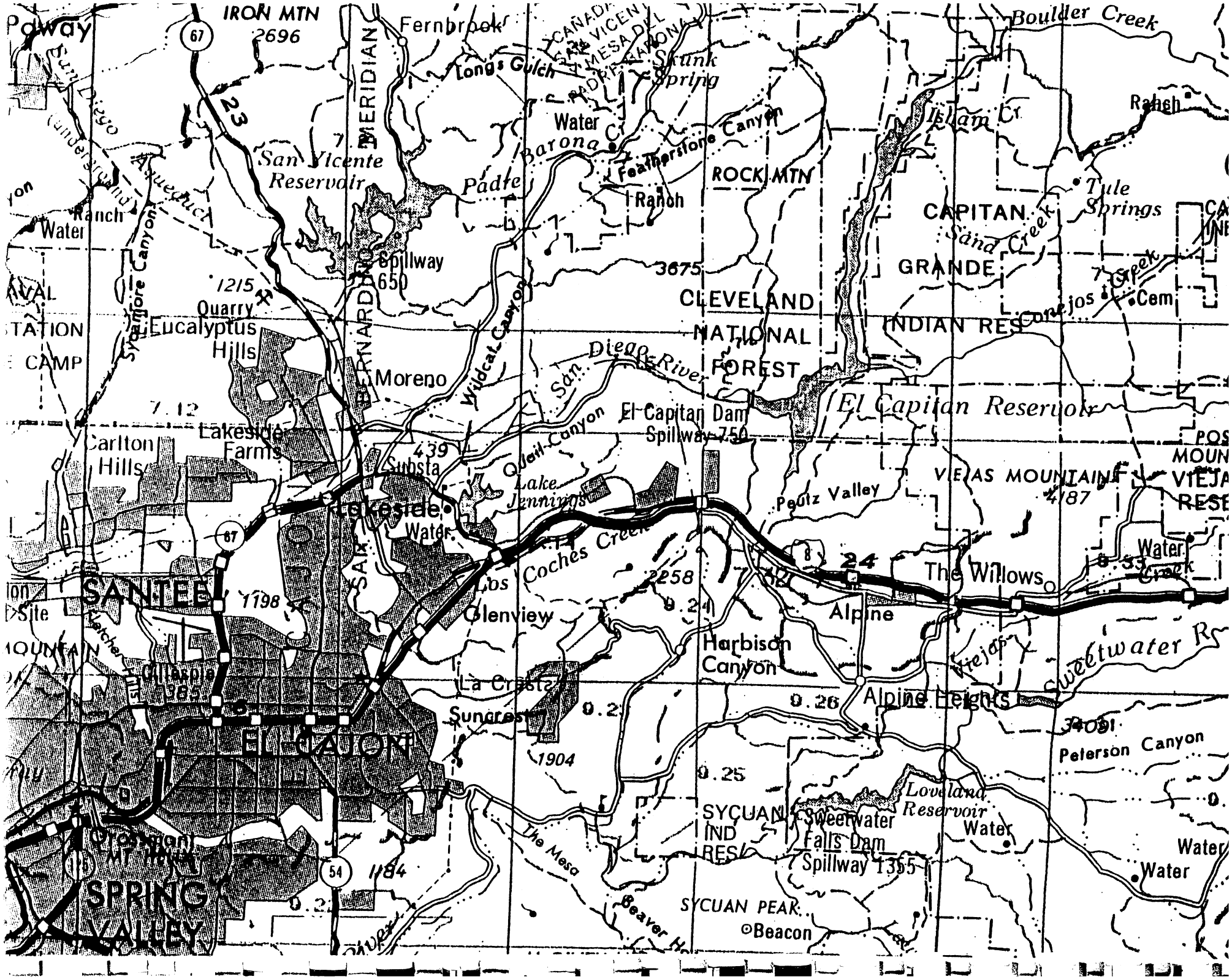
State of California

REGIONAL WATER QUALITY CONTROL BOARD

San Diego Region (9)

SAN DIEGO HYDROLOGIC BASIN PLANNING AREA (

Scale 1:250,000



Poway
IRON MTN
2696
67
Fernbrook
Boulder Creek
Longs Gulch
Skunk Spring
Water
Barona Cr
Featherstone Canyon
Isham Cr
Ranch
San Vicente Reservoir
Padre
ROCK MTN
Ranch
Tule Springs
CAPITAN GRANDE INDIAN RES
Sand Creek
Conejos Creek
Cem
Ranch
Water
Spillway 650
3675
1215
Quarry
Eucalyptus Hills
CLEVELAND NATIONAL FOREST
Wildcat Canyon
San Diego River
Moreno
El Capitan Reservoir
El Capitan Dam Spillway 750
7.12
Carlton Hills
Lakeside Farms
439
Substa
Quail Canyon
Lake Jennings
Peutz Valley
VIEJAS MOUNTAIN
4187
Lakeside
Water
Los Coches Creek
24
The Willows
Water
Creek
SANTEE
1198
Glenview
2258
9.24
Alpine
Harbison Canyon
Viejas
Sweetwater R
Gillespie
385
La Cresta
Suncrest
9.26
Alpine Heights
34091
Peterson Canyon
EL CAJON
1904
9.25
Loveland Reservoir
SYCUAN IND RES
Sweetwater Falls Dam Spillway 1355
Water
Water
Water
Grossmont
54
1184
The Mesa
SPRING VALLEY
SYCUAN PEAK
Beacon
Beaver H

Appendix F
Biological Resources Report

Pacific Southwest Biological Services, Inc.

Post Office Box 985, National City, California 91951-0985 • (619) 477-5333 • FAX (619) 477-5380

REPORT OF A BIOLOGICAL ASSESSMENT
OF THE ALPINE VILLAGE CENTER
ALPINE, SAN DIEGO COUNTY, CALIFORNIA

SITE PLAN NO. S 99-047
LOG NO. 99-14-036

UTM: 11-S: 522,900mE; 3,632,700mN

Prepared for

Grant-Tucker Properties
Mr. Steve Grant
1 Upper Newport Plaza
Newport Beach CA 92660
Telephone 949 252 7750
Facsimile 949 742 0885

Prepared by

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E-mail: bio@psbs.com

PSBS #T566B

Revised July 31, 2001

This Biological Assessment was prepared by Pacific Southwest Biological Services, Inc., and to the best of our knowledge, the information contained in this document is accurate and current.

Michael R. Evans

R. Mitchel Beauchamp, M. Sc., President
for *Pacific Southwest Biological Services, Inc.*
San Diego County Certified Biologist

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REPORT OF A BIOLOGICAL ASSESSMENT OF THE ALPINE VILLAGE CENTER

ALPINE, SAN DIEGO COUNTY, CALIFORNIA
S 99-047, LOG 99-14-036

July 31, 2001

SUMMARY

The biological survey of the 9.6-acre Alpine Village property revealed north-facing slopes dominated by Southern Mixed Chaparral vegetation. An area of disturbed Diegan Coastal Sage Scrub occurs along the northern boundary of the site. Coastal Sage - Chaparral Scrub occurs in the northern half of the site. The one sensitive plant species detected on the site was Engelmann Oak (*Quercus engelmannii*). No sensitive vertebrate species were observed or detected on the site; however, potential habitat for the San Diego Horned Lizard and Orangethroat Whiptail occurs on-site. The site is located within the Metro-Lakeside-Jamul Segment of the County Multiple Species Conservation Program (MSCP) Plan and must conform to that Plan's requirements.

INTRODUCTION

This update of three previous biological surveys of the Alpine Village site was performed by Pacific Southwest Biological Services, Inc., (Pacific Southwest) at the request of the developer, Grant-Tucker Properties. The purpose of the survey was to comply with County of San Diego processing of the proposed commercial development, consisting of a grocery store and pharmacy building, ancillary buildings, a graded pad, and paved parking facilities.

Existing residential housing is adjacent to the site to the south. To the west, new single-family residential housing is in the build-out stage. To the north are Alpine Boulevard, Interstate Highway 8 and additional residential uses. Residences and equine facilities occur directly to the east. To the southeast, grading is currently under way for additional housing, eliminating the remnant contiguous native habitat. Consequently, existing adjacent land uses do not allow connectivity to native habitat off-site.

METHODS

In conjunction with prior surveys of the site by Pacific Southwest, the original botanical survey of the property was conducted by botanist R. Mitchel Beauchamp in the spring of 1988. Botanist Kyle L. Ince performed an additional survey on the site 14 November 1990. Mr. Beauchamp conducted another survey on the property 14 March 1997 in conjunction with environmental survey work in the area, and again 6 June and 8 September 1999. The on-foot surveys covered all slope aspects, soil types, and drainages. Particular attention was given to the possible presence of gabbroic soil endemics. Vegetation and sensitive plant locations were delineated on a 1" = 40' topographic map.

Transect data collection of the disturbed vegetation communities in the north sector of the site was made by Mr. Beauchamp 22 October 1997 in company with field assistant Jose J. Barraza.

The zoological portion of the original survey was conducted by biologists Eric R. Lichtwardt and John E. Harris on 14 November 1990 from 0900 hours to 1030 hours. Skies were clear with a temperature of 75° F. at 1030 hours, winds were 3 to 5 miles per hour. Wildlife identifications were aided by binoculars (10x40 power). Species were identified through indirect signs (i.e., scat, tracks, calls, nests and burrows, etc.). A brief supplementary survey of the site was made by biologist Cornelius W. Bouscaren 12 March 1997. The survey was initiated at 1436 hours and was completed at 1555 hours; during that time, the temperature was 87□F, skies were clear, and winds were westerly at 5 mph. The entire site was covered on foot, observing the vegetation and watching and listening for wildlife. Binoculars (8.5x44 power) were used to assist in detection and identification. The purpose of the survey was to ascertain whether any significant changes had occurred to the vegetation on the site and to again check for sensitive biological resources.

In preparation of this report, prior biological surveys of the immediate area were examined to assess sensitive resources known from the vicinity of the site (Pacific Southwest 1988, 1989a, 1989b, 1990a, 1990b, 1997a). Observations from the prior surveys have been incorporated into the site's floral and faunal checklists. Pacific Southwest also conducted a search of the California Department of Fish and Game (CDFG) Natural Diversity Data Base (CNDDB) for the USGS 7.5' Alpine and Viejas Mountain, California Quadrangles, and reviewed the San Diego County Multiple Species Conservation Program (MSCP) Plan. This search revealed several federal or state listed species, or target species listed under the Conservation Plans, which may occur within the vicinity of the property.

LIMITATIONS AND DEFINITIONS

Complete biological inventories of sites often require a large number of field hours during different seasons, as well as nocturnal sampling for some animal groups such as small mammals. Depending on the season during which the field survey is conducted, amphibians, snakes, many mammals, owls and other nocturnal birds, and annual plants are groups that can be difficult to inventory. Many groups of vertebrates are difficult to detect during short-term field surveys. Some, such as migratory or nomadic birds, may be absent from the site while the fieldwork is being conducted. Other species occur in low densities and are easily missed. Species that are declining or have naturally patchy patterns of distribution may not be present in areas of what appears to be suitable habitat. However, through literature review, study of museum records, and knowledge of the habitat requirements and distribution patterns of individual species, the probability of a given species being present on a site can often be quite accurately predicted.

Scientific nomenclature used in this report is from the following references: vegetation, including classification, Holland (1986) as revised by Oberbauer (1996); flora, Beauchamp (1986) and Hickman (1993); birds, American Ornithologists' Union (1998); reptiles and amphibians, Collins (1990); and mammals, Jameson and Peeters (1988). General wildlife habitat

follows Mayer and Laudenslayer (1988).

LOCATION

The site is located in the southwest quarter of Section 26, Township 15 South, Range 2 East, San Bernardino Base Meridian, USGS 7.5' Alpine and Viejas Mountain, California Quadrangles (Figure 1). Access to the site from San Diego is west on U.S. Interstate Highway 8, then south at the Tavern Road exit to Alpine Boulevard and east to the site.

SURVEY RESULTS

GENERAL PHYSIOGRAPHY

The predominantly north-facing site lies south of I-8. The property is bounded on the west by Highlands View Road and South Grade Road, and is bordered by residential areas to the south and west. Residences and horse corrals are contiguous to the east. Old South Grade Road, which remains in use, bisects the site on a northeast-southwest axis. A small rocky knoll in the southeast quarter of the site reaches an elevation of 2,113 feet above sea level, and the low elevation of approximately 2,020 feet occurs in a drainage along the western boundary of the property.

Soils for the site are mapped as Fallbrook sandy loams, 9-15% eroded slopes and 15-30% eroded slopes (Bowman 1973). Surficial geology is mapped as Mesozoic granitic rocks (Rogers 1973). A large portion of the site has been cleared by the removal of debris and placement of a water line. This was done in conjunction with a separate development project to the west across the newly constructed northeast stretch of South Grade Road.

BOTANICAL RESOURCES

VEGETATION COMMUNITIES

Four discernible plant communities were detected on the site: Southern Mixed Chaparral, Diegan Coastal Sage Scrub, Coastal Sage - Chaparral Scrub, and Disturbed Habitat (Figure 2). The northern area of the site's vegetation is recovering from brushing in the mid-1970's, prior to which Southern Mixed Chaparral was the dominant vegetation community. The Holland (1986) vegetation codes are included, along with the area extent of each vegetation type. The site was mechanically cleared in the 1980's and the vegetation now extant is the result of resprouting from the affected shrubs. The site has always been a location of clandestine encampments, and trash accumulation on the site is a major reason for disturbance, either by its presence or by cleanup activity.

The acreages presented represent the vegetation type that would occur had the area not been impacted.

Southern Mixed Chaparral (#37120) (2.24 acres)

Southern Mixed Chaparral is the predominant plant community on-site. Indicator species include broad-leaved woody shrubs such as Scrub Oak (*Quercus berberidifolia*), Bigberry Manzanita (*Arctostaphylos glauca*), Mission Manzanita (*Xylococcus bicolor*), and Toyon

(*Heteromeles arbutifolia*). The most abundant Chaparral element on-site is Chamise (*Adenostoma fasciculatum*), with its small, linear, fascicled leaves and panicles of white flowers.

The Southern Mixed Chaparral on-site is less dense and not quite as tall as typical stands of this habitat in other areas of the region, thereby providing patches of bare soil where less competitive spring annuals have taken a foothold, including Jones Cryptantha (*Cryptantha muricata* var. *jonesii*), Rusty Popcorn-flower (*Plagiobothrys nothofulvus*), Thread-stem Dwarf-Flax (*Hesperolinon micranthum*), and Silver Puffs (*Stebbinoseris heterocarpa*). Also present in open areas are scattered bulbous perennials such as Splendid Mariposa-Lily (*Calochortus splendens*) and Small-flower Soap-Plant (*Chlorogalum parviflorum*).

Rock Outcrops are conspicuous on-site, especially along the peak of the knoll in the southern half of the property. Several taxa such as California Bee Plant (*Scrophularia californica*), Giant Needlegrass (*Achnatherum coronatum*), and Phacelia (*Phacelia suffrutescens*) are restricted to this setting and were detected during the surveys.

A minor drainage runs northwesterly across the northern portion of the site. This is associated with runoff from Old South Grade Road. No recent evidence of flow or wetland features occurs in this gully. No state or federal wetlands permits are required to alter this feature.

Identified on-site in the Southern Mixed Chaparral during the 1990 survey were two mature Engelmann Oaks, which occur near the southern boundary of the site. During the 1997 and 1999 surveys these oaks remained as earlier mapped. Two Engelmann Oak x Scrub Oak hybrids were located during the surveys in the southern half of the site. These hybrids exhibit shrubby characteristics with multiple stems. The presence of Mountain Blue-curls (*Trichostema parishii*) exemplifies the floristic affinity of the site with the southern montane San Diego County area.

Diegan Coastal Sage Scrub (#32520) (0.51 acre)

The northeastern portion of the site contains a stand of scrub vegetation dominated by California Sagebrush (*Artemisia californica*). Vegetation in this area was sampled along Transect #3. The vegetation appears to be a result of disturbance from clearing. The transect did not intercept isolated stands of Poison-Oak (*Toxicodendron diversilobum*), a species associated with interior Chaparral or Woodlands.

Coastal Sage - Chaparral (#37120) Scrub (#37G00) (4.28 acres)

Coastal Sage - Chaparral Scrub consists of a mix of sclerophyllous, woody Chaparral species and drought-deciduous, malacophyllous Sage Scrub species that can occur either as a post-fire successional community, from other forms of disturbance, or naturally.

An issue of the sensitivity of the recovering Chaparral vegetation became apparent with the development of vegetation criteria under the Natural Communities Conservation Plan (NCCP). To clarify the on-site situation, transects were established in representative vegetation formations on the site. Below are the results of the line-intercept survey along these transects. Figure 2 indicates the locations of the 100-foot transects surveyed in 1997.

SPECIES	100-FOOT TRANSECTS RESULTS (in %)			
	1	2	3	4
Bare Ground	35.8	18.6	13.2	
Adenostoma fasciculatum				
Arctostaphylos glauca				
Artemisia californica			47.3	
Baccharis sarothroides			6.1	
Eriogonum fasciculatum	12.8	29.2	24.9	
Gutierrezia sarothrae	19.8		2.7	
Lotus scoparius			0.6	
Quercus berberidifolia			5.0	
Salvia apiana	31.6	52.2	0.2	

This disturbed vegetation area on the site is compositionally very similar to Southern Mixed Chaparral but the more woody elements are much less frequent. However, the dominance, i.e., 31.6% (Transect #1) and 52.2% (Transect #2) of White Sage (*Salvia apiana*) skews consideration of delineating this habitat as Mixed Chaparral. Another principal component of this habitat is California Buckwheat (*Eriogonum fasciculatum*), which is commonly found in both Scrub and Chaparral associations. Such a mosaic plant community is best referred to as Coastal Sage - Chaparral Scrub that is recovering from the aforementioned past disturbance. Included in this association are stands of Broom Baccharis (*Baccharis sarothroides*), which lack California Sagebrush but do have California Buckwheat and a prevalence of White Sage. This association is demonstrated in Transects #1 and #2. The climax natural vegetation of this area is Southern Mixed Chaparral (San Diego County 1976); the current vegetative mix is a stage in the process of reversion to Southern Mixed Chaparral.

Disturbed Habitat (#11300) (2.57 acres)

The remainder of the property consists of ruderal land adjacent to residential areas, and areas such as that on the southern half of the property adjacent to Highlands View Road which is now devoted to landscaping. Included is disturbance to the knoll in the southeast part of the site, which is being graded in connection with development of TM 4939 adjacent in this area, and a small area in the southwest corner of the site that was disturbed in connection with a waterline easement for TM 4939. Also included is a drain structure on the northwestern portion of the property associated with development of TM 4941 adjacent in this area. Land without landscaping is either bare ground or is dominated by non-native, ruderal annuals. Old South Grade Road is included in this category. One mature Engelmann Oak is in the ruderal area in the far northeast corner of the site.

FLORA

A total of 123 plant taxa was observed on the subject property; of these, 38 (31%) were non-native (Appendix 1). The total number of species was compiled from all surveys on the site.

This list is considered a fair representation of all species occurring on-site. The native components of the site's flora are typical of the region and indicate the foothill location of the site. One sensitive plant was found on-site and is discussed in the **Sensitive Biological Resources** section of this report.

ZOOLOGICAL RESOURCES

GENERAL WILDLIFE HABITAT

The only functional wildlife habitat type on the property is Mixed Chaparral. The 1997 and 1999 surveys verified this observation. Much of the Mixed Chaparral habitat on the site is fragmented or disturbed from the construction of roads through the property. Additionally, the site is seriously disturbed from the many trails and removal of debris caused by transient human occupation of the site on an on-going basis. In general, the wildlife habitat on the site is of poor quality due to the human activity on and surrounding the property. Directly to the north of the site are Alpine Boulevard and I-8. Residential areas occur to the south, east, and west.

In Chaparral, fire is a significant element of the ecology. Fires rejuvenate the vegetation and open the habitat, creating a mosaic of successional stages. Mixed Chaparral can support a diverse community of vertebrate species, of which birds are the most easily observed. On this property, many of the typical avian Chaparral species were not observed, and may not occur on the site due to its past disturbance and somewhat isolated situation in a residential area.

Located within the Coastal Sage - Chaparral Scrub habitat, in the northwest corner of the site, is a small drainage. Due to its very small size and the general paucity of typical associated wetland plants, this area is not expected to support the typical vertebrate species found in this habitat type. In the southeastern corner of the property on a small hill is a Rock Outcrop. Rock Outcrops are a distinctive physiographic feature and are often found within shrublands, woodlands, and grasslands. Rock Outcrops may provide habitat for numerous reptilian species such as the Granite Spiny Lizard (*Sceloporus orcutti*) and Red Diamond Rattlesnake (*Crotalus ruber*). The presence of this type of structure in any given area may enhance the area's biodiversity by providing additional microhabitats.

FAUNA

AMPHIBIANS

No amphibians were observed during the survey. The Garden Slender Salamander (*Batrachoseps major*) may occur on the site; however, due to the xeric conditions of the property and the considerable human disturbance, few amphibian species would be expected.

REPTILES

One reptile, the Western Fence Lizard (*Sceloporus occidentalis*), was observed. As noted above, few species would be expected due to the high amount of human disturbance on and surrounding the site. Other reptiles possibly utilizing the site include the Rosy Boa (*Lichanura trivirgata*), Red Diamond Rattlesnake (*Crotalus ruber*), Orangethroat Whiptail (*Cnemidophorus hyperythrus*), and San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*).

BIRDS

Fourteen species of birds were observed on the site during the survey (Appendix 2). The Ruby-crowned Kinglet (*Regulus calendula*), Fox Sparrow (*Passerella iliaca*), and White-crowned Sparrow (*Zonotrichia leucophrys*) are common winter migrants of Chaparral habitat.

Year-round residents observed on the site included Anna's Hummingbird (*Calypte anna*), California Towhee (*Pipilo crissalis*), Bewick's Wren (*Thryomanes bewickii*), and Western Scrub-Jay (*Aphelocoma californica*). Common Ravens (*Corvus corax*) were seen flying over the property.

MAMMALS

Seven species of mammals were either observed directly or by sign (i.e., tracks, scat, burrows or nests) during the survey (Table 2). The tracks of a Virginia Opossum (*Didelphis virginiana*) were observed along Old South Grade Road. The burrows of the California Ground Squirrel (*Spermophilus beecheyi*) and Botta's Pocket Gopher (*Thomomys bottae*), along with two nests belonging to the Desert Woodrat (*Neotoma lepida*), were also found on the property. The tracks of one Mule Deer (*Odocoileus hemionus*) and the scat of the Coyote (*Canis latrans*) were observed on the site; however, it is believed that due to the high level of human disturbance, the property does not constitute a significant portion of either of these species' territories.

SENSITIVE BIOLOGICAL RESOURCES

The CNDDB search revealed federally/state listed plant species or target plant species listed under the Conservation Plans that are known from the general project area. Sensitive plants include those listed by the Service (1992) and CDFG (1997); candidates for listing (Service 1993; CDFG 1997), and/or considered sensitive by the CDFG (1998) and/or California Native Plant Society (CNPS) (Skinner and Pavlik 1994). An explanation of the Service, CDFG, and CNPS designations is provided (Appendix 3). One sensitive plant species, Engelmann Oak, was observed during the surveys.

SENSITIVE VEGETATION

Diegan Coastal Sage Scrub

The disturbed vegetation that has currently recovered to a dominance of California Sagebrush must be considered as Diegan Coastal Sage Scrub. This 0.51-acre area would revert to Chaparral vegetation with time if left undisturbed, since isolated elements of Chaparral, such as Honeysuckle (*Lonicera subspicata*) and Rockrose (*Helianthemum scoparium*), occur in the disturbed vegetation.

Coastal Sage - Chaparral Scrub

This transitional community in time would also revert to Chaparral.

SENSITIVE PLANTS

The Engelmann Oak is the only sensitive plant observed on the site. It has recently been shifted from Group A in the San Diego County Sensitive Plant List (County 1997a) to Group D.

Engelmann Oak (*Quercus engelmannii*)

LISTING: CNPS List 4 R-E-D Code 1-2-2
State/Fed. Status -- None FAGACEAE Apr.-May
Global Rank G3 State Rank S3.2

DISTRIBUTION: San Diego County, Orange County, and Riverside County, Santa Catalina Island; Baja California, Mexico

HABITAT: This tree occurs in both Oak Woodland and Southern Mixed Chaparral. In the foothills Engelmann Oak may occur as a shrubby element in the Chaparral. Typically in such a situation the understory is relatively dense and the small oaks (even mature oaks in this habitat usually remain stunted) are concentrated on the periphery of watercourses or mesic slope aspects.

KNOWN SITES: Engelmann Oak is relatively abundant on the Guejito Ranch, on Rancho Cuca, and near Mesa Grande. It is well represented in the vicinity of Alpine such as on the Dear [illegible] Road, as well as in Pamo Valley, east of Dulzura, and on the Daley Ranch north of Escondido.
In numerous other areas, it is locally common.

STATUS: Engelmann Oak populations in Southern California are still relatively abundant and stable. Poor reproduction is an apparent problem with this oak. This may be due to a variety of reasons, foremost of which is overgrazing by livestock. Other factors may include herbivory from small mammals, birds, and insects on the acorns; as well as browsing from deer, and a need for specific weather conditions to promote optimal seedling establishment. Frequent Engelmann Oak hybrids, with various species of Scrub Oak, are often noted in the Chaparral; typically these individuals are shrub-sized and exhibit considerable leaf variation.

The site contains two isolated Engelmann Oaks in the southern half of the site. These two trees do not constitute a Woodland community. A third Engelmann Oak occurs in the Disturbed Habitat in the extreme northeastern corner of the site.

SENSITIVE PLANTS POTENTIALLY OCCURRING ON-SITE

Most sensitive plants known from the project vicinity are associated with soils derived from gabbro. San Diego Thorn-mint (*Acanthomintha ilicifolia)* grows on nearby Poser Mountain in Auld clays not recorded on the Alpine Village site. Lakeside Ceanothus (*Ceanothus cyaneus*) has a high concentration just south of Interstate 8 in the Crest area on acid igneous rock types, which are lacking on-site. Rush-like Bristleweed (*Machaeranthera juncea*) grows just northwest of the site near the freeway on Victoria Ranch Estates (TPM No. 4925). Fish's Milkwort (*Polygala cornuta* var. *fishiae*) is known from very shaded, extensive Chaparral habitat on Viejas Creek. Cismontane Nolina (*Nolina cismontana*) inhabits the gabbroic slopes of Viejas Mountain but was not seen on-site. Also potentially present is Prostrate Spineflower (*Chorizanthe procumbens* var. *albiflora)*, a cryptic annual which is occasional in the region. Its presence in low numbers would not be considered botanically significant. The site has a sizable population of Cleveland Sage (*Salvia clevelandii*), an endemic shrub of the foothill areas on gabbroic soils. In addition to this species, there are several other sensitive plant species known from the vicinity and potentially occurring on-site. The following Table 1 lists these species, their conservation status, and potential for occurrence on the proposed project site.

TABLE 1. SENSITIVE PLANTS POTENTIALLY OCCURRING ON-SITE

SPECIES	STATUS Federal/State/CNPS	KEY HABITAT CHARACTER	REASON FOR EXCLUSION
San Diego Thorn-mint (*Acanthomintha ilicifolia*)	E/E/1B (2-3-2)	Vertisol clay soils of mesas & valleys, usually grasslands or sage scrub openings	Clay soils lacking
Dean's Milkvetch (*Astragalus deanei*)	SC/none/1B (3-3-3)	Open, brushy south-facing slopes in Diegan Coastal Sage Scrub, sometimes near burns	Not found on-site; outside usual range of species
San Diego Milkvetch (*Astragalus oocarpus*)	SC/none/1B (3-2-3)	Chaparral openings or gravelly flats in oak woodlands	Not found on-site
San Diego Sagewort (*Artemisia palmeri*)	none/none/2 (2-2-1)	Coastal sage, chaparral, riparian woodland, sandy soil	No appropriate habitat on-site
Encinitas Baccharis (*Baccharis vanessae*)	T/E/1B (2-3-2)	Chaparral, sandstone soils in steep rocky areas	Not observed on-site
Slender-pod Jewel Flower (*Caulanthus stenocarpus*)	SC/R/none	Chaparral, often recent burns, lumped w/ *C. heterophyllus* var. *heterophyllus*	Not observed during field surveys
Lakeside Ceanothus (*Ceanothus cyaneus*)	SC/none /1B (3-2-2)	Closed-cone coniferous forest, chaparral, 100-1,515 m	No appropriate habitat on-site
Delicate Clarkia (*Clarkia delicata*)	none/none/2 (1-2-1)	Periphery of oak woodlands, cismontane chaparral; near Jamul/ Dulzura	Appropriate habitats in adjacent woodland; not observed
Variegated Dudleya (*Dudleya variegata*)	SC/none/1B (2-2-2)	Rocky or clay soils, sometimes along vernal pool margins	No appropriate habitat on or near project site.
Palmer's Grappling Hook (*Harpagonella palmeri*)	SC/none/2 (1-2-1)	Chaparral, coastal scrub, valley & foothill grassland; clay soils, open grassy areas	Not observed during field surveys
Felt-leaved Monardella (*Monardella hypoleuca* ssp. *lanata*)	none/none/1B (2-2-2)	Chaparrral, cismontane woodland; sandy soils, 300-1119 m	Not observed during field surveys
Cleveland's San Diego Goldenstar (*Muilla clevelandii*)	SC/none/1B (2-2-2)	Openings in chaparral, coastal scrub, grasslands, vernal pools, usually clay soils, below 50 m	No appropriate habitat on-site
Dehesa Nolina (*Nolina interrata*)	T/E/1B (3-3-2)	Chaparral, rocky hillsides, ultramafic soils, 600-2,800 ft	Not observed during field surveys

SPECIES	STATUS Federal/State/CNPS	KEY HABITAT CHARACTER	REASON FOR EXCLUSION
Moreno Current (*Ribes canthariforme*)	SC/none/1B (3-1-3)	Chaparral w/acid igneous rocks, typically with massive, exposed boulders; near Jamul/Dulzura	No appropriate habitat on-site
San Diego Butterweed (*Senecio ganderi*)	SC/R/1B (3-2-3)	Closed-cone coniferous forest and southern mixed chaparral on Otay Mountain	Beyond geographic range and vegetation communities

SENSITIVE ANIMALS POTENTIALLY OCCURRING ON-SITE

Only two sensitive vertebrate species could potentially occur on-site. The limited extent of available habitat and location of the site near residences precludes any significance to the possible presence of these animals.

San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)

LISTING: USFWS - none (formerly Category 2)
CDFG (1992d) - Species of Special Concern
MSCP (1997) - Covered Species
CDFG (1991a) - Fully Protected

DISTRIBUTION: California and Baja California, Mexico.

HABITAT: Open chaparral, sage scrub, pine/oak woodlands, grasslands, and along washes.

STATUS: Declining, primarily due to habitat destruction and habitat degradation. Its status as an object for pet collection has also contributed to its decline.

This lizard generally occurs in open spaces of Woodland, Coastal Scrub, or Chaparral that provide access to sunning areas and supply Harvester Ants, which serve as its main prey base. The species typically has low population densities, even in areas of optimal habitat (Pianka and Parker 1975), and is therefore more susceptible to local extinction in small isolated habitat patches. It is relatively slow-moving compared to other lizards, and therefore particularly vulnerable to humans, domestic animals, and other disturbances. Due to the disturbed nature of this site, it is highly unlikely that a significant reproductive population of the San Diego Horned Lizard exists on the property.

Orangethroat Whiptail (*Cnemidophorus hyperythrus beldingi*)

LISTING: USFWS - none (formerly Category 2)
CDFG (1992d) - Species of Special Concern

DISTRIBUTION: Limited; found from southern Orange, western Riverside, and San Diego counties south to southern Baja California, Mexico.

HABITAT: Open woodlands, sage scrub, chaparral, and along the edges of riparian zones and washes.

STATUS: This species is still relatively common in areas where good habitat occurs; however, vast areas of former habitat in the coastal lowlands have been converted to urban and agricultural development.

The property lies on the eastern edge of the Orangethroat Whiptail range and this species may occur on the site. However, as with the San Diego Horned Lizard, the disturbed nature of the site and its relatively isolated position preclude any significance to the possible presence of this lizard.

The Coastal California Gnatcatcher (*Polioptila californica californica*) was not detected on the site nor is it known from any areas nearby. Pacific Southwest believes that, based upon the 1997 Service presence/absence survey guidelines for this federally listed Threatened species (Service 1997), a focused survey is not warranted due to lack of habitat and lack of proximity to suitable habitat. These guidelines state that such a survey is required □if proposed projects contain coastal sage scrub, alluvial fan scrub, chaparral, or intermixed or adjacent areas of grassland and riparian habitats, and is located within the range of this species.□ The site is out of the range of the species due to inland distance, habitat parameters, and site elevation. A focused survey for the species was conducted on the site in May-June 1997 with negative results. A focused survey was also conducted on a nearby larger parcel 0.8 mile to the southwest with better quality habitat in 1997 and in 1999 with negative results.

Quino Checkerspot Butterfly Habitat

The site lies within the Potential Habitat Area for the Quino Checkerspot Butterfly (*Euphydryas editha quino*) (Quino) as indicated on the map prepared by the Service for the 1999 season (Service 1999). The Quino is listed as Endangered by the Service. This same map shows the site as being outside of the Adult Focused Survey Area for 1999.

The botanical field assessment detected no Dot-seed Plantain (*Plantago erecta)*, the primary larval food source for the Quino on the project site. This may be due to the seasonal timing of the survey. *Plantago erecta* usually flowers between April and June. Due to the late timing of the survey, many flowering spring annuals, possible nectaring sources for the Quino, were not detected on the site.

However, a botanical survey by Pacific Southwest on a 12.6-acre site on Boulder Oaks Lane approximately 0.8 mile to the southwest in early June 1997 did not detect the species (Pacific Southwest 1997b). A habitat assessment for the Quino in the spring of 1999 on a 68-acre tract adjacent to the northeast of the Boulder Oaks Lane site did not detect *Plantago erecta* and concluded that the Quino is likely absent from that site (Riggan 1999). *Plantago erecta* is found on sandy, clay, or serpentine soils, on grassy slopes and flats, and open woodland (Hickman 1993). While sandy loam characterizes the site, *Plantago erecta* is found in San Diego County generally only below 1,000 feet in elevation (Beauchamp 1986), largely precluding the possibility of its occurrence on the site.

Pacific Southwest Permitted Quino Biologist performed a Quino Adult Survey on the subject property between 28 March 2001-25 April 2001 (see Appendix). The Quino Adult Survey, performed under the Service Protocol, indicated that Quino Butterflies are not using the site.

The CNNDB search revealed several other federal/state-listed animal species or target species listed under the Conservation Plans that are known from the general project area. The

following Table 2 lists these species, their conservation status, and potential for occurrence on the proposed project site.

TABLE 2. SENSITIVE ANIMALS POTENTIALLY OCCURRING ON-SITE

SPECIES	STATUS Federal/State/ CDFG	KEY HABITAT CHARACTER	REASON FOR EXCLUSION
Coast Patch-nosed Snake (*Salvadora hexalepis virgultea*)	SC/none/SC	Brushy or shrubby vegetation in coastal southern California; requires small mammal burrows	May occur on-site; not observed
Cooper's Hawk (*Accipiter cooperii*)	none/none/SC	Variety of habitats with trees for nesting (from urban to oak and riparian habitats)	May occur on-site; not observed during 1997 or 1999 surveys
Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)	SC/none/SC	Coastal sage scrub, sparse mixed chaparral, often in steep, rocky hillsides w/grass & form patches	Not observed during either 1997 or 1999 surveys
American Peregrine Falcon (*Falco peregrinus anatum*)	delisted/none/SC	Typically nests in high cliffs; feeds on aquatic birds and pigeons	No appropriate nesting habitat on-site
Bald Eagle (*Haliaeetus leucocephalus*)	T/none/SC	In San Diego County, normally associated with coastal lagoons or inland lakes	No appropriate habitat on-site
Least Bell's Vireo (*Vireo bellii pusillus*)	E/E/SC	Requires riparian woodland or mesquite bottomlands for breeding	No appropriate habitat on-site

RESOURCES/HABITAT EVALUATION

The principal vegetation/habitat types exhibited on the property are Diegan Coastal Sage Scrub, Coastal Sage - Chaparral Scrub, Southern Mixed Chaparral, and Disturbed Habitat.

Diegan Coastal Sage Scrub is considered a sensitive habitat by the County of San Diego and is given the highest inventory ranking priority in the CNDDB. The County Biological Mitigation Ordinance (BMO) (San Diego County Board of Supervisors 1997) identifies this habitat as a Tier II habitat for the purpose of evaluating its habitat potential and mitigation requirements. In addition, many federal, state and MSCP Covered Species are dependent upon Diegan Coastal Sage Scrub, including the Coastal California Gnatcatcher, Coastal Cactus Wren, San Diego Horned Lizard, and Orangethroat Whiptail. The Diegan Coastal Sage Scrub on site does not support the Coastal Cactus Wren or Coastal California Gnatcatcher, as previously discussed. It supports appropriate habitat and is within the distribution limits of the San Diego Horned Lizard and Orangethroat Whiptail. However, neither of these species was detected during the survey. Since the project site is well outside the Preapproved Mitigation Area identified by the Wildlife Agencies in the adopted MSCP, the Diegan Coastal Sage Scrub would not meet the criteria for a biological resource area.

Coastal Sage - Chaparral Scrub is also considered a sensitive habitat by the County of San Diego and identifies this habitat as a Tier II habitat for the purpose of evaluating its habitat potential and mitigation requirements.

Southern Mixed Chaparral, in general, is not considered sensitive habitat unless sensitive species are present, or if it is being used for foraging by a sensitive species, or if it serves as a habitat linkage or wildlife corridor. However, because the project is located in the Metro-Lakeside-Jamul segment of the MSCP, impacts to this habitat must be mitigated.

REGIONAL CONTEXT/WILDLIFE CORRIDORS/HABITAT LINKAGES AND MSCP

When evaluating the significance of biological resources on a site, it is important to determine the relationship of the resources to the region as a whole.

The project lies within the Metro-Lakeside-Jamul Segment of the Multiple Species Conservation Program (MSCP) Plan. According to the Habitat Evaluation Model prepared by San Diego County (County 1997b), the proposed project site consists solely of Low Value Habitat and is completely surrounded by other Low Value Habitat, and Developed areas. The parcel has minimal value as a Wildlife Corridor or Habitat Linkage.

PROJECT IMPACT ANALYSIS

POTENTIALLY SIGNIFICANT IMPACTS

Diegan Coastal Sage Scrub

The removal of this 0.51-acre isolated patch of Diegan Coastal Sage Scrub requires compensation by payment of fees for mitigation credits or acquisition of similar habitat off-site, since on-site mitigation is not feasible.

The Alpine Village Center site previously was part of TM 4941 RPL1. Mitigation requirements for TM 4941 RPL1, necessitating the acquisition of 0.6 acre of wetlands and 0.8 acre of Coastal Sage Scrub, have been satisfied. The only Coastal Sage Scrub formerly appearing on TM 4941 RPL1 is that on the current Alpine Village Center site. No further mitigation for impacts to Coastal Sage Scrub is required. Enclosed find a copy of a letter from The Environmental Trust attesting that 0.8-acre of mitigation credits for the Coastal Sage Scrub have been allocated for the project at the McGinty Mountain Environmental Preserve. The surplus 0.29-acre (0.8 minus 0.51) can be applied towards mitigation for impacts to the remaining Tier II habitat (Coastal Sage - Chaparral Scrub). Also, find copies of the Streambed Alteration Agreement No. 5-169-98 and the application to the U. S. Army Corps of Engineers for the appropriate permit. Note that the document covers wetlands not on the Alpine Village Center parcel (Attachment 1). That the County approved development of TM 4941 RPL1 is sufficient evidence that adequate mitigation for the wetlands has been provided. A copy of the Pacific Southwest's biological assessment report of TM 4941 RPL1 (Pacific Southwest 1997a) is included in Attachment 1. (See Attachment 1 in DPLU file).

Coastal Sage - Chaparral Scrub

Removal of 4.28 acres of this vegetation requires compensation by payment of fees for mitigation credits or acquisition of identical acreage of similar habitat off-site, since on-site

mitigation is not feasible. As previously mentioned, 0.29 acre of acreage already acquired can be applied to this, leaving a further requirement of 3.99 acres of mitigation acreage at the Tier II level.

MULTIPLE SPECIES CONSERVATION PLAN

Based on guidelines provided by the BMO addressed to the MSCP, determination whether the impact site qualifies as a Biological Resource Core Area is required.

On the Habitat Evaluation Model developed by the County, the site is classified as Low Value Habitat and is not shown as a preapproved mitigation area. It is not located within an area of habitat that contains biological resources that support or contribute to the long-term survival of sensitive species. It is not part of a regional linkage/corridor. Following the BMO criteria, the Impact Site is determined not to be a Biological Resource Core Area. Similarly, if any portion of the site is used as a Mitigation Site, it is not a Biological Resource Core Area.

In the BMO Vegetation Classification System, Diegan Coastal Sage Scrub and Coastal Sage - Chaparral Scrub are classified as Tier II vegetation communities. Southern Mixed Chaparral is classified as a Tier III community.

The appropriate ratio for off-site mitigation for impacts to Diegan Coastal Sage Scrub or Coastal Sage - Chaparral Scrub is either 1:1. The BMO makes no distinction for mitigation purposes between direct and indirect impacts. The appropriate ratio for mitigation for impacts to Southern Mixed Chaparral is 0.5:1.

Applying the Tier Classification System and Table of Mitigation Ratios from the BMO produces Table 3.

TABLE 3. BMO ANALYSIS OF MITIGATION RATIOS REQUIRED

VEGETATION	TIER	ACREAGE IMPACTED	RATIO AT MITIGATION SITE	ACREAGE TO BE PRESERVED OR RESTORED AT MITIGATION SITE
			MEETS CORE CRITERIA	MEETS CORE CRITERIA
Diegan Coastal Sage Scrub	II	0.51	1:1	0.51
Coastal Sage - Chaparral Scrub	II	4.28	1:1	4.28
Southern Mixed Chaparral	III	2.24	0.5:1	1.12
Disturbed Habitat	IV	2.57	none	none

Diegan Coastal Sage Scrub (0.51 acre) currently exists in an area of future development

on the site. As noted above, the mitigation requirement for the impacted Diegan Coastal Sage Scrub has already been satisfied. However, a mitigation requirement for impacts to Coastal Sage - Chaparral Scrub remains.

The proposed project will eliminate 2.24 acres of Southern Mixed Chaparral. Less than an acre of non-impacted acreage of Southern Mixed Chaparral remains on the southern half of the parcel south of the rocky knoll as Open Space. However, the County has determined that such Open Space would not be viable and will deny credit for this. One of the three mature Engelmann Oaks is located in this non-impacted acreage. Another is located in the southwest corner of the site in the ruderal area adjacent to the residential housing. Credits, regardless of location, totaling 1.12 acres must be acquired to complete mitigation requirements for the Southern Mixed Chaparral impacted on the site.

NON-SIGNIFICANT IMPACTS

The loss of any of the Engelmann Oak x Scrub Oak hybrids on the site would not be considered an adverse impact, nor would the loss of the Engelmann Oak in the far northeast corner of the site in the Disturbed area.

RECOMMENDATIONS TO REDUCE BIOLOGICAL IMPACTS

The following mitigation measures must be satisfied prior to grading, clearing, improvement plans or finalizing the map:

A. Provide for the approval of the Director of Planning and Land use the following:
   i. Provide evidence that 3.99 acres of coastal sage scrub habitat credit has been secured in a mitigation bank located within the boundaries of the County's Multiple Species Conservation Program
   ii. Provide an accounting of the status of the Mitigation Bank. This shall include the total amount of the credits available at the bank, the amount required by this project and the amount remaining after utilization by this project. This shall also identify the entity responsible for the maintenance and management of this bank and must include information regarding how the land will be protect in perpetuity.

b. Provide for the approval of the Director of Planning and Land Use the following:
   i. Provide evidence that 1.12 aces of southern mixed chaparral or other Tier III or higher habitat credit has been secured in a County approved mitigation bank located within the boundaries of the County's Multiple Species Conservation Program.
   ii. Provide an accounting of the status of the Mitigation Bank. This shall include the total amount of credits available at the bank, the amount required by this project, and the amount remaining after utilization by this project. This shall also identify the entity responsible for the maintenance and management of this bank and must include information regarding how the land will be protected in perpetuity.

2. Since the original survey of the site in 1988, the County of San Diego (San Diego County 1991) has issued specific guidelines regarding Oak trees. In the County's language, ...oak trees may not represent a significant biological resource, but because of their aesthetic

value, preservation of individual trees may be warranted. Two of the three mature Engelmann Oaks appear impacted by the proposed project. For aesthetic reasons, it is recommended that the proposed project ensure retention of these Oaks.

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APPENDIX 1. FLORAL CHECKLIST OF THE ALPINE VILLAGE PROPERTY SITE

HABITAT TYPES: **X = Disturbed Chaparral** **M = Southern Mixed Chaparral** **S = Coastal Sage Scrub**

CRYPTOGAMS	HABITAT
Ferns	
Pteridaceae - Brake Family	
Cheilanthes clevelandii D.C. Eaton Cleveland's Lipfern	M
GYMNOSPERMS	
Pinaceae - Pine Family	
**Pinus halapensis* Mill. Aleppo Pine	M
DICOTYLEDONS	
Anacardiaceae - Sumac Family	
Malosma laurina (Nutt.)Nutt. ex Abrams. Laurel-Leaf Sumac	X,M
Rhus ovata Wats. Sugarbush	M
**Schinus molle* L. Peruvian Pepper-treeM	
Toxicodendron radicans ssp. *diversilobum* (T.& G.)Thorne. Poison-Oak	M
Apiaceae - Carrot Family	
Apiastrum angustifolium Nutt. in T. & G. Mock Parsely	X
**Foeniculum vulgare* Mill. Sweet Fennel	M
Lomatium dasycarpum (T. & G.) C. & R. ssp. *dasycarpum* Woolly-fruit Lomatium	M,X
Sanicula crassicaulis Poepp. ex D.C. Pacific Sanicle	M
Asteraceae - Sunflower Family	
Acourtia microcephala D.C. Sacapellote, Purpleheads	M
Ambrosia psilostachya DC. var. *californica* (Rydb.)Blake. Western Ragweed	X
Artemisia californica Less. California Sagebrush	M,S
Baccharis sarothroides Gray. Gray. Br*p+15X	
Brickellia californica (T.& G.)Gray. California Brickellbush	M
**Centaurea melitensis* L. TocaloteM,X	
Cirsium occidentale (Nutt.)Jeps. Cobweb Thistle	M
**Conyza bonariensis* (L.)Cronq. Flax-Leaf Fleabane	M
**Conyza canadensis* (L.)Cronq. Horseweed	X
Eriophyllum confertiflorum (DC.) Gray var. *confertiflorum* Golden-Yarrow	X
**Gazania linearis* (Thunb.)Druce. Gazania	X
Gnaphalium bicolor Bioletti. Bicolor Cudweed	M
Gnaphalium californicum DC. California Everlasting	M
Gnaphalium canescens ssp. *beneolens* (Davidson)Stebb. & Keil. Fragrant Everlasting	X
Gnaphalium canescens ssp. *microcephalum* (Nutt.)Stebb. & Keil. White Everlasting	M
Gutierrezia sarothrae (Pursh)Britt. & Rusby. San Joaquin Matchweed	D,M,S,X
Hazardia squarrosa ssp. *grindelioides* (D.C.)Clark. Sawtooth Goldenbush	M
**Hedypnois cretica* (L.) Willd. Crete Hedypnois	X
Helianthus gracilentus Gray. Slender Sunflower	M
Heterotheca grandiflora Nutt. Telegraph Weed	M
**Hypochoeris glabra* L. Smooth Cat's-ears	M
Lessingia filaginifolia (H. & A.)M.A. Lane var. *flaginifolia* Sand-Aster	M,X
**Sonchus asper* (L.) Hill Prickly Sow-Thistle	X
**Sonchus oleraceus* L. Common Sow-Thistle	X
Stebbinsoseris heterocarpa (Nutt)Chambers. Silver Puffs	M
Stylocline gnaphalioides Nutt. Everlasting Nest-Straw	M,X

APPENDIX 1. FLORAL CHECKLIST OF THE ALPINE VILLAGE PROPERTY SITE (CONTINUED)

HABITAT TYPES: **X = Disturbed Chaparral** **M = Southern Mixed Chaparral** **S = Coastal Sage Scrub**

	HABITAT
Boraginaceae - Borage Family	
Cryptantha muricata var. *jonesii* (Gray)Jtn. Jones' Cryptantha	X
Plagiobothrys canescens Benth. Valley Popcornflower	M
Plagiobothrys collinus (Philbr.) I.M. Jtn. var. *californicus* (Gray) Higns. California Popcornflower	X
Plagiobothrys nothofulvus (Gray)Gray. Rusty Popcornflower	M
Brassicaceae - Mustard Family	
**Capsella bursa-pastoris* (L.)Medic. Shepherd's-Purse	M
Caulanthus lasiophyllum (H. & A.)Pays. California Mustard	M
**Hirschfeldia incana* (L.)Lagr.-Fossat. Shortpod Mustard	M,X
**Lobularia maritima* (L.) Desv. Sweet Alyssum	X
**Raphanus sativus* L. Wild Radish	M
Cactaceae - Cactus Family	
**Opuntia ficus-indica* (L.)Miller. Indian-Fig	M
Opuntia parryi Engelm. var. *parryi* Valley Cholla	M
Caprifoliaceae - Honeysuckle Family	
Lonicera subspicata var. *denudata* Rehd. San Diego Honeysuckle	M
Chenopodiaceae - Goosefoot Family	
**Salsola tragus* L. Russian-Thistle	M
Cistaceae - Rock-Rose Family	
Helianthemum scoparium var. *aldersonii* (Greene)Munz. Rush-Rose	M
Convolvulaceae - Morning-Glory Family	
Calystegia macrostegia ssp. *arida* (Greene)Brumm. Finger-leaf Morning-Glory	M
Crassulaceae - Stonecrop Family	
Crassula connata (Ruiz & Pav.)Berger in Engl. & Prantl. var. *connata* Dwarf Stonecrop	M
Dudleya pulverulenta (Nutt.)Britt.& Rose. Chalk-lettuce	M
Cucurbitaceae - Gourd Family	
Marah macrocarpus (Greene)Greene. Manroot, Wild-Cucumber	M
Cuscutaceae - Dodder Family	
Cuscuta californica Hook & Arn. var. *californica* Witch's Hair	M
Ericaceae - Heath Family	
Arctostaphylos glauca Lindl. Bigberry Manzanita	M
Xylococcus bicolor Nutt. Mission Manzanita	M
Euphorbiaceae - Spurge Family	
Eremocarpus setigerus (Hook.)Benth. Doveweed	M,X
Fabaceae - Pea Family	
**Acacia* sp. Acacia	X
**Acacia baileyana* F. Muell Cootamundra Wattle	X
**Acacia retinodes* Schldl. Everblooming Acacia	X
Lathyrus vestitus ssp. *alefeldii* (White)Isley. Sweetpea	M
Lotus purshianus (Benth.) Clem. & Clem. Spanish-Clover	X

APPENDIX 1. FLORAL CHECKLIST OF THE ALPINE VILLAGE PROPERTY SITE (CONTINUED)

HABITAT TYPES: **X = Disturbed Chaparral** **M = Southern Mixed Chaparral** **S = Coastal Sage Scrub**

	HABITAT
Fabaceae (continued)	
Lotus scoparius ssp. *brevialatus* (Ottley)Munz. Deerweed	M
Lupinus hirsutissimus Benth. Stinging Lupine	X
**Medicago polymorpha* L. California Bur-clover	X
**Parkinsonia aculeata* L. Mexican Palo Verde	X
Vicia americana Willd. var. *americana* American Vetch	X
Fagaceae - Oak Family	
Quercus berberidifolia Liebm. Scrub Oak	M,X
Quercus engelmannii Greene. Mesa Blue Oak, Engelmann Oak	M
Quercus engelmannii x *Q. berberidifolia* hybrid Oak	X
Geraniaceae - Geranium Family	
**Erodium cicutarium* (L.)L'Her. Red-stem Filaree	M
**Erodium moschatum* (L.)L'Her. White-stem Filaree	M
Hydrophyllaceae - Waterleaf Family	
Phacelia suffrutescens (Parry) Const. Phacelia	M
Lamiaceae - Mint Family	
**Marrubium vulgare* L. Horehound	M
Salvia apiana Jeps. White Sage	X
Salvia clevelandii (Gray)Greene. Cleveland Sage	M
Trichostema parishii Vasey. Mountain Blue-Curls	M
Linaceae - Flax Family	
Hesperolinon micranthum (Gray)Small. Thread-leaf Dwarf-Flax	M
Malvaceae - Mallow Family	
Malacothamnus fasciculatus (Nutt.)Greene var. *fasciculatus* Mesa Bushmallow	M
Oleaceae - Olive Family	
**Olea europea* L. Mission Olive	M
Onagraceae - Evening-Primrose Family	
Camissonia strigulosa (F.& M.)Raven. Strigulose Evening-Primrose	M
Epilobium canum (Greene)Raven. California-Fuchsia	M
Oxalidaceae - Wood-Sorrel Family	
Oxalis albicans Kunth ssp. *californica* (Abrams) Eiten California Wood-sorrel	X
Paeoniaceae - Peony Family	
Paeonia californica Nutt. in T.& G. California Peony	M
Papaveraceae - Poppy Family	
Eschscholzia californica Cham. California Poppy	
Polemoniaceae - Phlox Family	
Navarretia atractyloides (Benth.)Greene. Holly-leaf Skunkweed	M
Polygonaceae - Buckwheat Family	
Chorizanthe staticoides Benth. Turkish Rugging	X

APPENDIX 1. FLORAL CHECKLIST OF THE ALPINE VILLAGE PROPERTY SITE (CONTINUED)

HABITAT TYPES: **X = Disturbed Chaparral** **M = Southern Mixed Chaparral** **S = Coastal Sage Scrub**

	HABITAT
Polygonaceae (continued)	
Eriogonum fasciculatum Benth. ssp. *fasciculatum* Flattop Buckwheat	M,S,X
Pterostegia drymarioides F. & M. Granny's Hairnet	M
Portulacaceae - Purslane Family	
Calandrinia ciliata (Ruiz Lopez & Pavon) DC. Red Maids	X
Primulaceae - Primrose Family	
**Anagallis arvensis* L. Scarlet Pimpernel	M
Rhamnaceae - Buckthorn Family	
Ceanothus leucodermis E. Greene Whitebark Lilac	M
Ceanothus tomentosus ssp. *olivaceus* (Jeps.)Munz. Ramona Lilac	M
Rhamnus crocea Nutt. in T. & G. Spiny Redberry	M
Rosaceae - Rose Family	
Adenostoma fasciculatum H.& A. Common Chamise	M
Heteromeles arbutifolia (Ait.)M. Roem. Hollywood, Toyon	M
Rubiaceae - Madder Family	
Galium angustifolium Nutt. ex T. & G. ssp. *angustifolium* Narrow-leaf Bedstraw	M
Saxifragaceae - Saxifrage Family	
Jepsonia parryi (Torr.)Small. Coast Jepsonia	M
Scrophulariaceae - Figwort Family	
Cordylanthus rigidus Nutt. ex Benth. Dark-tip Bird's-Beak	M
Mimulus pilosus (Benth.)S.Wats. Downy Monkeyflower	M
Scrophularia californica var. *floribunda* Greene. California Bee Plant	M
Solanaceae - Nightshade Family	
Datura wrightii Regel. Western Jimsonweed	M
MONOCOTYLEDONS	
Agavaceae - Agave Family	
Yucca whipplei (Torr.)Simpson. Our Lord's Candle	M,X
Yucca schidigera Roezl ex Ortgies. Mojave Yucca	M
Cyperaceae - Sedge Family	
Carex triquetra Boott. Chaparral Sedge	M
Liliaceae - Lily Family	
**Amaryllis belladonna* L. Naked Lady	M
Calochortus splendens Dough. ex. Benth Splendid Mariposa-Lily	M
Chlorogalum parviflorum Wats. Small-Flower Soap-Plant	M
Dichelostemma capitatum Wood ssp. *capitatum* Wild Hyacinth	M
Poaceae - Grass Family	
Achnatherum coronatum (Thurb. in Wats.) Barkworth. Giant Stipa	M
**Avena barbata* L. Slender Oat	M,X
**Bromus diandrus* Roth. Ripgut Grass	M,X
**Bromus hordaceus* L. Soft Chess	M,X

APPENDIX 1. FLORAL CHECKLIST OF THE ALPINE VILLAGE PROPERTY SITE (CONTINUED)

HABITAT TYPES: **X = Disturbed Chaparral** **M = Southern Mixed Chaparral** **S = Coastal Sage Scrub**

	HABITAT
Poaceae (continued)	
******Bromus rubens* L. Red Brome	M
******Gastridium ventricosum* (Gouan)Schinz & Thell. Nitgrass	M
******Lamarckia aurea* (L.)Moench. Goldentop	M
Nassella cernua (Stebbins & Love) Barkworth Nodding Needlegrass	X
Nassella pulchra (Hitchc.)Barkworth. Purple Needlegrass	M
******Pennisetum setaceum* (Forsk.)Chiov. Fountain Grass	M
******Poa annua* L. Annual Bluegrass	X
******Schismus barbatus* (L.) Thell. Mediterranean Schismus	X
******Vulpia myuros* (L.)C.Gmelin Fescue	X

* - Denotes non-native plant taxa

APPENDIX 2. FAUNA CHECKLIST OF THE ALPINE VILLAGE PROPERTY SITE

M = SOUTHERN MIXED CHAPARRAL F = FLYOVER

COMMON NAME	SCIENTIFIC NAME	HABITAT
BIRDS		
Columbidae (Pigeons and Doves)		
Mourning Dove	*Zenaida macroura*	F
Trochilidae (Hummingbirds)		
Anna's Hummingbird	*Calypte anna*	M
Corvidae (Jays, Magpies, and Crows)		
Scrub Jay	*Aphelocoma coerulescens*	M
American Crow	*Corvus brachyrhynchos*	F
Common Raven	*Corvus corax*	F
Aegithalidae (Bushtit)		
Bushtit	*Psaltriparus minimus*	M
Troglodytidae (Wrens)		
Bewick's Wren	*Thryomanes bewickii*	M
Muscicapidae (Old World Warblers, Gnatcatchers, Kinglets, Thrushes, Bluebirds, and Wrentit)		
Ruby-crowned Kinglet	*Regulus calendula*	M
Mimidae (Mockingbirds and Thrashers)		
Northern Mockingbird	*Mimus polyglottos*	M
Emberizidae (Warblers, Sparrows, Blackbirds and Relatives)		
California Towhee	*Pipilo crissalis*	M
Fox Sparrow	*Passerella iliaca*	M
White-crowned Sparrow	*Zonotrichia leucophrys*	M
Fringillidae (Finches)		
House Finch	*Carpodacus mexicanus*	M
Lesser Goldfinch	*Carduelis psaltria*	M
MAMMALS		
Didelphidae (Opossums)		
Virginia Opossum	*Didelphis virginiana*	M
Leporidae (Rabbits and Hares)		
Desert Cottontail	*Sylvilagus audubonii*	M
Sciuridae (Squirrels, Chipmunks, and Marmots)		
California Ground Squirrel	*Spermophilus beecheyi*	M

TRUST

Post-it® Fax Note 7671	Date 12/21/99	# of pages ▶ 2
To Mike Evans	From L. Tucker	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 619 477-5380	Fax #	

March 12, 1999

(619) 565-
~~(619) 694-~~

Fax
Jim Nagel
County of San Diego
Dept. of Planning and Land Use
5201 Ruffin Road
San Diego, CA 92123

RE: No. TM 4941R, P90-033W, Log No. 90-15-17 - Remainder Parcel

Dear Mr. Nagel:

Please be advised that The Environmental Trust has allocated 0.8 acre of mitigation credits at our McGinty Mountain Environmental Preserve in favor of Sharon Haven for impacts to coastal sage scrub habitat associated with the above-referenced project. Sharon Haven has paid The Environmental Trust for the purchase of credits as well as for the endowment.

Do not hesitate to contact me if you have any questions regarding this matter.

Sincerely,

Mike Anfuso/rca

Mike Anfuso
Project Manager

MA:rca

cc: Nancy Gilbert, USFWS
Bill Tippets, CDFG
Sharon Haven

7879 El Cajon Boulevard • La Mesa, California 91941-3623 • Phone: (619) 461-8333 • FAX: (619) 461-8313 • e-mail: tet@cts.com

RECEIVED MAY 2 8 1998

STATE OF CALIFORNIA - THE RESOURCES AGENCY

PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
Eastern Sierra-Inland Deserts Region
330 Golden Shore, Suite 50
Long Beach, California 90802
(562) 590-5113

Date: May 26, 1998

To: Mr. Mike Reynolds
Reynolds Communities

Dear Mr. Reynolds:

Enclosed are two copies of Streambed Alteration Agreement No. 5-169-98. **If you agree with the conditions/measures set forth in the agreement, please sign both copies and return both to me for signature, at the above address.** Written notice of your intent to commence project activities needs to be provided to the Department at least five days in advance of commencing project activities.

The California Fish and Game Code requires that you notify the Department in writing within 14 days of receipt of this Proposal as to its acceptability, except that this time may be extended by mutual agreement. If you do not respond within this time period you may lose your right to request binding arbitration. For minor changes we suggest you contact the person responsible for writing your agreement, Dee Sudduth, prior to sending the written response.

If you have any questions regarding the proposed conditions please contact me at (619) 468-9231, or our main office at (562) 590-5137.

Thank you for your cooperation in this matter.

Sincerely,

Dee Sudduth

Dee Sudduth
Environmental Services Specialist
Region 6

CALIFORNIA DEPARTMENT OF FISH AND GAME
330 Golden Shore, Suite 50
Long Beach, California 90802

Notification No.5-169-98

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the **Department**, and name: Mike Reynolds, representing Reynolds Communities, address: 111 South Marshall #201, El Cajon, CA 92020, phone: (619) 442-5545, County of San Diego, State of California, hereinafter called the **Operator**, is as follows:

WHEREAS,pursuant to Section 1603 of California Fish and Game Code, the Operator, on the 28th day of April, 1998, notified the Department that they intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from the streambed(s) of, the following water(s): Chocolate Canyon Creek of San Diego County tributary to San Diego River, located at the intersection of Alpine Blvd., Victoria Drive and South Grade Road. Section 26, Township 15 s, Range 2 e , USGS Map Alpine and Viejas.

WHEREAS, the Department has determined that such operations may substantially adversely affect existing fish and wildlife resources including: **those songbirds, raptors, other birds, mammals, reptiles, amphibians, plants, and all other aquatic resources and wildlife in the streambed/lake and associated area affected by the proposed project in this agreement.**

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Operator's work. The Operator hereby agrees to accept the following measures/conditions as part of the proposed work.

If the Operator's work changes from that stated in the notification specified above, this agreement is no longer valid and a new notification shall be submitted to the Department of Fish and Game. Failure to comply with the provisions of this agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5937, and 5948, may result in prosecution.

Nothing in this agreement authorizes the Operator to trespass on any land or property, nor does it relieve the Operator of responsibility for compliance with applicable federal, state, or local laws or ordinances. A consummated agreement does not constitute Department of Fish and Game endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

THIS AGREEMENT BECOMES EFFECTIVE ON DATE OF DEPARTMENT'S SIGNATURE AND TERMINATES May 26, 1999, for the proposed project only. The Operator may request an extension of the agreement annually for a 12-month period if additional construction time is necessary. The extension shall be requested prior to the termination date of the agreement. This agreement shall remain in effect for that time necessary to satisfy the terms/conditions of this agreement.

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER 5-169-98

1. The following provisions constitute the limit of activities agreed to and resolved by this agreement. The signing of this agreement does not imply that the Operator is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this agreement, shall be subject to separate notification pursuant to Fish and Game Code 1600 et seq..

2. The Operator proposes to alter the following streambed Chocolate Canyon Creek, to perform the following work: grading and fill of the streambed through the installation of an underground storm drain, as described in the submitted application. Approximately 0.2 acres of wetlands to be impacted.

3. Specific work areas and mitigation measures are described on/in the plans and documents submitted by the Operator and shall be implemented as proposed, unless directed differently by this agreement.

4. The Operator certifies by signing this agreement that the project site has been surveyed and shall not impact any rare, threatened or endangered species; or the Operator certifies that such a survey is not required for the proposed project. If rare, threatened or endangered species occur within the proposed work area, or could be impacted by the work proposed, the Operator shall not proceed with the project until the Operator consults with the Department and obtains any required State and/or Federal permits.

5. The Operator shall mitigate for on site impacts to 0.2 acres of wetlands through the acquisition of wetland mitigation bank credits. The Operator shall mitigate for impacts at a 2:1 ratio at a mitigation bank approved by the Department.

6. In those project areas where nesting birds may occur, the Operator either shall not remove potential nesting riparian vegetation from March 15 through July 30, or shall survey all potential nesting riparian vegetation within the project site for active bird nests. If an active bird nest is located the nest site shall be flagged or staked a minimum of 5 yards in all directions, and this flagged zone shall not be disturbed until the nest becomes inactive, unless otherwise directed by the Department (ref.: Fish and Game Codes 3503, 3503.5).

7. The removal or disturbance of soil, vegetation and vegetative debris from the streambed or bank shall not exceed the limits approved by the Department, or as described in the submitted application.

8. Areas of disturbed soils with slopes toward a stream shall be stabilized to reduce erosion potential. Where possible, stabilization shall include the revegetation of stripped or exposed areas with vegetation native to the area. Planting, seeding and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials may be used for such stabilization.

9. When appropriate, mitigation for the removal of riparian vegetation shall include the revegetation of suitable areas with desirable vegetation native to the area. All revegetation plans for both erosion control and mitigation purposes shall be subject to Department review and approval.

10. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake or in wetted areas, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the agreement and as necessary to complete authorized work.

11. If a stream channel has been altered during project operations, its low flow channel shall be returned as nearly as possible to pre-project conditions without creating a possible future streambed or bank erosion problem, or a flat wide channel or sluice-like area. The disturbed portions of any stream channel within the high water mark of the stream shall be restored to as near original condition as possible, except as otherwise indicated in the submitted application or as directed by the Department.

12. Fill length, width, and height dimensions shall not exceed those of the original installation or the original naturally occurring topography, contour, and elevation; fill shall be limited to the minimal amount necessary to accomplish the agreed activities; fill construction materials other than on-site alluvium, shall consist of clean uncontaminated soil, silt-free gravel, and/or river rock; except as described in the submitted application or as otherwise specified in this agreement.

13. Vegetation removed from the site shall not be stockpiled in the streambed/creek or on its bank. The sites selected on which to push this material out of the stream should be selected in compliance with the other provisions of this agreement. Where possible, suitable brush piles may be left to provide wildlife habitat.

14. This agreement does not authorize the construction of any temporary or permanent dam, structure, flow restriction or fill, except as described in the Operator's notification. Any temporary dam, artificial obstruction, or other flow diversion shall be constructed from materials, such as clean gravel or sandbags, which will cause little or no siltation. If necessary, flow diversions shall be done in a manner that shall prevent pollution, minimize siltation and which shall provide flows to downstream reaches. Flows to downstream reaches shall be provided during all times that the natural flow would have supported aquatic life. Said flows shall be of sufficient quality and quantity to support existing aquatic life both above and below the diversion. Normal flows shall be restored to the stream immediately upon completion of work at that location.

15. Precautions to minimize turbidity/siltation shall be taken into account during project planning and implementation. This may require that the work site be isolated and /or the construction of silt catchment basins, so that silt, or other deleterious materials are not allowed to pass to downstream reaches. The placement of any structure or materials in the stream for this purpose, not included in the original project description, shall be coordinated with the Department. Coordination shall include the negotiation of additional agreement provisions.

16. Upon Department determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department approved control devices are installed, or abatement procedures are initiated.

17. Spoil sites shall not be located within a stream/lake, where spoil can be washed back into a stream/lake, or where it will cover aquatic or riparian vegetation. The Operator may remove all human generated debris, such as lawn and farm cuttings, garbage and trash.

18. Structures and associated materials, including debris, not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

19. No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow.

20. The Operator shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the operator to ensure compliance.

21. The clean-up of all pollution spills shall begin immediately. The Operator shall notify the Department immediately of any spills and shall consult with the Department regarding clean-up procedures and requirements.

22. All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances resulting from project related activities which could be hazardous to aquatic life or waters of the state, shall be prevented from contaminating the soil and/or entering the waters of the state. None of these materials shall be allowed to enter into or be placed within or where they may enter or be washed by rainfall or runoff into waters of the state. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

23. All provisions of this agreement remain in force throughout the term of the agreement. Any provisions of the agreement may be amended or the agreement may be terminated at any time provided such amendment and/or termination is agreed to in writing by both parties. Mutually approved amendments become part of the original agreement and are subject to all previously negotiated provisions.

24. If the Operator or any of the individuals mentioned above, violate any of the terms or conditions of this agreement, all work shall terminate immediately and shall not proceed until the Department has taken all of its legal actions.

25. The Department reserves the right to enter the project site at any time to ensure compliance with terms/conditions of this agreement.

26. The Operator shall provide a copy of this agreement to all contractors, subcontractors, and the Operator's project supervisors. Copies of the agreement shall be readily available at work sites at all times during periods of active work and must be presented to any Department personnel, or personnel from another agency upon demand.

27. The Operator shall notify the Department, in writing, at least five (5) days prior to initiation of construction (project) activities, and at least five (5) days prior to completion of construction (project) activities. Notification shall be sent to the Department at 330 Golden Shore, Suite 50, Long Beach, CA 90802, Attn: Environmental Services.

28. The Department reserves the right to suspend and/or cancel this agreement for other reasons, including but are not limited to, the following:

a. The Department determines that the information provided by the Operator in support of the Notification/Agreement is incomplete or inaccurate;
b. The Department obtains new information that was not known to it in preparing the terms and conditions of the Agreement;
c. The project or project activities as described in the Notification/Agreement have changed; and
d. The conditions of or affecting fish and wildlife resources change or the Department determines that project activities will result in a substantial adverse effect on the environment.

CONCURRENCE:

Reynolds Communities	**California Department of Fish and Game**
Mike Reynolds	Dee Sudduth
(signature) (date)	(signature) (date)
(title) 5/29/98	Environmental Specialist III (title)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
(33 CFR 325)

OMB APPROVAL NO. 0710-
Expires October 199

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructi searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of InformationOperations and Reports, 1215 Jefferson Davis Highway, S 204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Please DO NO RETURN your form to either of these addresses. Completed applications must be submitted to the District Engineer hav jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredg material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the applic for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cann processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to th application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMP

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME
REYNOLDS COMMUNITIES

8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
R. Mitchel Beauchamp, President
Pacific Southwest Biological Services, Inc

6. APPLICANT'S ADDRESS
111 South Marshall #201
El Cajon, CA 92020

9. AGENT'S ADDRESS
P.O. Box 985
National City, CA 91951-0985

7. APPLICANT'S PHONE NOS. W/AREA CODE
a. Residence
b. Business (619) 442-5545

10. AGENT'S PHONE NOS. W/AREA CODE
a. Residence (619) 477-0295
b. Business (619) 477-5333

11. **STATEMENT OF AUTHORIZATION**

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application an furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE — DATE: 27 April 1998

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Sun River-Alpine 13.6 acres

13. NAME OF WATERBODY, IF KNOWN (if applicable)
San Diego River
ocolate Canyon Creek - El Capitan Reservoir

14. PROJECT STREET ADDRESS (if applicable)
or APN's
APN 404-032-72

15. LOCATION OF PROJECT
San Diego — COUNTY
California — STATE

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, (see instructions)

17. DIRECTIONS TO THE SITE
East of town of Alpine at the junction of Alpine Boulevard, Victoria Drive, and South Grade Road.

ALPINE VILLAGE CENTER PROPERTY
SAN DIEGO COUNTY, CALIFORNIA.

SURVEY RESULTS FOR ADULT QUINO CHECKERSPOT BUTTERFLY
(*Euphydryas editha quino*)

UTM: 11-S: 522,900mE; 3,632,700mN
Site Plan No. S 99-047
Log No. 99-14-036

Prepared for

Mr. Larry Tucker
Grant-Tucker Properties
One Upper Newport Plaza
P.O. Box 7974
Newport Beach, CA 92658
Telephone 949-251-2045
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Prepared by

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Facsimile 619-477-5380
e-mail: bio@psbs.com

PSBS #T566C

23 May 2001

Doug Allen

Doug Allen. Permit # TE 837448-2

ALPINE VILLAGE CENTER PROPERTY
SAN DIEGO COUNTY, CALIFORNIA.

SURVEY RESULTS FOR ADULT QUINO CHECKERSPOT BUTTERFLY (*Euphydryas editha quino*)

23 May 2001

SUMMARY

A protocol survey for the adult Quino Checkerspot Butterfly (*Euphydryas editha quino*) (QCB) was conducted on the approximately 9.6-acre Alpine Village Center Property in San Diego County, California. This survey was performed to ascertain the presence or absence of adult QCB, QCB nectaring plants, and QCB larval host plants. The survey identified the following vegetation/habitat types occurring on the property: southern mixed chaparral, coastal sage scrub, and disturbed habitat. The larval host plants for the QCB, dwarf plantain (*Plantago erecta*), dark-tipped bird's-beak (*Cordylanthus rigidus*), and owl's clover (*Castilleja exerta*), were not detected on the property during the survey. **No adult QCB were observed or detected on the property during the year 2001 survey.**

INTRODUCTION AND BACKGROUND

NATURAL HISTORY OF THE QCB

The Quino Checkerspot Butterfly (*Euphydryas editha quino*) QCB (Family Nymphalidae) was formerly common throughout the coastal slope of southern California, including Los Angeles, Orange, Riverside, San Diego, and San Bernardino Counties and northern Baja California, Mexico. The historic range for this species includes the coastal plains and inland valleys from the Santa Monica Mountains to northern Baja California. Rapid declines in the subspecies' numbers over the last few decades led to the near extinction of the subspecies in the early 1990s. The QCB is now known only from western Riverside, southern San Diego Counties, and northern Baja California, Mexico. More than 75 percent of the QCB's historic range has been lost (Brown 1991). QCB populations have been reduced in number and size by more than 95 percent range-wide primarily due to direct and indirect human impacts including habitat loss and fragmentation, invasion of nonnative plants and animal species, grazing, enhanced soil nitrogen, increased carbon dioxide concentrations, climate change, and disrupted fire regimes (USFWS 2001).

The QCB occurs in association with a variety of plant communities, soil types, and elevations (up to 5,000 feet above mean sea level). These plant communities include; clay-soil meadows, grassland, forbland, coastal sage scrub, chaparral communities, juniper woodland, and semi-desert scrub that support native species of plantain and a variety of adult nectar resources. One factor associated with occupied QCB habitats is the presence of patches of bare or sparsely vegetated ground. Bare or sparsely vegetated ground is often associated with clay or cryptogamic crusts. Soil crusts, cryptogamic crusts, compacted soil, and nutrient-poor soils favor the growth of Dot-seed Plantain and other low-growing herbaceous plants over the establishment of taller grasses (e.g., *Avena, Bromus*) and woody perennials (Ballmer *et al.* 2000).

Adult QCBs rest on the ground or on very low vegetation within a few inches of the ground (Ballmer *et al.* 2000). Post-diapause QCB larvae spend much of their time on the ground, basking and absorbing solar energy (Ballmer *et al.* 2000). Dense, tall vegetation interferes with basking behavior by adult QCB and larvae, but also inhibits growth of the QCB larval host plant, dwarf plantain (Ballmer *et al.* 2000).

The life cycle of the QCB adults typically includes one generation of adults per year, with a 4-6 week flight period beginning between late February and May, depending on the weather patterns (Emmel and Emmel 1973). Adults live from 10-14 days, but with staggered emergence the flight period is typically 1-2 months. Adult QCB has a short tongue and cannot feed on flowers with deep corolla tubes. Adult QCBs may be observed nectaring at popcorn flower (*Plagiobothrys* and *Cryptantha* spp.), goldenstar (*Muilla* spp.), goldfields (*Lasthenia* spp.), fiddleneck (*Amsinckia* spp.), milfoil or yarrow (*Achillea millefolium*), chia (*Salvia columbariae*), blue dicks (*Dichelostemma pulchella*), mustards (*Brassica* spp.), California buckwheat (*Eriogonum fasciculatum*), and other flowering annuals and shrubs (Ballmer *et al.* 2000). Female deposits egg clusters near the base of larval host plants and hatching occurs within 10-14 days. The QCB larvae are closely associated with two primary host plants: dwarf plantain (*Plantago erecta*) and woolly plantain (*P. patagonica*). Other possible larval host plants may include dark-tipped bird's-beak (*Cordylanthus rigidus*), and owl's clover (*Castilleja exerta*). At the time of host plant senescence, if larvae have accumulated sufficient reserves, they are able to enter diapause (state of dormancy) and are able to survive to the next season or several years (Emmel and Emmel 1973, Singer and Ehrlich 1979, Ballmer *et al.* 2000).

LEGAL STATUS OF THE QCB

The U.S. Fish and Wildlife Service (USFWS) listed the QCB as Endangered under the Federal Endangered Species Act in early 1997 (USFWS 1997). The USFWS has produced a Draft Recovery Plan for the QCB (USFWS 2000). Recovery Plans delineate actions required to recover, protect, and down list federally listed plant and animal species. This plan identifies six Recovery Units. Recovery Units contain both lands that are considered essential to the long-term conservation of the QCB and lands that are not considered essential. Recovery Plans are not regulatory documents, and are non-binding to private landowners.

PURPOSE OF THE STUDY

Pacific Southwest Biological Services, Inc., (Pacific Southwest), at the request of Mr. Larry Tucker, of Grant-Tucker Properties, conducted a focused survey for the adult QCB on a 9.5-acre site proposed for development in the community of Alpine, San Diego County, California.

The purpose of the survey was to document the presence/absence of adult QCB and larval host plants occurring on the project site. This report summarizes the results of the surveys. It is anticipated that the information herein will be available for public agency review.

METHODS

The survey methods for adult QCB were conducted according to the guidelines set fourth in the U.S. Fish and Wildlife Service (USFWS) Quino Checkerspot Butterfly Year 2000 Survey Protocol (USFWS 2000) under Survey Techniques. Flight season for San Diego County above 2000 feet and south of state Route 78 was from 8 March through 26 April 2001. Wind velocity

was measured using a Brunton Windwatch. Wind speeds listed in Table 1 are an average over 3 minutes.

Due to adverse weather conditions (rain, high winds, low temperatures) during the flight season, weekly surveys of the property were not always possible. Two surveys the following week were employed on these occasions, as allowed by the protocol guidelines. The USFWS required five field visits during the flight season for the year 2001. This survey was started late into the flight season. However, San Diego County has established its own protocol. Due to the late start and time constraints to complete a protocol survey within in the flight season, the habitat assessment and first survey was combined.

Pacific Southwest biologist Doug Allen, who is authorized to conduct surveys for the QCB in Riverside County, California (USFWS permit # TE 837448-2), conducted the protocol surveys for the adult QBC as indicated in Table 1. Field notes are attached to this report (Appendix 2). The habitat assessment concluded that approximately 9.4 acres of the property supports suitable QCB habitat.

Table 1. Summation of Field Surveys.

DATE	PERSONNEL	TYPE OF SURVEY	TIME	CONDITIONS*
28 March 2001	Doug Allen	Habitat Assessment/ Adult QCB	0730-0900	Start: 60.8°F, Clear, W @ 2 mph. Finish: 66.2°F, Clear, W@ 1 mph.
4 April 2001	Doug Allen	Adult QCB	1350-1450	Start: 66.7°F, Clear, SW@ 3 mph Finish: 62.9°F, 40% cover, SW@ 2 mph
13 April 2001	Doug Allen	Adult QCB	0900-1000	Start: 68.0°F, Clear, Wind 0 mph. Finish: 67.1°F, Clear, Wind 0 mph
17 April 2001	Doug Allen	Adult QCB	0800-0915	Start: 61.0°F, Clear, E @ 3 mph Finish: 73.6, Clear, Wind @ 0 mph
25 April 2001	Doug Allen	Adult QCB	0830-1000	Start: 81.1°F, 50% Clear, N@ 1 mph Finish: 81.1°F, Clear, NW@ 2 mph

* Field notes (Appendix 2)

DEFINITIONS

Vegetation Communities

Vegetation habitats or communities are assemblages of plant species that usually coexist in the same area. The classification of vegetation communities is based upon the life form of the dominant species within that community and the associated flora. The nomenclature for vegetation communities follows Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986).

Species Nomenclature

The scientific nomenclature used in this report is from the following references: Butterflies: Opler 1999, Emmel 1998, Pyle 1998, Brown *et al.*, 1992, Garth and Tilden 1986, Scott 1986, Emmel and Emmel 1973. Plants: Hickman 1993.

SURVEY LOCATION

PROPERTY LOCATION

The property is located in the community of Alpine of eastern San Diego County, California (Figure 1), southeast of the intersection of Alpine Boulevard and South Grade Road. The map location (Figure 2) of the property is in the southwest quarter of Section 26, Township 15 South, Range 2 east of the San Bernardino Base and Meridian; USGS 7.5' Alpine and Viejas Quadrangle California-San Diego County (UTM 11-S: 522,900mE; 3,632,700mN). The property is mapped within Zone 2 of the Year 2000 Quino Survey Area Map (USFWS 2000). The property is mapped outside any of the Quino Checkerspot Butterfly Recovery Units of the Draft Recovery Plan (USFWS 2001). The property is located within the Metro-Lakeside-Jamul Segment of the County of San Diego's Multiple Species Conservation Program (MSCP) Plan.

SURVEY RESULTS

PHYSICAL CHARACTERISTICS OF THE PROPERTY

Soils for the project area are mapped as Fallbrook sandy loam, 9-15% eroded slopes and 15-30% eroded slopes (Bowman 1973). Elevation range of the project site is from approximately 621 meters (2,020 feet) above mean sea level to 650 meters (2,113 feet). The property is mostly flat with a small knoll in the southeast section of the property. A portion of this knoll has been recently cut and graded for a small residential subdivision. A section of Old South Grade Road bisects the property on a northeast-southwest axis. This road is not in use and is blocked at both ends. A seasonal drainage occurs on the property. This drainage contained water from the recent rains. Residences occur to the west and south. A commercial building with parking occurs to the east. Interstate Highway 8 occurs to the north across Alpine Boulevard.

BIOLOGICAL RESOURCES OF THE PROPERTY

Vegetation Communities

The discernible vegetation/habitat types occurring on the site are: southern mixed chaparral, coastal sage scrub, bare ground, and disturbed habitat. The coastal sage scrub and chaparral are becoming intermixed vegetation types. Disturbed habitat occurs through out the property.

Habitat Considerations

The QCB habitat on the property is characterized by the open nature of the mixed southern chaparral, coastal sage scrub, bare ground, rock outcrops, and disturbed habitat. The property supports several species of adult QCB nectaring plants. Although no dwarf plantain was detected on the property, *Plantago ovata* was used as part of a hydro-seed mixture used on the cut slopes and edges of the road and is growing in very dense patches.

Dark-tipped bird's-beak, a possible QCB larval host plant, was detected on the property during a 1999 biological survey of the property (Pacific Southwest 2000). The surrounding landscape is becoming fragmented by development (residential). The existing surface roads do not compromise landscape connectivity for butterflies. The knoll supports native vegetation (coastal sage scrub/mix chaparral), rock outcrops, bare ground, and disturbed habitat.

The site field assessment revealed apparently suitable QCB habitat occurring on the property as defined by the protocol guidelines (USFWS 2001). The project site includes potential adult QCB plant nectaring species including California bee plant (*Scrophularia californica*), popcorn flower (*Plagiobothrys* spp. and *Cryptantha* spp.) and fiddleneck (*Amsinckia* spp.) plus other native and nonnative flowering annuals. Only a small portion of the property could be excluded from the survey under the year 2001 protocol survey guidelines (USFWS 2001) (Figure 3).

Although several species of butterflies were observed during the five field visits (Appendix 1) and the property includes suitable adult QBC habitat components; **no adult or larvae Quino Checkerspot Butterflies were observed on the property during the 2001 protocol survey**.

The property does support suitable habitat for the hermes copper (*Lycaena hermes*), an endemic butterfly to San Diego County and a species covered under the County's Multiple Species Conservation Plan. The County will not require a survey for this species. A copy of this report will be submitted to the USFWS and the County of San Diego.

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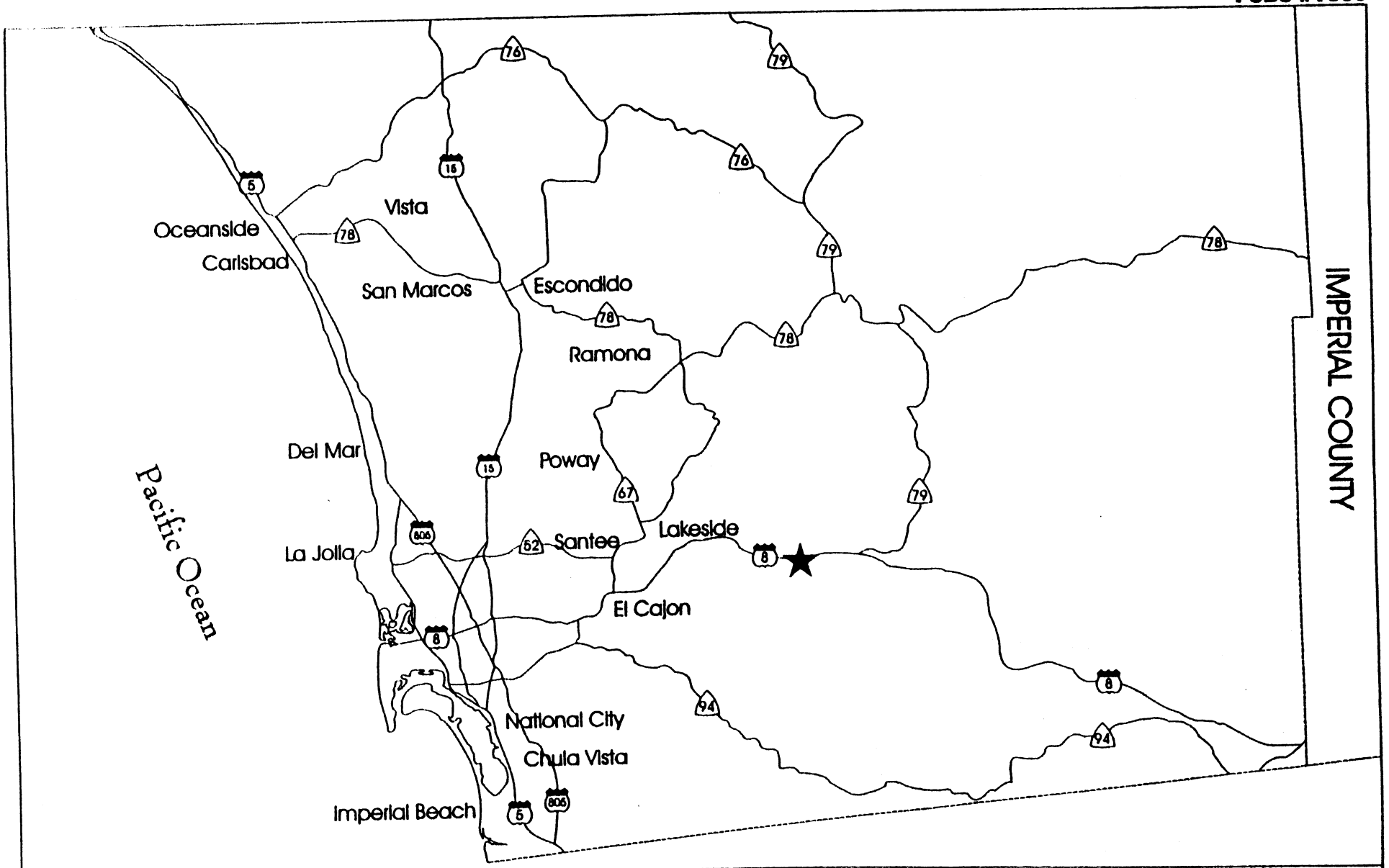

Figure 1. Project Vicinity, ALPINE VILLAGE CENTER Property ★

Pacific Southwest Biological Services, Inc.

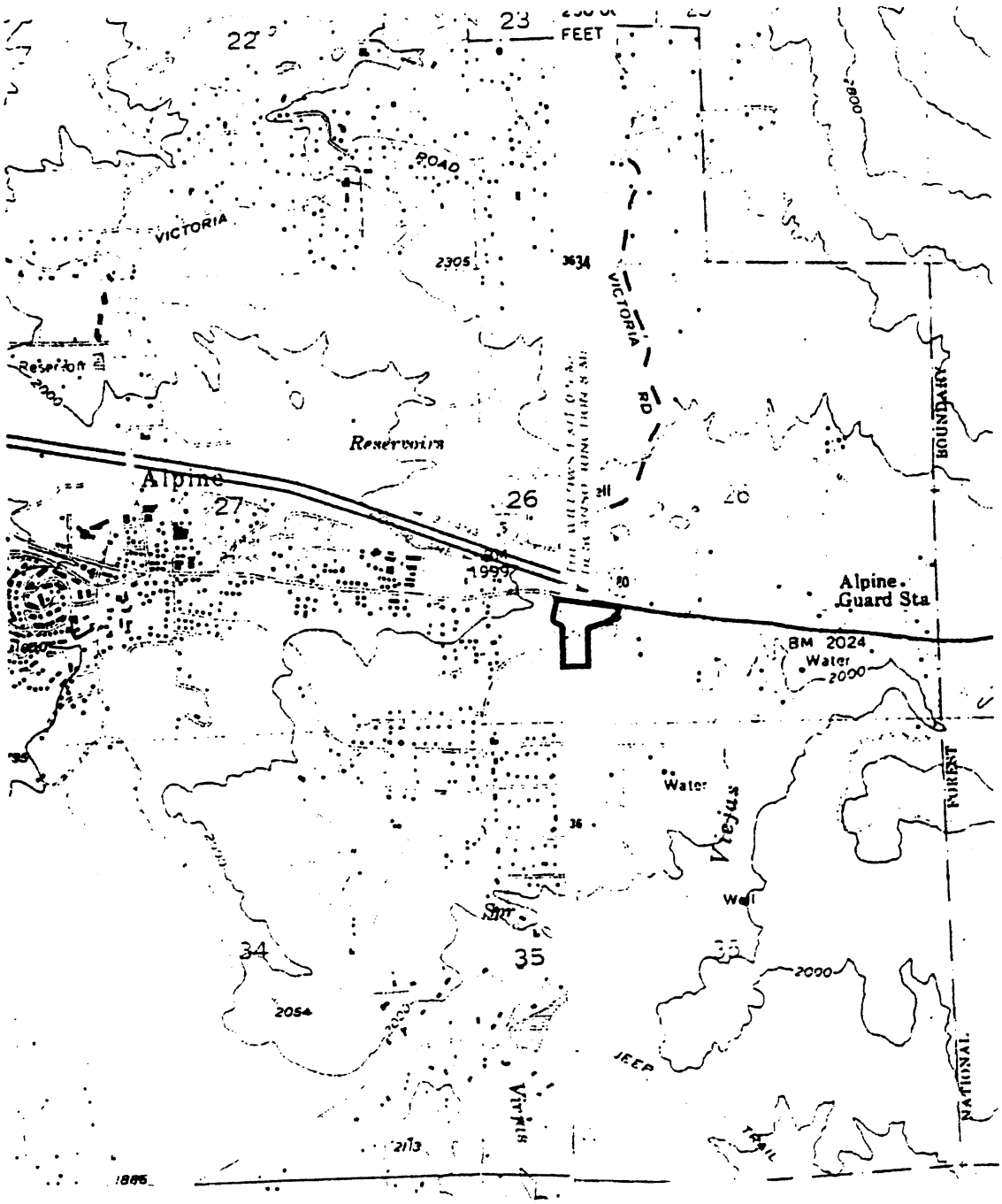

Figure 1. Project Vicinity Map
USGS 7.5' Alpine and Viejas
Mountain Quadrangles

N

1" = 2000'

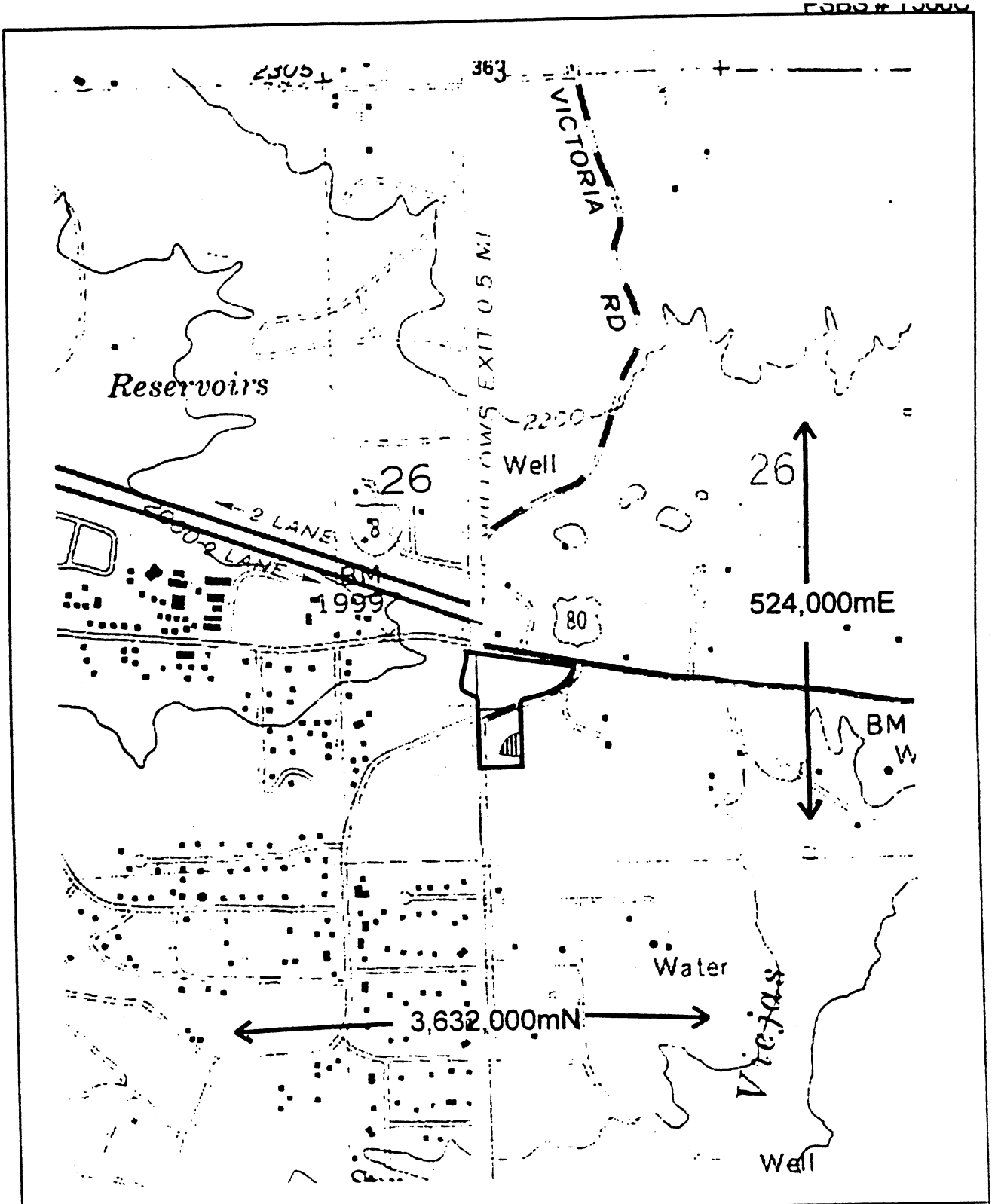

Figure 3. Site Assessment and Host Plant Location Map
Biologist: Doug Allen
USGS Quadrangle: Alpine and Viejas Mountain,CA 200%
Excluded Areas: Closed Canopy Chaparral
Larval Host Plant Location: none

N

1" = 1000'

Pacific Southwest Biological Services, inc.

Photo 1. Project Site Facing Northeast

Photo 2. Project Site Facing Southwest.

Photo 3. Project Site Facing Southwest.

Photo 4. Plantago ovata

APPENDIX 1.

BUTTERFLIES OBSERVED OR DETECTED ON ALPINE VILLAGE CENTER PROPERTY, ALPINE, SAN DIEGO COUNTY, CALIFORNIA.

APPENDIX 1.
BUTTERFLIES OBSERVED OR DETECTED ON ALPINE VILLAGE CENTER PROPERTY, ALPINE, SAN DIEGO COUNTY, CALIFORNIA.

Common Name	Scientific Name
Date: 28 March 2001	
Nymphalidae (Brush-footed Butterflies)	
Painted Lady	*Vanessa cardui*
Riodinidae (Metalmarks)	
Behr's Metalmark	*Apodemia mormo virgulti*
Date: 4 April 2000	
Hesperiidae (True Skippers)	
Mourful Duskywing	*Erynnis tristis*
Nymphalidae (Brush-footed Butterflies)	
Painted Lady	*Vanessa cardui*
Riodinidae (Metalmarks)	
Behr's Metalmark	*Apodemia mormo virgulti*
Lycaenidae (Hairstreaks, Coppers, and Blues)	
Perplexing Hairstreak	*Callophrya perplexa*
Date: 13 April 20001	
Hesperiidae (True Skippers)	
Mourful Duskywing	*Erynnis tristis*
Nymphalidae (Brush-footed Butterflies)	
Painted Lady	*Vanessa cardui*
Date: 17 April 2001	
Nymphalidae (Brush-footed Butterflies)	
Painted Lady	*Vanessa cardui*

Date: 25 April 2001

Nymphalidae (Brush-footed Butterflies)

Painted Lady	*Vanessa cardui*

Pieridae (Whites, Sulfurs, Marbles, and Orange-tips)

Common White	*Pontia protodice*

Riodinidae (Metalmarks)

Behr's Metalmark	*Apodemia mormo virgulti*

Lycaenidae (Hairstreaks, Coppers, and Blues)

Acmon Blue	*Icaricia acmon*

APPENDIX 2.

FIELD NOTES FOR ALPINE VILLAGE CENTER PROPERTY, ALPINE, SAN DIEGO COUNTY, CALIFORNIA.

28 March 01
Alpine - QCB
0730 60.8°F W2 Clear

Popcorn Flower
Piece on Road Berm
Honey Hill Ranch Road
Look From Hydro seed
Cryto - Soil
BEMM:
Plady
0830 65.9°F Ø Clear
During
Meter - mustard, Radius
Erodium
% whip
0900 66.2°F W2 Clear

04 APRIL 01

Alpine Village - SD Co.

QCB II 1350

66.7°F SW @ 3 clear

WP #17 523511, 3632683

PHair · Plady :

Dwing ·

BEMM ·

* R. crocea w̄ E. fas.

copper?

1450 62.9°F SW @ 2 40% oc

Red Hawk

13 April 01

Alpine Village

0900 68.0°F ¢ clear

Plandy ⊠ ⊠

Dwing.

1000 67.1 wal clear

17 April 01

Alpine Village

0800 61.0°F E@3 Clear

Plady T.

0900 73.0°F Ø clear

Very little native nectar

Sources - Black mustard

abundant on east

cut slope

0915 73.6°F Ø clear

25 April 01

Alpine Village, Alpine CA

S.D. Co.

0830 81.1°F NW 1 clear

Plady ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒

Acma ' BEMM:

Cowh :

0930 82.8°F NW ~~NE~~ 1 clear

Schulania (Bee plant)

1000 81.8°F NW 2 clear

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REPORT OF A BIOLOGICAL ASSESSMENT OF THE SUN RIVER PROPERTY ALPINE, SAN DIEGO COUNTY, CALIFORNIA

TM No.: 4941 RPL

UTM: 522,900mE; 3,632,700mN; 11: N.

Prepared for

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18 December 1990
(Revised 24 October 1997)

This Biological Survey Report was prepared by Pacific Southwest Biological Services, Inc. and to the best of our knowledge and belief, the information contained in this document is accurate and current.

R. Mitchel Beauchamp, M. Sc., President
Pacific Southwest Biological Services, Inc.
Gila Biological Services, Inc.
Tierra Madre Consultants, Inc.

REPORT OF A BIOLOGICAL ASSESSMENT OF THE SUN RIVER PROPERTY ALPINE, SAN DIEGO COUNTY, CALIFORNIA

18 December 1990
(Revised 24 October 1997)

SUMMARY

The original 1990 biological survey of the 23-acre Sun River property revealed north-facing slopes dominated by Southern Mixed Chaparral vegetation. A minor drainage with a few willow trees along with other wetland-associated vegetation occurs in the northwestern corner of the site. An area of disturbed Sage Scrub plant communities occupies the northeastern corner of the site. The only sensitive plant species detected on the site was Engelmann Oak (*Quercus engelmannii*). No sensitive vertebrate species were observed or detected on the site; however, habitat for the Coast Horned Lizard and Orange-throat Whiptail occurs on-site. A 1997 survey of the site revealed no significant changes, and no sensitive vertebrates were observed.

INTRODUCTION

The original biological survey of the Alpine site was performed by Pacific Southwest Biological Services, Inc. at the request of the owner, Mrs. Sharon Haven. The purpose of the survey was to identify sensitive biological resources and constraints in the preliminary phases of development design. The updated survey was performed for Dacor Design Group through the request of Mr. Dean Ashworth.

METHODS

The botanical portion of the original survey was conducted by Kyle L. Ince on 14 November 1990. The on-foot survey covered all slope aspects, soil types, and drainages. Particular attention was given to the possible presence of gabbroic soil endemics. Vegetation and sensitive plant locations were delineated on a 1" = 40' topographic map. A follow up survey of botanical resources was made by R. Mitchel Beauchamp as indicated below.

The zoological portion of the original survey was conducted by Eric R. Lichtwardt and John E. Harris on 14 November 1990 from 0900 hours to 1030 hours. Skies were clear with a temperature of 75° F. at 1030 hours; winds were 3 to 5 miles per hour. Wildlife identifications were aided by binoculars (10 x 40 power). Unobserved species were identified through indirect signs (i.e., scat, tracks, calls, nests and burrows, etc.).

Prior biological surveys of the immediate region were examined to assess sensitive resources known from the vicinity of the site (PSBS 1988, 1989a, 1989b, 1990a, 1990b). A spring survey of the site was performed by R. Mitchel Beauchamp in 1978 and on 14 March 1997 in conjunction with environmental survey work in the area. These observations have been incorporated into the site's floral checklist.

Transects of the disturbed vegetation communities of the northeastern sector of the site were made by Mr. Beauchamp on 22 October 1997 in company with field assistant, Jose J. Barraza.

A brief supplementary survey of the site was made by Cornelius W. Bouscaren 12 March 1997. The survey was initiated at 1436 and was completed at 1555; during that time the temperature was 87° F., skies were clear, and winds were westerly at 5mph. The entire site was covered on foot, observing the vegetation and watching and listening for wildlife. Binoculars (8.5x44) were used to assist in detection and identification. The purpose of the survey was to ascertain whether any significant changes had occurred to the vegetation on the site and to again check for sensitive biological resources.

Scientific nomenclature used in this report is from the following references: vegetation, Holland (1986); flora, Beauchamp (1986) and Hickman (1993); birds, American Ornithologists' Union (1983, 1989); reptiles and amphibians, Collins (1990); and mammals, Jameson and Peeters (1988). General wildlife habitat follows Mayer and Laudenslayer (1988).

Since the 1990 survey, botanical science has made changes in the classification and nomenclature of the genus *Quercus*. The Scrub Oak (*Quercus dumosa*) of the earlier report is now referred to as Scrub Oak (*Q. berberidifolia*). On site there are indications of hybridization with Engelmann Oak (*Q. engelmannii*). However, recognition of the widespread frequency of such hybridization is now accepted by referring to such a cross as *(Q. engelmannii* x *berberidifolia)* (Roberts 1995).

LOCATION

The site is located in the southwest quarter of Section 26, Township 15 South, Range 2 East, San Bernardino Base Meridian, USGS 7.5' Alpine and Viejas Mountain Quadrangles (Figure 1). Access to the property is from the east via Alpine Blvd.

GENERAL PHYSIOGRAPHY

The predominantly north-facing site lies south of Interstate 8. The property is bisected from the north by the east end of South Grade Road and is surrounded by residential areas to the south, east and west. A small rocky knoll in the southeast quarter of the site has an elevation of 2113 feet, and the low elevation of 1880 feet occurs in the drainage in the northwest corner of the property.

Soils for the site are mapped as Fallbrook sandy loams, 9 to 15% eroded slopes and 15 to 30% eroded slopes (Bowman 1973). Surficial geology is mapped as Mesozoic granitic rocks (Rogers 1973). A large portion of the site has been cleared by the realignment of South Grade Road. This was done in conjunction with another development project. Because of the prior clearing, most of the vegetation, except for the wetland habitats, is a resprout or regrowth of the shrub cover.

BOTANICAL RESOURCES

VEGETATION

Four discernible plant communities were detected on the site: Southern Mixed Chaparral, Coastal Sage Scrub, as well as a wetland drainage feature (Figure 2). The northern area of the site's vegetation is recovering from brushing in the mid 1970's.

Southern Mixed Chaparral (11.7 acres)

Southern Mixed Chaparral is the predominant plant community on-site. Indicator species include broad-leaved woody shrubs such as Scrub Oak (*Quercus berberidifolia*), Bigberry Manzanita (*Arctostaphylos glauca*), Mission Manzanita (*Xylococcus bicolor*), and Toyon (*Heteromeles arbutifolia*). The most abundant chaparral element on-site is Chamise (*Adenostoma fasciculatum*) with its small, linear, fascicled leaves and panicles of white flowers.

The Mixed Chaparral on-site is less dense and not quite as tall as typical stands of this habitat in other areas of the region, thereby providing patches of bare soil where less competitive spring annuals have taken a foothold, including Jones Cryptantha (*Cryptantha muricata* var. *jonesii*), Rusty Popcorn-flower (*Plagiobothrys nothofulvus*), Thread-stem Dwarf-Flax (*Hesperolinon micranthum*), and Silver Puffs (*Stebbinoseris heterocarpa*). Also present in open areas are scattered bulbous perennials such as Mariposa Lily (*Calochortus* sp.) and Small-flower Soap-Plant (*Chlorogalum parviflorum*).

Rocky outcrops are conspicuous on-site especially along the peak of the knoll near the southeastern corner of the property. Several taxa such as California Bee Plant (*Scrophularia californica*), Giant Stipa (*Achnatherum coronatum*), and Phacelia (*Phacelia suffrutescens*) are restricted to this condition and were detected during the current survey.

Identified on-site during the 1990 survey were six mature Engelmann Oaks (*Q. engelmannii*), five of which occur near the southern boundary of the site. During the 1997 survey these oaks remained on the site as earlier mapped. Nine Engelmann Oak x Scrub Oak hybrids (*Q. engelmannii* x *Q. berberidifolia*) were located during this survey. Seven of these are grouped along Alpine Boulevard just west of the Victoria Drive intersection in the area mapped as Successional Sage Scrub, although this grouping is not sufficiently large in areal extent to represent a distinct habitat type. The other two hybrids are in the southeast quadrant of the site. All of these hybrids exhibit shrubby characteristics with multiple stems. The presence of Mountain Blue-curls (*Trichostema parishii*) exemplifies the floristic affinity of the site with the southern montane San Diego County area.

Coastal Sage Scrub (0.8 acre)

The northeastern portion of the site contains a stand of scrub vegetation dominated by California Sagebrush (*Artemisia californica*) This is characterized by Transect #3. The vegetation appears to be a result of disturbance from clearing. Not intercepted by the transect were isolated stands of Poison-Oak (*Toxicodendron diversilobum*) an associated of interior Chaparral situation or woodlands.

Disturbed Chaparral (2.4 acres)

An issue of the sensitivity of the recovering chaparral vegetation became apparent with the development of vegetation criteria under the Natural Communities Conservation Plan (NCCP). To clarify the on-site situation, transects were made in representative vegetation formations on the site to clarify this situation. Below is the result of these transects. Figure 2 indicates the locations of the 100 foot long line intercept transects.

SPECIES	100-FOOT TRANSECTS RESULTS			
	1	2	3	4
Bare Ground	**35.8'**	**18.6'**	**13.2'**	**22.6'**
Adenostoma fasciculatum				**55.9'**
Arctostaphylos glauca				**6.0**
Artemisia californica			**47.3**	
Baccharis sarothroides			**6.1**	
Eriogonum fasciculatum	**12.8**	**29.2**	**24.9**	**7.5**
Gutierrezia sarothrae	**19.8**		**2.7**	**8.0**
Lotus scoparius			**0.6**	
Quercus berberidifolia			**5.0**	
Salvia apiana	**31.6**	**52.2**	**0.2**	

This disturbed plant community is compositionally very similar to Southern Mixed Chaparral but the woodier elements are much less frequent. However, the dominance , i.e. 31.6% and 52.2% of White Sage (*Salvia apiana*) skews consideration of delineating this habitat as Mixed Chaparral. Another principal component of this habitat is Flat-topped Buckwheat (*Eriogonum fasciculatum*), which is commonly found in both scrub and chaparral associations. Such a mosaic plant community is, therefore, best referred to as a disturbed Chaparral which is recovering from the aforementioned past disturbance. Included in this association are stands of Broom Baccharis (*Baccharis sarothroides*) which lack the Sagebrush presence but do have Flat-top Buckwheat (*Eriogonum fasciculatum*) and a prevalence of White Sage (*Salvia apiana*). This association is demonstrated in Transects #1 and #2. The climax natural vegetation of this area is Mixed Chaparral (San Diego County 1976); the current vegetative mix is a stage in the process of reversion to Mixed Chaparral.

Drainage (0.2 acre)

A drainage with wetland-associated vegetation occurs in the northwestern corner of the site (Figure 2). Approximately 0.2 acre of wetland which includes a few scattered Willows (*Salix lasiolepis, S. gooddingii*) along with Western Cottonwood (*Populus fremontii*) constitutes this area and shades a depauperate understory of Cocklebur (*Xanthium strumarium*) and Tall Flat-sedge (*Cyperus eragrostis*).

The height and canopy of the Willows and Cottonwoods have increased since the earlier survey. Upstream, hydrophilic vegetation becomes scarce; however, evidence of scouring and accumulation of debris warrant wetland consideration under the U.S. Army Corps of Engineers jurisdiction as "waters of the United States" (3 CFR 328), as well as the California Department of Fish and Game 1603 Streambed Alteration Agreement. The small size and recent origin of the feature, however, preclude its being considered a functional biological association. Runoff into the site has increased since the 1990 report by activities of CalTrans.

Cleared and Paved Areas (7.9 acres)

The remainder of the property consists of cleared areas adjacent to residential areas and paved roadways. These sites are dominated by non-native, ruderal annuals. Much of this clearing has been due to the need for fuel modification.

FLORA

A total of 140 plant taxa was observed on the subject property in the 1997 survey; of these, 26 (19%) were non-native (Table 1). The total number of species was compiled during spring of 1978, fall of 1990, and spring of 1997. This list is considered to be a fair representation of all species occurring on-site. The native components of the site's flora are typical of the region and indicate the foothill location of the site. One sensitive plant was found on-site and is discussed in the **Sensitive Biological Resources** section of this report.

ZOOLOGICAL RESOURCES

GENERAL WILDLIFE HABITAT

The only functional wildlife habitat type on the property is Mixed Chaparral. The 1997 survey verified this observation. Much of the Mixed Chaparral habitat on the site is fragmented or disturbed from the construction of roads through the property. Additionally, the site is seriously interdicted by many trails and accumulations of debris from transient human occupation of the site on an on-going basis. In general the wildlife habitat on the site is of poor quality due to the heavy human activity on and surrounding the property. Directly to the north of the site are Alpine Boulevard and Interstate-8. Residential areas occur to the southeast and west. Bisecting the property, as mentioned above, are two roads, which during the recent survey remained largely devoid of vegetation.

In Chaparral, fire is a significant element of the ecology. These fires rejuvenate the vegetation and open the habitat, creating a mosaic of successional stages. Mixed chaparral can support a diverse community of vertebrate species of which birds are the most easily observed. On this property, many of the typical avian chaparral species were not observed and may not occur on the site due to its past disturbance and somewhat isolated situation in a residential area. Chaparral, in general, is also not optimal raptor foraging habitat due to limited prey visibility. However, some bird hunting raptors such as the Sharp-shinned Hawk (*Accipiter striatus*) forage over chaparral during their winter stay in San Diego County.

Located within the Mixed Chaparral habitat, in the northeast corner of the site, is a small drainage. Due to its very small size and the general paucity of typical associated wetland plants, this area is not expected to support the normal vertebrate species found in this habitat type. In the southeastern corner of the property on a small hill is a rocky outcrop. Rocky outcrops provide habitat for numerous reptilian species such as the Granite Spiny Lizard (*Sceloporus orcutti*) and the Red Diamond Rattlesnake (*Crotalus ruber*).

AMPHIBIANS

No amphibians were observed during either survey. The Garden Slender Salamander (*Batrachoseps major*) may occur on the site; however, due to the xeric conditions of the property and the large amount of human disturbance, few amphibian species would be expected.

REPTILES

One reptile, the western fence lizard (*Sceloporus occidentalis*), was observed. As noted above, few species would be expected due to the high amount of human disturbance on and surrounding the site. Other reptiles possibly utilizing the site include the Rosy Boa (*Lichanura trivirgata*), Red Diamond Rattlesnake (*Crotalus ruber*), Orange-throat Whiptail (*Cnemidophorus hyperythrus*), and the Coast Horned Lizard (*Phrynosoma coronatum*).

BIRDS

Fourteen species of birds were observed on the site during the survey (Table 2). Ruby-crowned Kinglet (*Regulus calendula*), Fox Sparrow (*Passerella iliaca*), and White-crowned Sparrow (*Zonotrichia leucophrys*) are common winter migrants of chaparral habitat.

Year-round residents observed on the site included Anna's Hummingbird (*Calypte anna*), California Towhee (*Pipilo crissalis*), Bewick's Wren (*Thryomanes bewickii*), and Scrub Jay (*Aphelocoma coerulescens*). Five Common Ravens (*Corvus corax*) were seen flying over the property and a flock of Bushtits (*Psaltriparus minimus*) was observed near the drainage ditch in the northwest corner of the property.

MAMMALS

Seven species of mammals were either observed directly or by sign (i.e., tracks, scat, burrows or nests) during the survey (Table 2). The tracks of a Virginia Opossum (*Didelphis virginiana*) were observed along the new road bisecting the site from the north. The Opossum has adapted well to living around residential areas. The burrows of the California Ground Squirrel (*Spermophilus beecheyi*) and Botta's Pocket Gopher (*Thomomys bottae*), along with two nests belonging to the Desert Woodrat (*Neotoma lepida*), were also found on the property. The tracks of one Mule Deer (*Odocoileus hemionus*) and the scat of the Coyote (*Canis latrans*) were observed on the site; however, it is believed that due to the high level of human disturbance, the property does not constitute a significant portion of either of these species' range.

SENSITIVE BIOLOGICAL RESOURCES

SENSITIVE VEGETATION

Drainage

Approximately 0.2 acre of wetland habitat occurs on the project within a drainage at the northwest corner of the site. The wetland feature on-site, however, is of recent origin and is not a significant biological resource.

Coastal Sage Scrub

Under the NCCP guidelines, the disturbed vegetation that has currently recovered to a dominance of California Sagebrush, must be considered as Coastal Sage Scrub. This 0.2 acre area will revert to chaparral vegetation with time since isolated elements of Chaparral, such as Honeysuckle (*Lonicera subspicata*) and Rockrose (*Helianthemum scoparium*).

SENSITIVE PLANTS

Engelmann Oaks were the only sensitive plants observed on the site.

Engelmann Oak (*Quercus engelmannii*)

LISTING:	CNPS List 4 R-E-D Code 1-2-2 State/Fed. Status – None (California Native Plant Society, Smith and Berg 1988)
DISTRIBUTION:	San Diego, Orange and Riverside counties, Santa Catalina Island; Baja California, Mexico
HABITAT:	Oak Woodland, Chaparral
SITE:	Relatively abundant in the Echo military sector on Camp Pendleton, in the Santa Margarita Mountains, on the Guejito Ranch, on Ranch Cuca, and near Mesa Grande. Well represented in vicinity of Alpine, as on slopes near South Grade Road. In other areas often very localized. Frequent hybrids with scrub oak often noted in chaparral; typically these individuals are shrub-sized and exhibit much leaf variation.
STATUS:	Stable

The site contains six isolated trees of Engelmann oak, ranging in size from 8 to 13 inches in diameter at breast height. These trees do not constitute a woodland habitat and are just individual, scattered trees.

SENSITIVE PLANTS KNOWN FROM THE REGION BUT NOT FOUND ON-SITE

Most sensitive plants in the area are associated with gabbroic-derived soils. *Acanthomintha ilicifolia* grows on nearby Poser Mountain in Auld clays not recorded on the Haven Alpine site. *Ceanothus cyaneus* has high concentration just south of Highway 8 in the Crest area on acid igneous rock types which are lacking on-site. *Machaeranthera juncea* grows just northwest of the site near the freeway on Victoria Ranch Estates (TPM No. 4925). *Polygala cornuta* is known from very shaded, extensive chaparral habitat in Viejas Creek. *Nolina cismontana* inhabits the gabbroic slopes of Viejas Mountain but was not seen on-site. Also potentially present is *Chorizanthe procumbens* var. *albiflora*, a cryptic annual

which is occasional in the region. Its presence in low numbers would not be considered botanically significant. The site does have a sizable population of Cleveland Sage (*Salvia clevelandii*), an endemic shrub of the foothill areas on gabbroic soils.

SENSITIVE VERTEBRATES DETECTED ON-SITE

No sensitive vertebrate species were detected on-site during the field survey.

SENSITIVE VERTEBRATES KNOWN FROM THE REGION BUT NOT FOUND ON-SITE

Only two sensitive vertebrate species could potentially occur on-site. The limited extent of available habitat and location of the site near residences precludes any significance to the possible presence of these low rarity animals.

Coast Horned Lizard (*Phrynosoma coronatum*)

LISTING:	IUCN (1979) - Depleted CDFG (1977, 1988, 1989) - Protected Amphibian/Reptile SDNGWS (1976) - Species of local concern SDHS (1980) - Endangered Amphibians/Reptiles
DISTRIBUTION:	California and Baja California, Mexico
HABITAT:	Open scrubland and pine/oak woodland
STATUS:	Depleted due to pet collection and habitat destruction.

This lizard generally occurs in open spaces of woodland or coastal scrub and chaparral which provide access to sunning areas as well as harvester ants which serve as their main prey base. They typically have low population densities, even in areas of optimal habitat (Pianka and Parker 1975) and are therefore more vulnerable to local extinction in small isolated habitat patches. This species is relatively slow-moving compared to other lizards, and therefore particularly vulnerable to humans, pets, and other disturbances. Due to the disturbed nature of this site it is highly unlikely that a significant reproductive population of Coast Horned Lizard exists on the property.

Orange-throat Whiptail (*Cnemidophorus hyperythrus beldingi*)

LISTING:	SDNGWS (1976) - Species of Local Concern CITES (1976) - Category II IUCN (1979) - Rare SDHS (1980) - Threatened CDFG (1977, 1988, 1989) - Protected Reptile, Sensitive
DISTRIBUTION:	Limited; found from southern Orange County, western Riverside and San Diego counties south to southern Baja California, Mexico.
HABITAT:	Open scrubland
STATUS:	Limited distribution; found only in western San Diego County and Baja California, Mexico.

This property lies on the eastern edge of the Orange-throat Whiptail habitat and this species may occur on the site. However, as with the Horned Lizard, the disturbed nature of the site and its relatively isolated position precludes any significance to the possible presence of this lizard.

The Coastal California Gnatcatcher (*Polioptila californica californica*) was not detected on the site nor is it known from any areas nearby. Pacific Southwest believes that, based upon the recently- issued (USFWS 1997) Service presence/absence survey guidelines for this federally-listed Threatened species, a focused survey is not warranted due to lack of habitat and lack of proximity to suitable habitat. These guidelines state that such a survey is required "if proposed projects contain coastal sage scrub, alluvial fan scrub, chaparral, or intermixed or adjacent areas of grassland and riparian habitats, and is located within the range of this species." The site is out of the range of the species due to inland distance, habitat parameters and site elevation.

EXPECTED BIOLOGICAL IMPACTS

SIGNIFICANT IMPACTS

Wetlands

The elimination of the 0.2 acre drainage wetland in the northwest corner of the property will occur with proposed grading associated with the proposed project. A Streambed Alteration Agreement, in accordance with California Department of Fish & Game Code 1603 will be required to fill this ditch. A Nation-wide permit 26 applies to the channel under current U.S. Army, Corps of Engineers regulations of the Clean Water Act. Mitigation for the loss of this resource is to be by off-site acquisition of wetland credits. Regionally the expected impact to this drainage is not considered an adverse biological impact due to the limited extent of the feature and the recent and artificial nature of the system's water source. The small size, lack of wetland understory, and geographic isolation of this habitat from other larger areas of wetland vegetation further add to this project's insignificant impact to the flora and fauna that would normally be associated with this habitat type. Human transient use of the site further adds to its degradation.

Coastal Sage Scrub

The removal of this 0.2 acre of sensitive vegetation at a later date will require compensation by payment of fees for mitigation credits. Since the feature occurs on the remainder parcel and will not be a part of the currently proposed development, this mitigation measure is held in abeyance until development plans for this eastern area are approved. The option, of course, remains to mitigate for the impact now and remove the feature as pard of an independent grading activity or in conjunction with the adjacent development.

MULTIPLE SPECIES CONSERVATION PLAN

Based on guidelines provided by the recently issued revisions of the San Diego County Biological Mitigation Ordinance (BMO) addressed to the Multiple Species Conservation Plan (MSCP), the following is required:

Following the BMO, the Impact Site is determined not to be a Biological Resource Core Area, since it does not contain habitat known to support sensitive species.

In the BMO Vegetation Classification System, Diegan Coastal Sage Scrub is classified as a Tier II vegetation community.

The appropriate ratio for mitigation on the site, a Biological Resource Area, is 1.5:1. The BMO makes no distinction for mitigation purposes between direct and indirect impacts.

Applying the Tier Classification System and Table of Mitigation Ratios from the BMO produces the following table:

Note: Ratios vary depending on whether the mitigation site meets criteria for biological resource core area according to the BMO definition.

Vegetation	Tier Category	Acreage Impacted	Ratio at Mitigation Site		Acreage to be Preserved or Restored at Mitigation Site	
			Meets Core Criteria	Does Not Meet Core Criteria	Meets Core Criteria	Does Not Meet Core Criteria
Diegan Coastal Sage Scrub	II	2.36	1.5:1	2:1	3.54	4.72

Using this mitigation ratio, the impacts to Diegan Coastal Sage Scrub would incur a mitigation obligation of 1.2 acres (1.5 x 0.8 acre) of Diegan Coastal Sage Scrub to be restored and/or preserved on-site. Diegan Coastal Sage Scrub (0.8 acre) currently exists in an area of future development on the site.

In lieu of, or in combination with, on-site preservation and restoration, off-site credits of Diegan Coastal Sage Scrub will be acquired.

NON-SIGNIFICANT IMPACTS

The proposed project will eliminate 8.6 acres of Mixed Chaparral and disturbed Mixed Chaparral habitat. This is not considered a sensitive habitat in San Diego County and given the existing residential areas to the south, east and west and Alpine Boulevard and Interstate-8 to the north, little biological utility would be retained by placing any of the project site within a biological easement.

Three Engelmann Oaks would be eliminated by grading for proposed parcels 18, 20 and 21, as would two additional Engelmann Oaks in the proposed borrow area in the southeast quarter of the project. The sixth tree is located at the northeastern corner of the site. The loss of Engelmann Oaks woodland is considered an adverse biological impact; however, the few isolated trees on-site do not constitute a woodland habitat and their loss is not considered a significant adverse biological impact. The loss of any of the Engelmann Oak x Scrub Oak hybrids on the site would not be considered an adverse impact.

RECOMMENDATIONS TO REDUCE BIOLOGICAL IMPACTS

The loss of 0.2 acre of wetland vegetation in the northwestern drainage ditch will require the acquisition of a 1603 California Department of Fish and Game Streambed Alteration Agreement.

Since the original survey of the site, the County of San Diego (San Diego County 1991) has issued specific guidelines regarding oak trees. In the County's language, "...oak trees may not represent a significant biological resource, but because of their aesthetic value, preservation of individual trees may be warranted." For aesthetic reasons, it is recommended that the proposed project be amended so that the three Engelmann Oaks scheduled for elimination in the area of proposed lots 18, 20, and 21 be preserved as part of the landscape of the lots.

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TABLE 1. FLORAL CHECKLIST OF THE SUN RIVER PROPERTY SITE

HABITAT TYPES: X = Disturbed Chaparral; M = Southern Mixed Chaparral; C = Drainage Channel; S = Coastal Sage Scrub

	HABITAT
CRYPTOGAMS	
Ferns	
Pteridaceae - Brake Family	
Cheilanthes clevelandii D.C. Eaton Cleveland's lipfern	C
GYMNOSPERMS	
Pinaceae - Pine Family	
• *Pinus halapensis* Mill. Aleppo pine	M
DICOTYLEDONS	
Anacardiaceae - Sumac Family	
Malosma laurina (Nutt.)Nutt. ex Abrams. Laurel-Leaf Sumac	X,M
Rhus ovata Wats. Sugarbush	M
• *Schinus molle* L. Peruvian Pepper-tree	M
Toxicodendron radicans ssp. *diversilobum* (T.& G.)Thorne. Poison-Oak	M
Apiaceae - Carrot Family	
Apiastrum angustifolium Nutt. in T. & G. Wild-celery	X
• *Foeniculum vulgare* Mill. Sweet Fennel	M
Lomatium dasycarpum (T. & G.)C. & R. ssp. *dasycarpum*	M,X
Sanicula crassicaulis Poepp. ex D.C.	M
Asteraceae - Sunflower Family	
Acourtia microcephala D.C. Sacapellote, Purpleheads	M
Ambrosia psilostachya DC. var. *californica* (Rydb.)Blake. Ragweed	X
Artemisia californica Less. California Sagebrush	M,S
Baccharis salicifolia (R. & P.) Pers. Mule-Fat	C
Baccharis sarothroides Gray. Broom Baccharis	M,S,X
Brickellia californica (T.& G.)Gray. California Brickellbush	M
• *Centaurea melitensis* L. Tocalote	M,X
Cirsium occidentale (Nutt.)Jeps. Cobweb Thistle	M
• *Conyza bonariensis* (L.)Cronq. Flax-Leaf Fleabane	M
• *Conyza canadensis* (L.)Cronq. Horseweed	X
Encelia californica Nutt. California Encelia	X
Eriophyllum confertiflorum (DC.) Gray var. *confertiflorum* Golden-Yarrow	X
• *Gazania linearis* (Thunb.)Druce. Gazania	X
Gnaphalium bicolor Bioletti. Bicolor Cudweed	M
Gnaphalium californicum DC. California Everlasting	M
Gnaphalium canescens ssp. *beneolens* (Davidson)Stebb. &Keil.	X
Gnaphalium canescens ssp. *microcephalum* (Nutt.)Stebb. & Keil. White Everlasting	M
Gutierrezia sarothrae (Pursh)Britt. & Rusby. San Joaquin Matchweed	D,M,S,X
Hazardia squarrosa ssp. *grindelioides* (D.C.)Clark. Sawtooth Goldenbush	M
• *Hedypnois cretica* (L.) Willd. Crete hedypnois	X

	Habitat
Asteraceae - Sunflower Family (continued)	
Helianthus gracilentus Gray. Slender Sunflower	M
Heterotheca grandiflora Nutt. Telegraph Weed	M
• *Hypochoeris glabra* L. Smooth Cat's-ears	M
Lessingia filaginifolia (H. & A.)M.A. Lane var. *flaginifolia* Sand-Aster	M,X
• *Sonchus asper* (L.) Hill prickly sow thistle	X
• *Sonchus oleraceus* L. Common Sow-Thistle	X
Stebbinsoseris heterocarpa (Nutt)Chambers. Silver Puffs	M
Stylocline gnaphalioides Nutt. Everlasting Nest-Straw	M,X
• *Xanthium strumarium* var. *canadense* (Mill.)T.& G. Cocklebur	M
Boraginaceae - Borage Family	
Cryptantha muricata var. *jonesii* (Gray)Jtn. Jones' Cryptantha	X
Plagiobothrys canescens Benth. Valley Popcornflower	C
Plagiobothrys collinus (Philbr.) I.M. Jtn. var. *californicus* (Gray) Higns. California Popcornflower	X
Plagiobothrys nothofulvus (Gray)Gray. Rusty Popcornflower	M
Brassicaceae - Mustard Family	
• *Capsella bursa-pastoris* (L.)Medic. Shepherd's-Purse	M
Caulanthus lasiophyllum (H. & A.)Pays. California Mustard	M
• *Hirschfeldia incana* (L.)Lagr.-Fossat. Short-pod Mustard	M,X
• *Lobularia maritima* (L.) Desv. Sweet Alyssum	X
• *Raphanus sativus* L. Wild Radish	M
Cactaceae - Cactus Family	
• *Opuntia ficus-indica* (L.)Miller. Indian-Fig	M
Opuntia parryi Engelm. var. *parryi* Valley Cholla	M
Caprifoliaceae - Honeysuckle Family	
Lonicera subspicata var. *denudata* Rehd. San Diego Honeysuckle	M
Chenopodiaceae - Goosefoot Family	
• *Salsola tragus* L. Russian-thistle	M
Cistaceae - Rock-Rose Family	
Helianthemum scoparium var. *aldersonii* (Greene)Munz. Rush-Rose	M
Convolvulaceae - Morning-Glory Family	
Calystegia macrostegia ssp. *arida* (Greene)Brumm. Finger-leaf Morning-Glory	M
Crassulaceae - Stonecrop Family	
Crassula connata (Ruiz & Pav.)Berger in Engl. & Prantl. var. *connata* Dwarf Stonecrop	M
Dudleya pulverulenta (Nutt.)Britt.& Rose. Chalk-lettuce	M
Cucurbitaceae - Gourd Family	
Marah macrocarpus (Greene)Greene. Manroot, Wild-Cucumber	M
Cuscutaceae - Dodder Family	
Cuscuta californica Hook & Arn. var. *californica* witch's hair	M
Ericaceae - Heath Family	
Arctostaphylos glauca Lindl. Bigberry Manzanita	M
Xylococcus bicolor Nutt. Mission Manzanita	M
Euphorbiaceae - Spurge Family	
Eremocarpus setigerus (Hook.)Benth. Doveweed	M,X

	Habitat
Fabaceae - Pea Family	
• *Acacia* sp.	C
• *Acacia baileyana* F. Muell Cootamundra Wattle	C
• *Acacia retinodes* Schldl. Everblooming Acacia	C
Lathyrus vestitus ssp. *alefeldii* (White)Isley. Sweetpea	M
Lotus purshianus (Benth.) Clem. & Clem. Spanish-clover	X
Lotus scoparius ssp. *brevialatus* (Ottley)Munz. Deerweed	M
Lupinus hirsutissimus Benth. stinging lupine	X
• *Medicago polymorpha* L. California burclover	X
• *Parkinsonia aculeata* L. Mexican Palo Verde	X
Vicia americana Willd. var. *americana* American vetch	X
Fagaceae - Oak Family	
Quercus berberidifolia Liebm. Scrub Oak	M,X
Quercus engelmannii Greene. Mesa Blue Oak, Engelmann Oak	M
Quercus engelmannii x *Quercus berberidifolia* hybrid	X
Geraniaceae - Geranium Family	
• *Erodium cicutarium* (L.)L'Her. Red-stem Filaree	M
• *Erodium moschatum* (L.)L'Her. White-stem Filaree	M
Hydrophyllaceae - Waterleaf Family	
Phacelia suffrutescens (Parry)Const.	M
Lamiaceae - Mint Family	
• *Marrubium vulgare* L. Horehound	M
Salvia apiana Jeps. White Sage	X
Salvia clevelandii (Gray)Greene. Cleveland Sage	M
Trichostema parishii Vasey. Mountain Blue-Curls	M
Linaceae - Flax Family	
Hesperolinon micranthum (Gray)Small. Thread-leaf Dwarf-Flax	M
Malvaceae - Mallow Family	
Malacothamnus fasciculatus (Nutt.)Greene var. *fasciculatus* Mesa Bushmallow	M
Oleaceae - Olive Family	
• *Olea europea* L. Mission Olive	M
Onagraceae - Evening-Primrose Family	
Camissonia strigulosa (F.& M.)Raven. Strigulose Evening-Primrose	M
Epilobium canum (Greene)Raven.	M
Oxalidaceae - Wood-Sorrel Family	
Oxalis albicans Kunth ssp. *californica* (Abrams) Eiten California wood-sorrel	X
Paeoniaceae - Peony Family	
Paeonia californica Nutt. in T.& G. California Peony	M
Papaveraceae - Poppy Family	
Eschscholzia californica Cham. California poppy	
Polemoniaceae - Phlox Family	
Navarretia atractyloides (Benth.)Greene. Holly-leaf Skunkweed	M

	Habitat
Polygonaceae - Buckwheat Family	
Chorizanthe staticoides Benth. Turkish rugging	X
Eriogonum fasciculatum Benth. ssp. *fasciculatum* Flat-top Buckwheat	M,S,X
Pterostegia drymarioides F. & M. Granny's Hairnet	M
• *Rumex crispus* L. curly dock	C
Portulacaceae - Purslane Family	
Calandrinia ciliata (Ruiz Lopez & Pavon) DC. red maids	X
Primulaceae - Primrose Family	
• *Anagallis arvensis* L. Scarlet Pimpernel	M
Rhamnaceae - Buckthorn Family	
Ceanothus leucodermis E. Greene White-stemmed-Lilac	C
Ceanothus tomentosus ssp. *olivaceus* (Jeps.)Munz. Ramona-Lilac	M
Rhamnus crocea Nutt. in T. & G. Spiny Redberry	M
Rosaceae - Rose Family	
Adenostoma fasciculatum H.& A. Common Chamise	M
Heteromeles arbutifolia (Ait.)M. Roem. Hollywood, Toyon	M
Rubiaceae - Madder Family	
Galium angustifolium Nutt. ex T. & G. ssp. *angustifolium* Narrow-leaf Bedstraw	M
Salicaceae - Willow Family	
Populus fremontii Wats. Western Cottonwood	C
Salix gooddingii var. *variabilis* Ball. Black Willow	C
Salix lasiolepis Benth. var. *lasiolepis*. Arroyo Willow	C
Salix lucida Muhlenb. ssp. *lasiandra* (Benth) Murray lance-leaf willow	C
Saxifragaceae - Saxifrage Family	
Jepsonia parryi (Torr.)Small. Coast Jepsonia	M
Scrophulariaceae - Figwort Family	
Cordylanthus rigidus Nutt. ex Benth. Dark-tip Bird's-Beak	M
Mimulus pilosus (Benth.)S.Wats.	M
Scrophularia californica var. *floribunda* Greene. California Bee Plant	M
Solanaceae - Nightshade Family	
Datura wrightii Regel. Western Jimsonweed	M
• *Nicotiana glauca* Grah. tree tobacco	C
Tamaricaceae - Tamarisk Family	
• *Tamarix parviflora* DC. European tamarisk	C
MONOCOTYLEDONS	
Agavaceae - Agave Family	
Hesperoyucca whipplei (Torr.)Simpson. Our Lord's Candle	M,X
Yucca schidigera Roezl ex Ortgies. Mojave Yucca	M
Arecaceae - Palm Family	
• *Washingtonia robusta* Wendle. thread palm	M
Cyperaceae - Sedge Family	
Carex triquetra Boott. Chaparral Sedge	M
Cyperus eragrostis Lam. Tall Flatsedge	C

	Habitat
Liliaceae - Lily Family	
• *Amaryllis belladonna* L. Naked Lady	M
Calochortus sp.	M
Chlorogalum parviflorum Wats. Small-Flower Soap-Plant	M
Dichelostemma capitatum Wood ssp. *capitatum* wild hyacinth	M
Poaceae - Grass Family	
Achnatherum coronatum (Thurb. in Wats.) Barkworth. Giant Stipa	M
• *Avena barbata* L. Slender Oat	M,X
• *Bromus diandrus* Roth. Ripgut Grass	M,X
• *Bromus hordaceus* L. Soft Chess	M,X
• *Bromus rubens* L. Red Brome	M
• *Cortaderia jubata* (Lem.) Stapf pampas grass	C
• *Cynodon dactylon* (L.)Pers. Bermuda Grass	M,X
• *Gastridium ventricosum* (Gouan)Schinz & Thell. Nitgrass	M
• *Lamarckia aurea* (L.)Moench. Goldentop	M
Muhlenbergia rigens (Benth.)Hitchc. California Deergrass	M
Nassella cernua (Stebbins & Love) Barkworth nodding needlegrass	X
Nassella pulchra (Hitchc.)Barkworth. Purple Needlegrass	M
• *Pennisetum setaceum* (Forsk.)Chiov. Fountain Grass	M
• *Poa annua* L. annual bluegrass	X
• *Schismus barbatus* (L.) Thell. Mediterranean schismus	X
• *Vulpia myuros* (L.)C.Gmelin	X

• - Denotes non-native plant taxa

TABLE 2. FAUNA CHECKLIST OF THE SUN RIVER PROPERTY SITE

C = Mixed Chaparral F = Flying S = Scat
N = Nest/Burrows T = Tracks

COMMON NAME	SCIENTIFIC NAME	NUMBER/MEANS OF DETECTION	HABITAT
BIRDS			
Columbidae (Pigeons and Doves)			
Mourning Dove	*Zenaida macroura*		
Trochilidae (Hummingbirds)			
Anna's Hummingbird	*Calypte anna*	2	C
Corvidae (Jays, Magpies, and Crows)			
Scrub Jay	*Aphelocoma coerulescens*	8	C
American Crow	*Corvus brachyrhynchos*		
Common Raven	*Corvus corax*	5	F
Aegithalidae (Bushtit)			
Bushtit	*Psaltriparus minimus*	Flock	C
Troglodytidae (Wrens)			
Bewick's Wren	*Thryomanes bewickii*	1	C
Muscicapidae (Old World Warblers, Gnatcatchers, Kinglets, Thrushes, Bluebirds, and Wrentit)			
Ruby-crowned Kinglet	*Regulus calendula*	1	C
Mimidae (Mockingbirds and Thrashers)			
Northern Mockingbird	*Mimus polyglottos*	1	C
Emberizidae (Warblers, Sparrows, Blackbirds and Relatives)			
California Towhee	*Pipilo crissalis*	9	C
Fox Sparrow	*Passerella iliaca*	2	C
White-crowned Sparrow	*Zonotrichia leucophrys*	13	C
Fringillidae (Finches)			
House Finch	*Carpodacus mexicanus*	10	C
Lesser Goldfinch	*Carduelis psaltria*	1	C
MAMMALS			
Didelphidae (Opossums)			
Virginia Opossum	*Didelphis virginiana*	T	C
Leporidae (Rabbits and Hares)			
Desert Cottontail	*Sylvilagus audubonii*	1	C
Sciuridae (Squirrels, Chipmunks, and Marmots)			
California Ground Squirrel	*Spermophilus beecheyi*	N	C

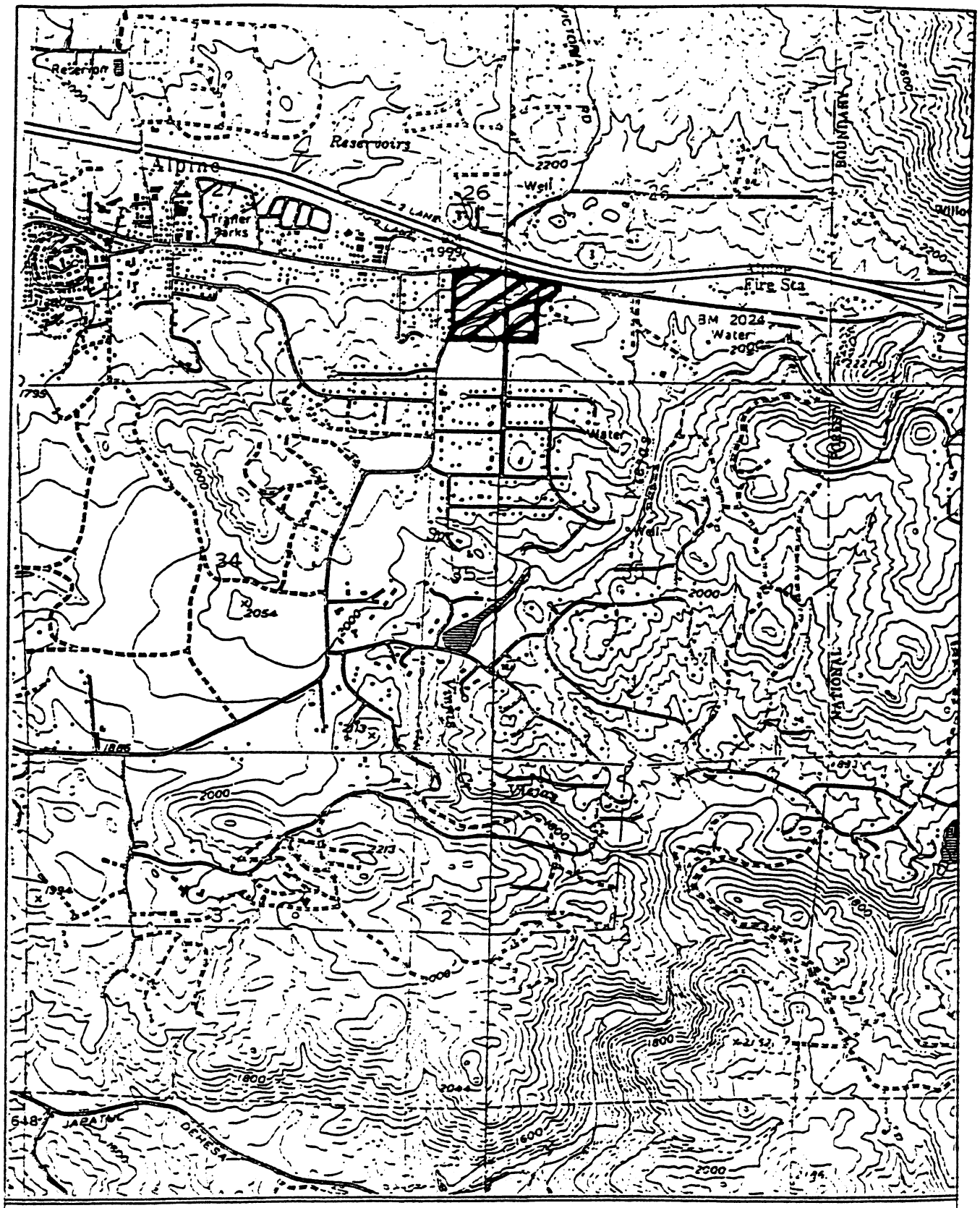
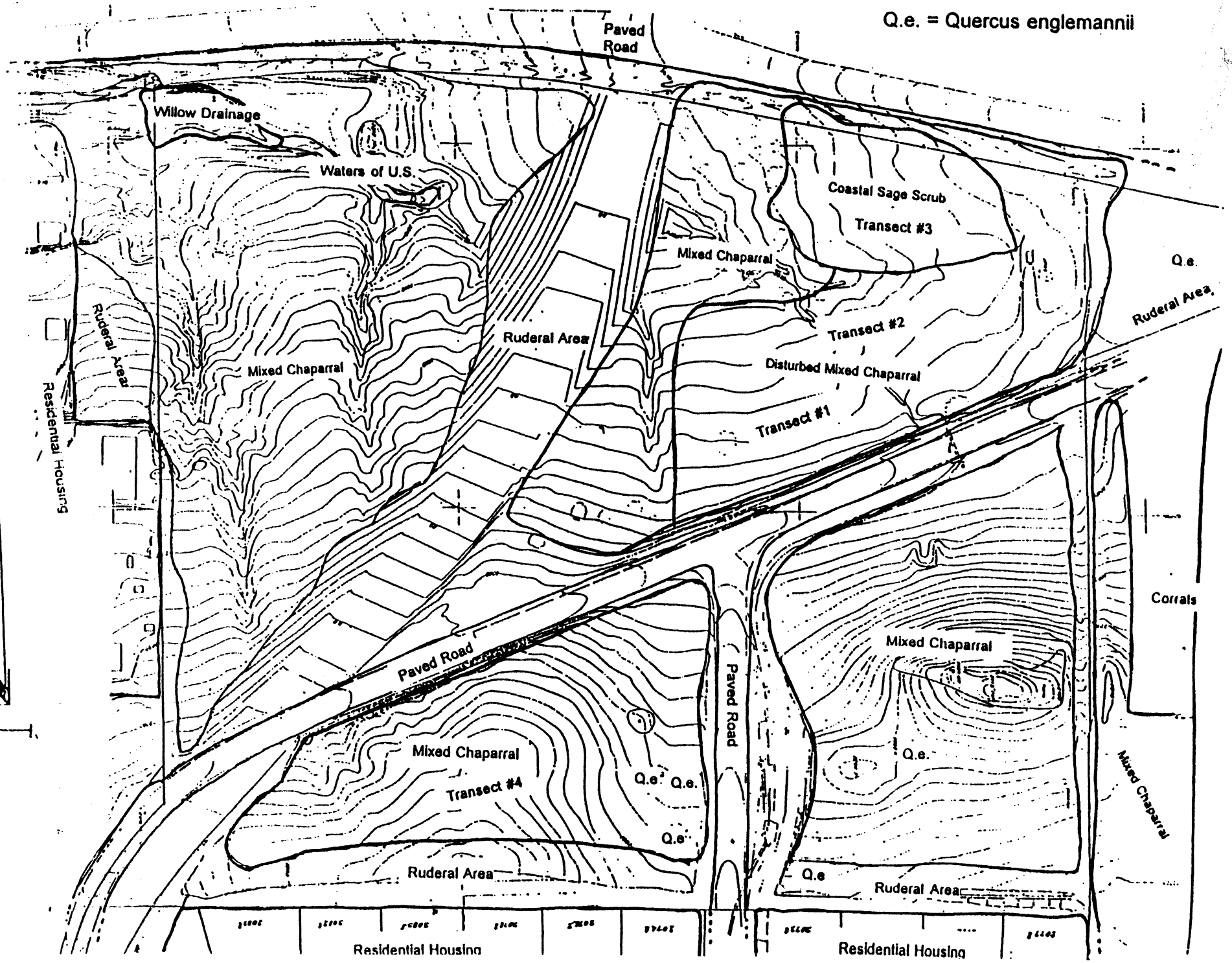


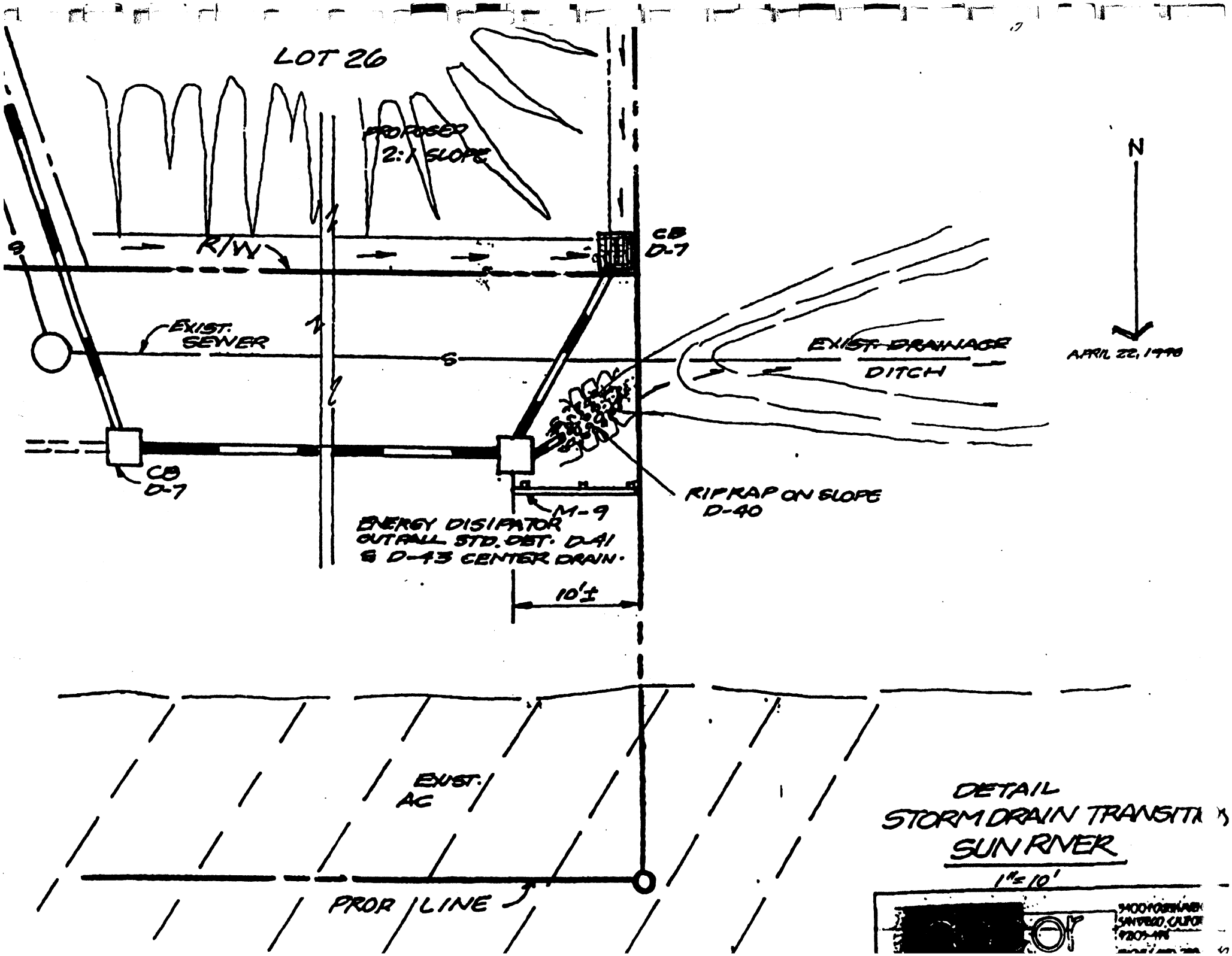
FIGURE 1. PROJECT VICINITY MAP
USGS 7.5' Alpine and Viejas Mountain Quadrangles

N

1" = 2000'

FIGURE 2. VEGETATION, TRANSECT, AND SENSITIVE RESOURCES




LOT 26
PROPOSED 2:1 SLOPE
R/W
CB D-7
EXIST. SEWER
EXIST. DRAINAGE DITCH
N
APRIL 22, 1990
CB D-7
RIPRAP ON SLOPE D-40
M-9
ENERGY DISIPATOR OUTFALL STD. DET. D-41 & D-43 CENTER DRAIN.
10'±
EXIST. AC
PROP LINE
DETAIL
STORM DRAIN TRANSITI
SUN RIVER
1"=10'

PRELIMINARY
NOT FOR CONSTRUCTION
FOR BID PURPOSES ONLY