THE CITY OF SAN DIEGO

DEVELOPMENT SERVICES DEPARTMENT
Date of Notice: August 14, 2015
PUBLIC NOTICE OF PREPARATION OF A
DRAFT ENVIRONMENTAL IMPACT REPORT
SAP No.: 24001819

PUBLIC NOTICE: The City of San Diego will be the Lead Agency and will prepare a draft Environmental Impact Report in compliance with the California Environmental Quality Act (CEQA). This Notice of Preparation of an Environmental Impact Report was publicly noticed and distributed on August 14, 2015. This notice was published in the SAN DIEGO DAILY TRANSCRIPT and placed on the City of San Diego website at http://www.sandiego.gov/city-clerk/officialdocs/notices/index.shtml.

SCOPING RESPONSE: Written comments should be sent to Martha Blake, City of San Diego Development Services Center, 1222 First Avenue, MS 501, San Diego, CA 92101 or e-mailed to DSDEAS@sandiego.gov referencing the Project Name and Number in the subject line within 30 days of the receipt of this notice. Responsible agencies are requested to indicate their statutory responsibilities in connection with this project when responding. A draft Environmental Impact Report incorporating public input will then be prepared and distributed for public review and comment.

PROJECT NAME: CARROLL CANYON MIXED USE

PROJECT NO.: 240716
SCH No.: *Pending*
COMMUNITY PLAN AREA: Scripps Miramar Ranch
COUNCIL DISTRICT: 5 (Mark Kersey)

SUBJECT: CARROLL CANYON MIXED USE: COMMUNITY PLAN AMENDMENT, REZONE, PLANNED DEVELOPMENT PERMIT, SITE DEVELOPMENT PERMIT and VESTING TENTATIVE MAP to demolish 76,241 square feet of existing structures and on-site surface parking and construct a mixed-use development consisting of 260 residential units and 12,200 square feet of commercial retail/restaurant space. The site is zoned IP-2-1 (Industrial - Park) and is designated Industrial in the Scripps Miramar Ranch Community Plan. The project would require a rezone to RM-3-7 and a land use designation change to Residential.

The 9.28-acre project site is located at 9850 Carroll Canyon Road and is currently developed with mostly vacant office buildings and associated surface parking and facilities. The applicant previously proposed demolition of the existing office complex and redevelopment of the site as the "Carroll Canyon Commercial Center" project, with 144,621 square feet of commercial development that would have included a mix of retail shops, financial institution(s), sit-down restaurant(s), and fast-service restaurant(s). Discretionary approvals associated with that previous proposal included: a General Plan Amendment to change the land use designation from Light Industrial to Community Commercial; a Community Plan Amendment to change the current land use designation from Industrial Park to Community Shopping; a Rezone of the site from IP-2-1 (Industrial—Park) to CR-2-1 (Commercial—Regional), a Planned Development Permit (PDP) to allow deviation of minimum street frontage, a Site Development Permit (SDP) for the development of a large retail establishment of 100,000 square feet or more, a Neighborhood Use Permit (NUP) for a Comprehensive Sign Plan, and a Vesting Tentative Map (VTM). A Draft EIR (Project No. 240716/SCH No. 2012081029) was prepared for the previously proposed Carroll Canyon Commercial Center project and circulated for public review on September 6, 2013. In response to public comments, the project applicant has redesigned the project, reducing the amount of commercial space and, with the addition of multi-family residential use, is proposing the Carroll Canyon Mixed-Use project.

APPLICANT: Sudberry Development, Inc.

RECOMMENDED FINDING: Pursuant to Section 15060(d) of the CEQA Guidelines, it appears that the proposed project could potentially result in significant environmental impacts in the following areas: Land Use, Transportation/Circulation/Parking, Visual Quality/ Neighborhood Character, Biological Resources, Noise, Air Quality, Global Climate Change, Energy, Geologic Conditions, Paleontological Resources, Hydrology/Water Quality, Public Utilities, and Public Services and Facilities.

AVAILABILITY IN ALTERNATIVE FORMAT: To request this Notice in alternative format, call the Development Services Department at (619) 446-5460 immediately to ensure availability. This information is also available in alternative formats for persons with disabilities. To request this Notice in alternative format, call (619) 446-5446 or (800) 735-2929 (TEXT TELEPHONE).

ADDITIONAL INFORMATION: For information on environmental review and/or information regarding this project, contact Martha Blake at (619) 446-5375. Supporting documents may be reviewed, or purchased for the cost of reproduction, at the Fifth floor of the Development Services Department. For information regarding public meetings/hearings on this project, contact John Fisher, Project Manager, at (619) 446-5231. This notice was published in the SAN DIEGO DAILY TRANSCRIPT, placed on the City of San Diego website http://www.sandiego.gov/city-clerk/officialdocs/notices/index.shtml and distributed on August 14, 2015

Kerry Santoro, Deputy Director
Development Services Department

ATTACHMENTS: Figure 1. Project Vicinity Map
Figure 2. Project Location Map
Scoping Letter

DISTRIBUTION:

U.S. Government
U.S. Fish and Wildlife Service (23)
MCAS Miramar (13)

State of California
California Department of Fish and Wildlife (32A)
Regional Water Quality Control Board (44)
State Clearinghouse (46)
Caltrans (31)

City of San Diego
Mayor's Office
City Attorney's Office (MS 59)
Councilmember Mark Kersey, District 5
Central Library (81)
Scripps Miramar Ranch Library (81FF or MS 17)
Development Services Department
- Project Manager (MS 501)
- Engineering Review (MS 501)
- Landscape Review (MS 501)
- Fire and Life Safety (MS 401)
- Permit Reviewer (MS 501)
- Geology (MS 501)
- EAS (MS 501)

Planning Department
- Long Range Planning (MS 5A)

Additional Biological Distribution
Environmental Law Society (164)
Sierra Club (165)
San Diego Audubon Society (167)
Mr. Jim Peugh (167A)
California Native Plant Society (170)
Center for Biological Diversity (176)
Endangered Habitats League (182A)

Historic Distribution
South Coastal Information Center @ San Diego State University (210)
Native American Heritage Commission (56)
San Diego Archaeological Center (212)
Louie Guassac (215A)
Clint Linton (215B)
San Diego County Archaeological Society, Inc. (218)

Others
SANDAG (108)
Citizens Coordinate for Century III (179)
San Diego Natural History Museum (166)
San Diego Gas and Electric (114)
Beeler Canyon Conservancy (436)
Scripps Miramar Ranch Planning Group (437)
Alliant International University (438)
Scripps Ranch Civic Assoc (440)

Walter Library USIU (441)
Gary Akin -San Diego Gas & Electric (381)

Applicant
Jeff Rogers, Sudberry Development, Inc., 5465 Morehouse Dr., Ste. 260, San Diego, CA 92121

Agent & Consultant
Karen L. Ruggels, K L R PLANNING, P.O. Box 882676, San Diego, California 92168-2676

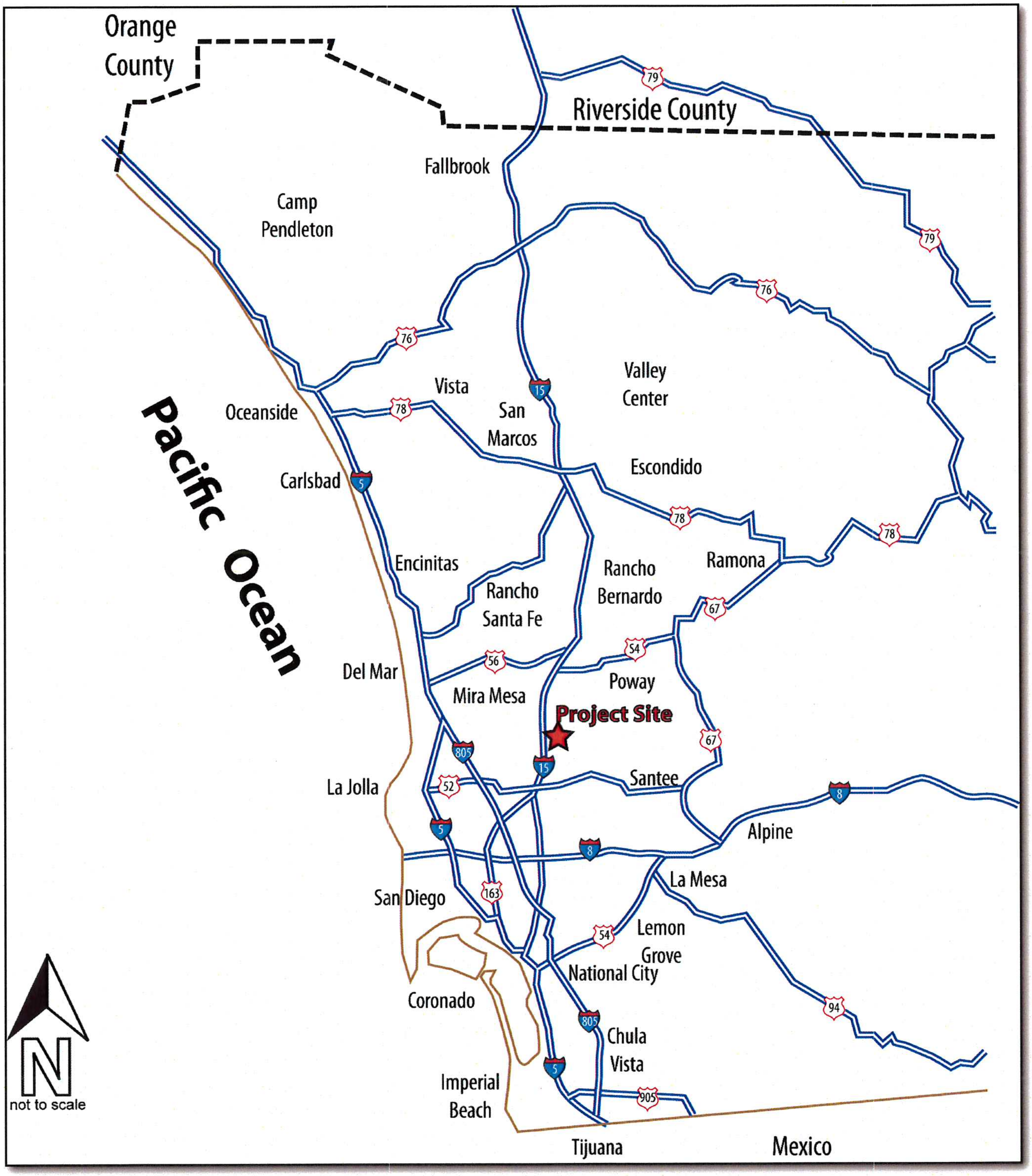

Figure 1. Project Vicinity Map

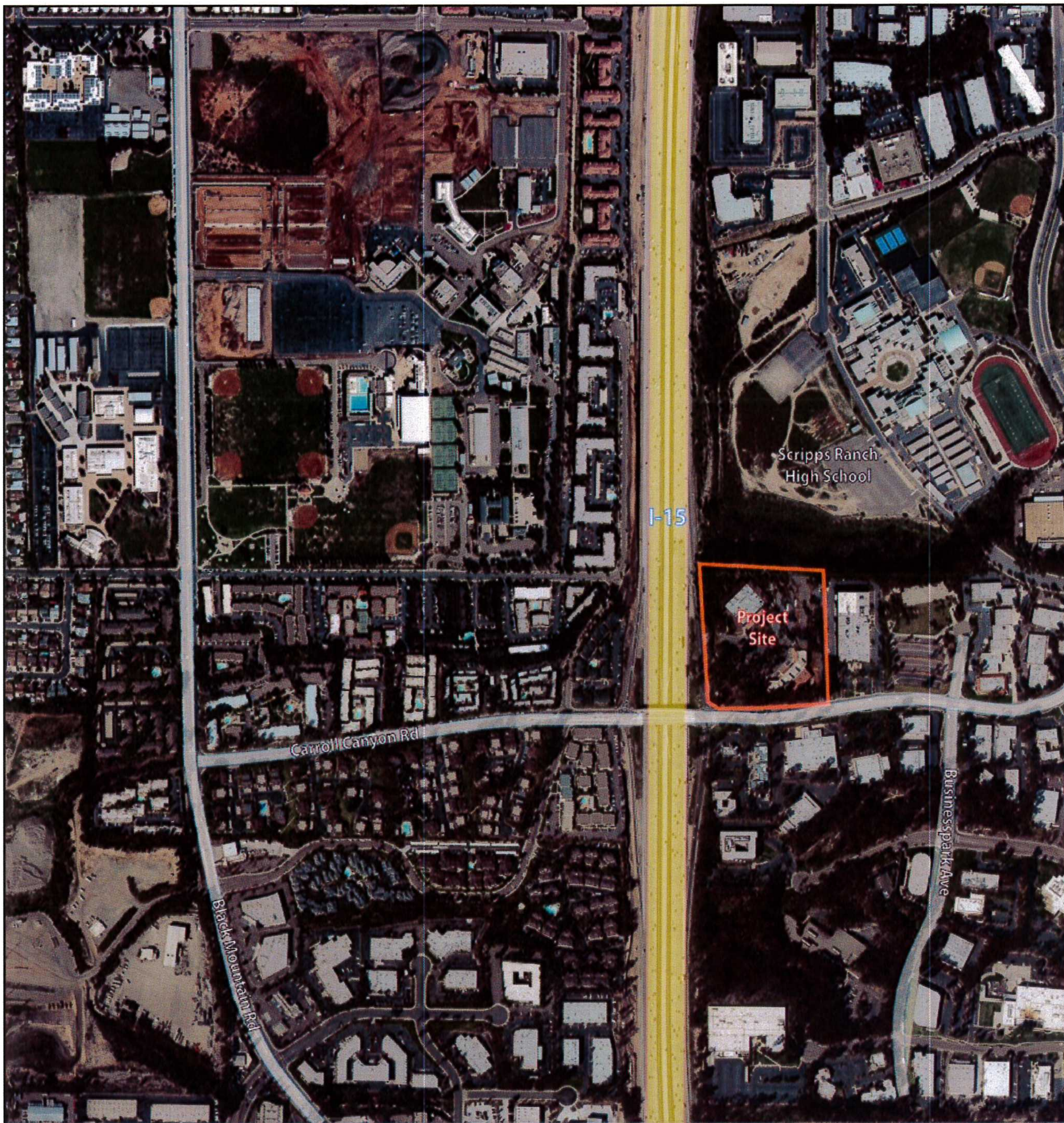

Figure 2. Project Location Map

THE CITY OF SAN DIEGO

August 13, 2015

Mr. Jeff Rogers
Sudberry Properties
5465 Morehouse Drive, Suite 260
San Diego, California 92121

SUBJECT: SCOPE OF WORK FOR AN ENVIRONMENTAL IMPACT REPORT FOR THE CARROLL CANYON MIXED USE PROJECT, PROJECT NO. 240716

Dear Mr. Rogers:

Pursuant to Section 15060(d) of the California Environmental Quality Act (CEQA), the Environmental Analysis Section (EAS) of the City of San Diego Development Services Department has determined that the proposed project may have significant effects on the environment, and the preparation of an Environmental Impact Report (EIR) is required. Staff has determined that a project EIR is the appropriate environmental document for the Carroll Canyon Mixed Use project.

The purpose of this letter is to identify the issues to be specifically addressed in the EIR. The EIR shall be prepared in accordance with the City's "Technical Report and Environmental Impact Report Guidelines," dated September 2002 and updated December 2005. A copy of the current guidelines is attached. The project issues to be discussed in the EIR are outlined below. A Notice of Preparation (NOP) will be distributed to the Responsible Agencies and others who may have an interest in the project as required by CEQA Section 21083.9(a)(2).

Please note, changes or additions to the scope of work may be required as a result of input received in response to the Notice of Preparation. In addition, the applicant may adjust the project over time, and any such changes would be disclosed within the EIR.

Each section/issue area of the EIR should provide a descriptive analysis of the project followed by a comprehensive evaluation of the issue area. The EIR should also include sufficient graphics and tables to provide a complete description of all major project features.

PROJECT LOCATION

The 9.52-acre project site is located at 9850 Carroll Canyon Road, San Diego, California 92131. The site is situated in the northeast quadrant of Interstate 15 (I-15) and Carroll Canyon Road in the Scripps Miramar Ranch Community Plan Area of the City of San Diego and is within the Marine Corps Air Station (MCAS) Miramar Airport Influence Area, and is within Council District 5 (see attached Figure 1: Project Location map).

PROJECT BACKGROUND

The project applicant previously proposed demolition of the existing office complex and redevelopment of the site as the "Carroll Canyon Commercial Center" project, with 144,621 square feet of commercial development that would have included a mix of retail shops, financial institution(s), sit-down restaurant(s), and fast-service restaurant(s). Discretionary approvals associated with that previous proposal included: a General Plan Amendment to change the land use designation from Light Industrial to Community Commercial; a Community Plan Amendment to change the current land use designation from Industrial Park to Community Shopping; a Rezone of the site from IP-2-1 (Industrial—Park) to CR-2-1 (Commercial—Regional), a Planned Development Permit (PDP) to allow deviation of minimum street frontage, a Site Development Permit (SDP) for the development of a large retail establishment of 100,000 square feet or more, a Neighborhood Use Permit (NUP) for a Comprehensive Sign Plan, and a Vesting Tentative Map (VTM). A Draft EIR (Project No. 240716/SCH No. 2012081029) was prepared for the previously proposed Carroll Canyon Commercial Center project and circulated for public review on September 6, 2013. In response to public comments, the project applicant has redesigned the project, reducing the amount of commercial space and, with the addition of multi-family residential use, is proposing the Carroll Canyon Mixed-Use project.

PROJECT DESCRIPTION

The Carroll Canyon Mixed Use Project proposes the redevelopment of an existing office complex with a mixed-use development that would include multi-family residential units, retail shops, and restaurants. The existing 76,241 square feet of office buildings and associated facilities would be demolished and replaced with 260 multi-family residential units and approximately and 12,200 square feet of retail/restaurant space.

The project requires discretionary approvals including: General Plan Amendment and Community Plan Amendment to change the current land use designation from Industrial to Residential, a Rezone of the site from IP-2-1 to RM-3-7, a Site Development Permit, a Planned Development Permit, and a Vesting Tentative Map. The initiation of the Scripps Miramar Ranch

Community Plan Amendment was approved by the Planning Commission on January 15, 2015 (Resolution No. PC-4647).

EIR REQUIREMENTS

The EIR serves to inform governmental agencies and the public of a project's environmental impacts. Emphasis in the EIR must be on identifying feasible solutions to environmental impacts. The objective is not to simply describe and document an impact, but to actively create and suggest mitigation measures or project alternatives to substantially reduce the significant adverse environmental impacts. The adequacy of the EIR will depend greatly on the thoroughness of this effort.

The EIR must be written in an objective, clear, and concise manner, in plain language. The use of graphics is encouraged to replace extensive word descriptions and to assist in clarification. Conclusions must be supported with quantitative, as well as qualitative, information, to the extent feasible.

Prior to the distribution of the draft EIR for public review, Conclusions, which are attached at the front of the draft EIR, will also need to be prepared. The Conclusions cannot be prepared until an approved draft has been submitted and accepted by the City. The EIR shall include a title page that includes the Project Tracking System (PTS) number and the date of publication. The entire environmental document must be left justified and shall include a table of contents and an executive summary of all of the following sections. Please refer to the "Environmental Impact Report Guidelines," updated December 2005, for additional details regarding the required information.

1. INTRODUCTION

   The EIR shall introduce the project with a brief discussion on the intended use and purpose of the EIR. This discussion shall focus on the type of analysis that the EIR is providing and provide an explanation of why it is necessary to implement the project. This section shall describe and/or incorporate by reference any previously certified environmental documents that cover the project site including any EIRs. This section shall briefly describe areas where the project is in compliance or non-compliance with assumptions and mitigation contained in these previously certified documents. Additionally, this section shall provide a brief description of any other local, state and federal agencies that may be involved in the project review and/or any grant approvals.

2. ENVIRONMENTAL SETTING

   The EIR shall describe the precise location of the project and present it on a detailed topographic map and regional map. This section shall also include a map of the specific proposal and discuss the existing conditions on the project site and in the project area. In addition, the section shall provide a local and regional description of the environmental setting of the project, as well as the zoning and land use designations of the site and its contiguous properties, area topography, drainage characteristics, and vegetation. It shall include any applicable land use plans such as the City's MSCP/MHPA and other applicable open space preserves or overlay zones that affect the project site, such as the City of San Diego General Plan. The section shall include a listing of any open space easements or building restricted easements that exist on the property. A description of other utilities that may be present on or in close proximity to the site and their maintenance accesses shall also be discussed. Provide a recent aerial photo of the site and surrounding uses, and clearly identify the project location. This section shall include a brief description of the location of the closest police and fire stations along with their response times.

3. PROJECT DESCRIPTION

The EIR shall include a detailed discussion of the goals and objectives of the project, in terms of public benefit (increase in housing supply, employment centers, etc.). Project objectives will be critical in determining the appropriate alternatives for the project, which would avoid or substantially reduce potentially significant impacts. As stated in CEQA Section 15124 (b), "A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding consideration, if necessary. The statement of objectives should include the underlying purpose of the project." This section shall describe all discretionary actions needed to implement the project (e.g. Site Development Permit, Planned Development Permit, Tentative Map, etc.) including all permits required from federal, state, and local agencies. The description of the project shall include all major project features, including density, grading (cut and fill), relocation of existing facilities, land use, retaining walls, landscaping, drainage design, improvement plans, including any off-site improvements, vehicular access points and parking areas associated with the project. The project description shall describe any off-site activities necessary to construct the project. The EIR shall include sufficient graphics and tables to provide a complete description of all major project features. Project phasing also should be described in this section. This discussion shall address the whole of the project

4. HISTORY OF PROJECT CHANGES

This section of the EIR shall outline the history of the project and any physical changes that have been made to the project in response to environmental concerns identified during the City's review of the project.

5. ENVIRONMENTAL IMPACT ANALYSIS

The potential for significant environmental impacts must be thoroughly analyzed and mitigation measures identified that would avoid or substantially lessen any significant impacts. Since the City of San Diego is the Lead Agency for this project, the EIR must represent the independent analyses of the Environmental Analysis Section (EAS). Therefore, all impact analysis must be based on the City's "Significance Determination Thresholds" dated January 2011. Below are key environmental issue areas that have been identified for this project, within which the issue statements must be addressed individually. Discussion of each issue statement shall include an explanation of the existing project site conditions, impact analysis, significance determination, and appropriate mitigation. The impact analysis shall address potential direct, indirect, and cumulative impacts that could be created through implementation of the project and its alternatives. Lastly, the EIR should summarize each required technical study or survey report within each respective issue section, and all requested technical reports must be included as the appendices to the EIR and summarized in the text of the document.

In each environmental issue section, mitigation measures to avoid or substantially lessen impacts must be clearly identified and discussed. The ultimate outcome after mitigation should also be discussed (i.e., significant but mitigated, significant and unmitigated). If other potentially significant issue areas arise during the detailed environmental investigation of the project, consultation with Development Services Department is required to determine if these areas need to be added to the EIR. As supplementary information is required, the EIR may also need to be expanded.

5.1 Land Use

Issue 1: Would the project be inconsistent/conflict with the environmental goals, objectives, or recommendations of the Scripps Miramar Ranch Community Plan or City of San Diego General Plan?

Issue 2: Would the project be inconsistent/conflict with an adopted land use designation or intensity resulting in indirect or secondary environmental impacts?

Issue 3: Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project?

Issue 4: Would the project be inconsistent/conflict with the City's Multiple Species Conservation Program (MSCP) Subarea Plan and any applicable MHPA Adjacency Guidelines?

As indicated under Project Description, the project would include a community plan amendment and rezone, as well as a Site Development Permit , Planned Development Permit, and Vesting Tentative Map. Impacts of the land use changes must be addressed in the EIR. In addition, the EIR shall evaluate consistencies/ inconsistencies (including all deviations, variances, etc.) with local, State, and Federal regulations (i.e., the City's General Plan, Scripps Miramar Ranch Community Plan, and City of San Diego Land Development Code, MCAS Miramar Airport Land Use Compatibility Plan, and Multiple Species Conservation Program). If the project is found to be inconsistent with any adopted land use plans, the EIR would disclose and analyze any physical effects that may result from the inconsistency that could be considered significantly adverse.

5.2 Transportation/Traffic Circulation/Parking

Issue 1: **Would the project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

Issue 2: **Would the project conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?**

Issue 3: **Would the project result in a change in traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

Issue 4: **Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?**

Issue 5: **Would the project result in inadequate emergency access?**

Issue 6: **Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?**

Issue 7: **Would the project result in an increased demand for off-site parking and/or significant effects on existing parking?**

The proposed project will change the existing land use from Industrial Park to Residential and would increase the development intensity from the existing 76,241-square-foot office building to approximately 260 multi-family residential units and 12,200 square feet of commercial/retail space. An associated increase in traffic volumes would result. A traffic study must be prepared, to the satisfaction of the City Engineer, to determine if the increase traffic volumes has the potential to result in direct and/or cumulative impacts on the surrounding local circulation network (segments and intersections) and adjacent I-15 freeway (freeway ramps and mainline).

Describe in this section any required modifications and/or improvements to the existing circulation system, including City streets, intersections, freeways, and interchanges required as a result of the project. Discuss any potential traffic impacts on the Scripps Miramar Ranch community, as well as adjacent communities (if applicable). Also, discuss how the mix of uses would affect the overall traffic generated by the project. Address cumulative traffic impacts, including any future development in the Scripps Miramar Ranch community, as well as adjacent communities, as appropriate. Note the assumption of traffic conditions at build-out. Describe the adequacy of parking proposals and the walkability and connectivity of planned facilities internally within the project and externally to adjacent office parks and light industrial developments. Describe how the internal street pattern would circulate vehicles through the site. Describe how any proposed pedestrian and bicycle access would connect with off-site circulation elements. Address existing and future transit facilities/opportunities.

The EIR shall present mitigation measures that are required to reduce impacts. Discuss if those measures will mitigate impacts to below a level of significance. If the project results in traffic impacts, which cannot be mitigated to below a level of significance, the Alternatives section of the EIR should include a project alternative that will avoid or further reduce traffic impacts.

5.3 Visual Quality/Neighborhood Character

Issue 1: Would the project substantially obstruct any vista or scenic view from public vantage points as identified in the community plan?

Issue 2: Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Issue 3: Would the project substantially degrade the existing visual character or quality of the site or its surroundings? Would the project create a negative aesthetic site or project?

Issue 4: Would the project result in bulk, scale, materials, or style that are incompatible with surrounding development?

Issue 5: Would the project substantially alter the existing or planned character of the area? Would the project be of a size, scale, or design that would markedly contrast with the character of the surrounding area?

Issue 6: Would there be a loss of any distinctive or landmark tree(s), or stand of mature trees as identified in the community plan?

Issue 7: Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

This section should evaluate grading associated with the project and the potential change in the visual environment based on the development. Provide an evaluation of the Visual Quality/Neighborhood Character (Aesthetics) impacts due to the project. Describe the structures in terms of building mass, bulk, height, and architecture. Describe or state how this complies with or is allowed by the City's standards for the zone (or proposed zone). Describe how the character of the surrounding community area would be affected with development of the project. Address visual impacts of the project from public vantage points. Visibility of the site from public vantage points should be identified through a photo survey/inventory and/or photo simulations, and any changes in these views should be described.

Describe how the character of the surrounding area would be affected with development of the project. Describe any unifying theme proposed for the development area, and include a description of the design guidelines. Would the project result in a homogenous style of architecture, or would varied architectural designs be encouraged? Also address any zone deviations (such as height) that could result in substantial impacts to the visual environment.

If significant impacts to Visual Quality/Neighborhood Character are identified, mitigation measures and/or project alternatives that would reduce significant impacts to below a level of significance should be provided. Any and all deviations/variances relating to visual quality/neighborhood character and bulk and scale must be discussed in this section.

5.4 Air Quality

Issue 1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Issue 2: Would the project cause a violation of any air quality standard or contribute substantially to an existing or projected air quality violation?

Issue 3: Would the project expose sensitive receptors to substantial pollutant concentrations?

Issue 4: Would the project exceed 100 pounds per day of Particulate Matter (PM) (dust)?

Issue 5: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Issue 6: Would the project create objectionable odors affecting a substantial number of people?

The construction and operation phases of the project have potential to affect air quality. Construction can create short-term air quality impacts through equipment use, ground-disturbing activities, architectural coatings, and worker automotive trips. Air quality impacts resulting from the operation of the project would be primarily generated by increases in automotive trips. An air quality analysis must be prepared which discusses the project's impact on the ability to meet state, regional, and local air quality strategies/standards, as well as any health risks associated with construction.

Describe the project's climatological setting within the San Diego Air Basin and the basin's current attainment levels for State and Federal Ambient Air Quality Standards. Discuss short- and long-term and cumulative impacts on regional air quality, including construction and operational-related sources of air pollutants. Discuss the potential impacts from the increase in trips to the Regional Air Quality Standards, and the overall air quality impacts from such trips, and any proposed mitigation measures. Should the project result in a significant decrease in the levels of service of any roadway or intersection in the vicinity of a sensitive receptor, address the potential degradation of air quality, which may result, including the possibility of "hot spots" within the area. Also include a discussion of potential dust generation during construction within this section of the document together with any proposed dust suppression measures that would avoid or lessen dust related impacts to sensitive receptors within the area.

5.5 Global Climate Change

Issue 1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Issue 2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of greenhouse gases?

This section shall present an overview of greenhouse gases (GHG) including the most recent information regarding the current understanding of the mechanisms behind current conditions and trends, and the broad environmental issues related to global climate change. A discussion of current domestic legislation, plans, policies, and programs pertinent to global climate change shall also be included. The EIR shall provide details of the project's sustainable features such as pedestrian access and orientation, sustainable design and building features, and others that meet criteria outlined in the Conservation Element of the General Plan.

The EIR shall address the project's contribution to GHG emissions. A quantitative analysis addressing the project-generated GHG emissions, as applicable, shall be provided in a GHG emission study summarized in the EIR.

Based on the scope of the project, the analysis should identify existing baseline GHG emissions and GHG emissions resulting from both construction activities related to the project and on-going operation of the project. The analysis should include, but is not limited to, the five primary sources of GHG emissions: vehicular traffic, generation of electricity, natural gas consumption/combustion, solid waste generation, and water usage. If the project would result in significant GHG emissions, project features, designs and measures should be identified and incorporated into the project to reduce GHG emissions to below a level of significance.

5.6 Energy

Issue 1: Would the construction and operation of the proposal result in the use of excessive amounts of electrical power?

Issue 2: Would the proposal result in the use of excessive amounts of fuel or other forms of energy (including natural gas, oil, etc.)?

CEQA Guidelines requires that potentially significant energy implications of a project shall be considered in an EIR to the extent relevant and applicable to the project. Particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy should be included in this section. The EIR section shall address the estimated energy use for the project and assess whether the project would generate a demand for energy (electricity and/or natural gas) that would exceed the planned capacity of the energy suppliers. A description of any energy and/or water saving project features should also be included in this section. (Cross-reference with GHG Emissions discussion section as appropriate.) Describe any proposed measures included as part of the project or required as mitigation measures directed at conserving energy and reducing energy consumption. Ensure this section addresses all issues described within Appendix F of the CEQA Guidelines.

5.7 Noise

Issue 1: Would the project result or create a significant increase in the existing ambient noise levels?

Issue 2: Would the project result in exposure of people to noise levels which exceed City's adopted noise ordinance or are incompatible with the City's Land Use-Noise Compatibility guidelines?

Issue 3: Would the project cause exposure of people to current or future transportation noise levels which exceed standards established in the Noise Element of the General Plan? Would the project expose people to noise levels which exceed the City's established CEQA Significance Thresholds?

Issue 4: Would the project result in a substantial temporary or periodic increase in ambient noise level in the project vicinity above existing without the project?

The project site is currently subject to traffic noise from the adjacent street (Carroll Canyon Road) and the I-15 freeway which would affect the proposed uses. An acoustical analysis, prepared in accordance with the City's "Acoustical Report Guidelines," is required to determine if any impacts would occur due to project implementation. The report must assess the effects of existing and projected transportation noise levels on interior and exterior usable areas. Because the project site is located in the Airport Influence Area Review Area 1 of MCAS Miramar, the noise study should also address potential noise impacts associated with aircraft noise generated by MCAS Miramar operations. Where adverse impacts are identified, mitigation measures (i.e., setbacks, use of double-paned glass, noise walls/berms, and other noise attenuation techniques) must be provided Include tables within the noise study, which show the existing, and future noise levels of dB(A) and any increased noise levels over dB(A) in 3 dB(A) increments along affected roads.

The analysis should discuss how the project would conform to the City of San Diego Municipal Code Noise and Abatement Control Ordinance §59.5.01 and the General Plan. Additionally, construction noise may impact surrounding uses and the EIR should include a discussion regarding this potential impact.

5.8 Geologic Conditions

Issue 1: Would the project expose people or property to geologic potential substantial effects including the risk of life, injury, or death due to hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?

Issue 2: Would the project result in a substantial increase in wind or water erosion of soils, either on or off the site?

Issue 3: Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

The project site is located within Geologic Hazard Category 52, characterized as other level areas, gently sloping to steep terrain, level or sloping terrain, favorable geologic structure, low risk to development. No active, potentially active, or inactive faults are known to exist onsite. Furthermore, the project site has been previously graded and is fully developed with office buildings and associated surface parking. The project would replace the existing land uses with a mixed-use development. A geotechnical investigation, prepared in accordance with the City's Geotechnical Report Guidelines, is required to address the feasibility and suitability of the entire site for the development

The section shall describe the geologic and subsurface conditions in the project area. It shall describe the general setting in terms of existing topography, geology (surface and subsurface), tectonics and soil types. It shall assess possible impacts to the project from geologic hazards and unfavorable soil conditions. The constraints discussion shall include issues such as the potential for liquefaction, slope instability, and other hazards. Any secondary impacts due to soils/geology mitigation (e.g., excavation of unsuitable soil) shall also be addressed. Additionally, the sections shall provide mitigation, as appropriate, that would reduce the potential for future adverse impacts resulting from on-site soils and geologic hazards.

5.9 Biological Resources

Issue 1: Would the project result in a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in the MSCP or other local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS)?

Issue 2: Would the project result in a substantial adverse impact on any Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines of the Land Development manual or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS?

Issue 3: Would the project result in a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pool, riparian, etc.) through direct removal, filling, hydrological interruption, or other means?

Issue 4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP Plan, or impede the use of native wildlife nursery sites?

Issue 5: Would the project result in a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan, either within the MSCP plan area or in the surrounding region?

Issue 6: Would the project introduce land use within an area adjacent to the MHPA that would result in adverse edge effects?

Issue 7: Would the project result in a conflict with any local policies or ordinances protecting biological resources?

Issue 8: Would the project result in an introduction of invasive species of plants into a natural open space area?

The project site had been fully developed and is the location of existing office buildings and associated improvements. North of the project site is an intermittent drainage where native vegetation occurs. Improvements associated with the proposed project may result in direct and indirect impacts to off-site biological resources.

A Biological Technical Report shall be prepared n accordance with City of San Diego Biology Guidelines. The report should include a description of terrestrial habitats on site. Flora and fauna observed or known to utilize the area should be discussed, including threatened and endangered species. The report should contain an evaluation of the potential for project related impacts to occur on identified resources and include mitigation measures should impacts occur. The impact analysis must consider all project elements, including brush management.

5.10 Paleontological Resources

Issue 1: Would the project result in the loss of significant paleontological resources?

The EIR should include a paleontological resources discussion that identifies the underlying soils and formations and the likelihood of the project to uncover paleontological resources during grading activities. The section should identify the depth of cut (in feet) and amount of grading (in cubic yards) that would result from any grading activities. The City's thresholds for monitoring include grading depths of 10 feet or more and excavation of 1,000 or 2,000 cubic yards depending on the respective moderate or high sensitivity of the formational soils on-site. Monitoring may also be required depending on other site conditions, such as previous grading on-site and depth of exposed formations(s). If the development would impact fossil formations possessing moderate to high potential for significant resources, specific conditions (monitoring and curation) would be required to mitigate impacts to a level below significance.

The project site is underlain by Linda Vista Formation, residual soil, and fill. The Linda Vista Formation has a moderate to high potential to contain late Eocene vertebrates, which would be of scientific interest. No resource potential would be exhibited in residual soil and fill areas on the project site. The project site has been previously graded and is fully developed resulting in a low probability of encountering fossil resources. However, if site grading would occur within the Linda Vista Formation and would exceed the City's thresholds as described above, monitoring would be required. The EIR should include a paleontological discussion based on current City mitigation requirements for paleontological resources.

5.11 Hydrology/Water Quality

Issue 1: Would the project cause a substantial increase in impervious surfaces and associated increased runoff?

Issue 2: Would the project cause a substantial alteration to on- and off-site drainage patterns due to changes in runoff flow rates or volumes?

Issue 3: Would the project result in an increase in pollutant discharge to receiving waters during construction or operation?

Issue 4: Would the project violate any water quality standards or waste discharge requirements?

Issue 5: Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses of planned uses for which permits have been granted?

Anticipated changes to existing drainage patterns and runoff volumes should be addressed in the EIR. A preliminary hydrology study must be provided and measures to protect on-site and downstream properties from increased erosion or siltation must be identified.

Water Quality is affected by sedimentation caused by erosion, by urban runoff carrying contaminants, and by direct discharge of pollutants (point-source pollution). As land is developed or redeveloped, the impervious surfaces could send an increased volume of runoff containing oils, heavy metals, pesticides, fertilizers, and other contaminants (non-source pollution) into associated watersheds. Sedimentation can impede stream flow. Compliance with the City's Storm Water Standards, including any other standards that may be applicable, is generally considered to preclude water quality impacts. The Storm Water Standards are available online at:

http://www.sandiego.gov/development-services/industry/information/stormwater.shtml

Discuss the project's effect on water quality within the project area and downstream. If the project requires treatment control Best Management Practices (BMPs), submit a Water Quality Technical Report (WQTR) consistent with the City's Storm Water Standards. The report must describe how source control and site design have been incorporated into the project, the selection and calculations regarding the numeric sizing treatment standards, BMP maintenance schedules and maintenance costs, and the responsible party for future maintenance and associated costs. The report must also address water quality, by describing the types of pollutants that would be generated during post construction, the pollutants to be captured and treated by the BMPs. The findings in this report must be reflected within this section of the EIR. Based on the analysis and conclusions of the WQTR, the EIR shall disclose how the project would comply with local, State, and Federal regulations and standards.

Per the Water Quality Control Plan for the San Diego Basin, the project site is included in the Poway Hydraulic Area (No. 906.20) of the Peñasquitos Hydrologic Unit (Basin No. 6). This section shall identify pollutants of concern for the watershed considering the Federal Clean Water Act (CWA) Section 303(d) impaired water listings, address potential impacts to the beneficial uses, and address if the project would cause impacts to water quality. Conformance with the National Pollutant Discharge Elimination System (NPDES) requirements shall be discussed.

5.12 Health and Safety

Issue 1: Would the project result in hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within a quarter-mile of an existing or proposed school?

Issue 2: Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment and would the project expose people to potential health hazards?

Issue 3: Would the project expose people to toxic substances?

Issue 4: Would the project impair implementation of, or physically interfere with, an adopted emergency response plan?

Issue 5: Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including when wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The EIR shall identify known contamination site(s) within the project areas and address the potential impact to occupants of the proposed project. This section should also address any other hazardous materials that would be utilized and/or stored on-site. Please provide the types and quantities of hazardous materials along with the locations of storage areas on the plans. The EIR shall also discuss project effects on emergency routes and access within the project area during and after project construction.

Fire hazards exist where highly flammable vegetation is located adjacent to development. Specialized public safety issues arise in cases where brush management requirements cannot be met. The EIR should discuss the project in terms of health and safety as it relates to fire hazards on and adjacent to the project. The discussion should include a discussion of brush management zones (if required), as well as any other safety measure to be implemented for the site.

5.13 Public Services and Facilities

Issue 1: Would the project result in a need for new or expanded public facilities, including fire protection, police protection, health, social services, emergency medical, libraries, schools, and parks? If so, what physical impacts would result from the construction of these facilities?

Issue 2: Would the project increase the use of existing neighborhood and regional parks of other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Issue 3: Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have a significant adverse physical effect on the environment?

Discuss any intensification of land use on the property and if it would increase demand on existing and planned public services and faiclities. Identify fire and police facilities in relation to the project site. Disclose the Fire and Police Departments' current response time to the area. Discuss if the site currently receives six-minute response time for fire crews and equipment, eight-minute emergency services response time, and whether the Police Department's goal of a seven-minute response time for priority calls are currently able to be met on-site. Discuss if or how the project would alter any existing or planned response times to the site or surrounding service area.

5.14 Public Utilities

Issue 1: Would the proposal result in a need for new systems or require substantial alterations to existing utilities including those necessary for water, sewer, storm drains, and solid waste disposal? If so, what physical impacts would result from the construction of these facilities?

Issue 2: Would the project have an effect on or result in a need for new or altered governmental services in any of the following areas: Police protection, fire/life safety services, or maintenance of public facilities, including roads?

The EIR shall include a discussion of potential impacts to public utilities as a result of the project. Identify any conflicts with existing and planned infrastructure, and evaluate any need for upgrading infrastructure and include an analysis of any impacts resulting from the construction of needed new facilities.

Discuss the project's construction and operational effects on the City's ability to handle solid waste. According to Assembly Bill 939, the City of San Diego is required to divert at least 50 percent of its solid waste from landfill disposal through source reduction, recycling, and composting. The project meets the City's threshold of demolition and/or development of 40,000 square feet or more and therefore a Waste Management Plan must be prepared by the applicant, approved by the City's Environmental Services Department, and summarized in the EIR. The Plan must address recycling and solid waste disposal, for demolition, construction, and post-construction occupancy phases of the project.

A Sewer and/or Water Study should be performed to determine if appropriate sewer/water facilities are available to serve the development. The analysis and conclusions of the studies shall be included in the EIR.

In regards to water usage, the project would not require a Water Supply Assessment, as it does not meet the requirements of SB 610 and SB 221.

6. CUMULATIVE EFFECTS

When this project is considered with other past, present, and reasonably foreseeable future projects in the project area, implementation could result in significant environmental changes, which are individually limited but cumulatively considerable. Therefore, in accordance with CEQA Section 15130, potential cumulative impacts shall be discussed in a separate section of the EIR. This section shall include all existing and pending development proposals, including those undergoing review with the Development Services Department. The discussion shall address the potential cumulative effects related to each environmental resources area that should be discussed in the EIR as outlined above.

Additionally, the Cumulative Impacts section must address the project's contribution to greenhouse gases. Quantify the greenhouse gas emissions associated with the project and the extent to which that contribution affects global climate change. Discuss current relevant legislation (AB 32, SB 97) and how the proposed project's air quality analysis conforms to state requirements. (This discussion may reference and summarize the detailed analysis presented in the Energy and Global Climate Change sections of the EIR.)

7. MITIGATION MEASURES

Mitigation measures should be clearly identified and discussed and their effectiveness assessed in each issue section of the EIR. A Mitigation, Monitoring, and Reporting Program (MMRP) for each issue area with significant impacts is mandatory and projected effectiveness must be assessed (i.e., all or some CEQA impacts would be reduced to below a level of significance, etc.). At a minimum, the MMRP should identify: 1) the department responsible for the monitoring; 2) the monitoring and reporting schedule; and 3) the completion requirements. In addition, mitigation measures and the monitoring and reporting program for each impact should also be contained (verbatim) to be included within the EIR in a separate section and a duplicate separate copy (Word version) must also be provided to EAS.

8. EFFECTS FOUND NOT TO BE SIGNIFICANT

A separate section of the EIR shall include a brief discussion of why certain areas were not considered to be potentially significant and were therefore not included in the EIR. For the Carroll Canyon Mixed Use Project, these include agricultural resources, biological resources, historical resources, mineral resources, and population and housing. If issues related to these areas or other potentially significant issues areas arise during the detailed environmental investigation of the project, consultation with EAS is recommended to determine if subsequent issue area discussions need to be added to the EIR. Additionally, as supplementary information is submitted (such as with the technical reports), the EIR may need to be expanded to include these or other additional use areas.

9. NEW INFORMATION/PROJECT AMENDMENTS

If the project description changes, and/or supplementary information becomes available, the EIR may need to be expanded to include additional issue areas. This must be determined in consultation with EAS staff.

10. MANDATORY DISCUSSION AREAS

In accordance with CEQA Section 15126, the EIR must include a discussion of the following issue areas:

A. Any significant environmental effects that cannot be avoided if the proposed project is implemented. Include impact threshold criteria used. Provide mitigation measures where appropriate; including triggers, details, responsible entities, and a monitoring and report schedule. Include a sentence on the significance of each impact area discussed, with effect of proposed mitigation if appropriate. Do not include analysis in this sentence.

B. Any significant irreversible environmental changes that would result from the implementation of the proposed project.

C. Growth-inducing impacts of the proposed project. The EIR shall address the potential for growth inducement through implementation of the project. The EIR shall discuss the ways in which the project 1) is directly and indirectly growth inducing (i.e. fostering economic or population growth by land use changes, construction of additional housing, etc.) and 2) if the subsequent consequences (i.e. impacts to existing infrastructure, requirement of new facilities, roadways, etc.) of the growth inducing project would create a significant and/or unavoidable impact, and provide for mitigation or avoidance. Accelerated growth could further strain existing community facilities or encourage activities that could significantly affect the environment. This section need not conclude that growth-inducing impacts if any are significant unless the project would induce substantial growth or concentration of population.

11. ALTERNATIVES

The EIR shall place major attention on reasonable alternatives that avoid or reduce the project's significant environmental impacts while still achieving the stated project objectives. Therefore, a discussion of the project's objectives should be included in this section. The alternatives should be identified and discussed in detail and should address all significant impacts. Refer to Section 15364 of the CEQA Guidelines for the CEQA definition of "feasible."

Preceding the detailed alternatives analysis, provide a section entitled "Alternatives Considered but Rejected." This section should include a discussion of preliminary alternatives that were considered but not analyzed in detail. The reasons for rejection must be explained in detail and demonstrate to the public the analytical route followed in rejecting certain alternatives.

The following alternative must be considered:

A. No Project/No Build

This alternative should describe an alternative that leaves the site as it is currently developed. Demolition of the existing office complex would not occur, and no new development would take place. Discuss the environmental effects that could increase or decrease as a result of this alternative, such as land use, traffic, air quality, GHG, and noise.

B. No Project/Industrial Park Alternative

The project site is located in an area designated as an Industrial Park land use in the Community Plan. Therefore, as a subset of the No Project Alternative, discuss an alternative that redevelops the site with uses consistent with the current Community Plan. Discuss the environmental effects that could increase or decrease as a result of this alternative, such as land use, traffic, air quality, and noise.

C. Reduced Development Alternative

If the traffic study shows a substantial increase in traffic volumes in the community as a result of build-out of the proposed project, a Reduced Development Alternative that reduces the overall traffic impacts should be presented with the DEIR. The Applicant should work with the City's EAS and Transportation Development staff to determine the development intensity that should be considered in this alternative.

D. Alternative Location for the Project

Discuss other off-site locations that might be feasible which would avoid or substantially reduce significant impacts associated with the project at the proposed location and still achieve the primary project objectives.

If through the environmental analysis process, other alternatives become apparent which would mitigate potentially significant impacts, these alternatives must be discussed with EAS staff prior to including them in the EIR. It is important to emphasize that the alternatives section of the EIR should constitute a major part of the report. The timely processing of the environmental review will likely be dependent on the thoroughness of effort exhibited in the alternative analysis.

12. REFERENCES

Material must be reasonably accessible. Use the most up-to-date possible and reference source documents

13. INDIVIDUALS AND AGENCIES CONSULTED

List those consulted in preparation of the EIR. Seek out parties who would normally be expected to be a responsible agency or an interest in the project.

14. CERTIFICATION PAGE

    Include City and Consulting staff members, titles, and affiliations

15. APPENDICES

    Include the EIR Notice of Preparation (NOP), and any comments received regarding the NOP and Scoping Letter. Include all accepted technical studies.

CONCLUSION

If other potentially significant issue areas arise during detailed environmental investigation of the project, consultation with this division is required to determine if these other areas need to be addressed in the EIR. Should the project description be revised, an additional scope of work may be required. Furthermore, as the project design progresses and supplementary information becomes available, the EIR may need to be expanded to include additional issue areas.

It is important to note that timely processing of your project will be contingent in large part on your selection of a well-qualified consultant. Prior to starting work on the EIR, a meeting between the consultant and EAS will be required to discuss and clarify the scope of work. Until the screencheck for the draft EIR is submitted, which addresses all of the above issues, the environmental processing timeline will be held in abeyance. Should you have any questions, please contact the environmental analyst, Martha Blake at (619) 446-5375; for general question regarding the project contact John Fisher, Project Manager, at (619) 446-5231.

Sincerely,

Kerry Santoro
Deputy Director
Development Services Department

cc: Martha Blake, Development Services Department
Environmental Project File
Karen L. Ruggels, K L R PLANNING, Consultant

DEPARTMENT OF TRANSPORTATION
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4050 TAYLOR ST, M.S. 240
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www.dot.ca.gov

Serious drought.
Help save water!

August 14, 2015

11-SD-15
PM 15
Carroll Canyon Mixed Use
NOP

Ms. Martha Blake
City of San Diego
Development Services
1222 First Avenue, MS-501
San Diego, CA 92101

Dear Ms. Blake:

The California Department of Transportation (Caltrans) has received the Notice of Preparation (NOP) dated, August 14, 2015, for the Carroll Canyon Mixed Use Project located adjacent to the Interstate 15 (I-15) at Carroll Canyon. Caltrans has the following comments:

Please provide a copy of the Traffic Impact Study when available for review.

A traffic impact study (TIS) is necessary to determine this proposed project's near-term and long-term impacts to the State facilities – existing and proposed – and to propose appropriate mitigation measures. The study should use as a guideline the Caltrans Guide for the Preparation of Traffic Impact Studies. Minimum contents of the traffic impact study are listed in Appendix "A" of the TIS guide. www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf

The geographic area examined in the traffic study should include as a minimum all regionally significant arterial system segments and intersections, including State highway facilities where the project will add over 100 peak hour trips. State highway facilities that are experiencing noticeable delays should be analyzed in the scope of the traffic study for projects that add 50 to 100 peak hour trips.

A focused analysis may be required for project trips assigned to a State highway facility that is experiencing significant delay, such as where traffic queues exceed ramp storage capacities. A focused analysis may also be necessary if there is an increased risk of a potential traffic accident.

All freeway entrance and exit ramps where a proposed project will add a significant number of peak-hour trips that may cause any traffic queues to exceed storage capacities should be analyzed. If ramp metering is to occur, a ramp queue analysis for all nearby Caltrans metered on-ramps is required to identify the delay to motorists using the on-ramps and the storage necessary to accommodate the queuing. The effects of ramp metering should be analyzed in the traffic study. Ramp meter delays above 15 minutes are considered excessive.

The data used in the TIS should not be more than 2 years old.

Caltrans endeavors that any direct and cumulative impacts to the State Highway System be eliminated or reduced to a level of insignificance pursuant to the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) standards.

Mitigation measures to State facilities should be included in TIS. Mitigation identified in the traffic study, subsequent environmental documents, and mitigation monitoring reports, should be coordinated with Caltrans to identify and implement the appropriate mitigation. This includes the actual implementation and collection of any "fair share" monies, as well as the appropriate timing of the mitigation. Mitigation improvements should be compatible with Caltrans concepts.

Mitigation measures for proposed intersection modifications are subject to the Caltrans Intersection Control Evaluation (ICE) policy (Traffic Operation Policy Directive 13-02). Alternative intersection design(s) will need to be considered in accordance with the ICE policy; therefore, please refer to the policy for more information and requirements.
http://www.dot.ca.gov/hq/traffops/signtech/signdel/policy/13-02.pdf

Mitigation conditioned as part of a local agency's development approval for improvements to State facilities can be implemented either through a Cooperative Agreement between Caltrans and the lead agency, or by the project proponent entering into an agreement directly with Caltrans for the mitigation. When that occurs, Caltrans will negotiate and execute a Traffic Mitigation Agreement.

If you have any questions on the comments Caltrans has provided, please contact Roy Abboud of the Development Review Branch at (619) 688-6968.

Sincerely,

JACOB M. ARMSTRONG, Chief
Development Review Branch

VIEJAS
TRIBAL GOVERNMENT

P.O. Box 908
Alpine, CA 91903
#1 Viejas Grade Road
Alpine, CA 91901

Phone: 6194453810
Fax: 6194455337
viejas.com

September 10, 2015

Martha Blake
1222 First Avenue, MS 501
San Diego, CA 92101

RE: Carroll Canyon Mixed Use (Project No. 240716)

Dear Ms. Blake,

The Viejas Band of Kumeyaay Indians ("Viejas") has reviewed the proposed project and at this time we have determined that the project site is has cultural significance or ties to Viejas. Viejas Band request that a Kumeyaay Cultural Monitor be on site for ground disturbing activities to inform us of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains. Please call Julie Hagen for scheduling at 619-659-2339 or email jhagen@viejas-nsn.gov. Thank you

Sincerely,

VIEJAS BAND OF KUMEYAAY INDIANS

Review – Scripps Miramar Ranch Planning Group
Project Name: Carroll Canyon Mixed Use
Project No.: 240716
Notice of Preparation (NOP)

In addition to evaluating environmental effects, the Draft Environmental Impact Report (DEIR) should include an accurate and complete analysis of the Project's consistency with the Scripps Miramar Ranch Community Plan as adopted by the San Diego City Council in August 1978 into the City of San Diego General Plan. Where significant inconsistencies are identified, ensure the DEIR delineates mitigations to minimize or avoid the inconsistencies.

Land Use
Ensure Land Use analysis includes, but is not limited to, a comprehensive evaluation of consistency with the General Plan in the following areas:

- Strive for balanced commercial development
- Encourage the development of a prestigious industrial park that provides desirable employment opportunities.
- Encourage the retention and creation of middle-income employment by encouraging the development of measures that facilitate expansion of high technology business facilities that have the potential to create middle-income jobs likely to be filled by local residents.
- Support the creation of higher quality jobs with advancement opportunities and self-sufficient wages.
- Prioritize economic development efforts to attract and induce investment in local businesses.
- Mixed-Use Village and Commercial Areas Policy. Develop and apply building design guidelines and regulations to create diversity rather than homogeneity, and improve the quality of in-fill development.
- Work toward achieving a complete, functional and interconnected pedestrian network.
- "Transit First" goal
- Impacts to public facilities and services
- Protection of life, property, and environment by delivering the highest level of emergency and fire-rescue services, hazard prevention, and safety education.

[Scripps Ranch has been evacuated twice since 2003 during the 2003 and 2007 fires affecting San Diego County and surrounding communities. Conduct extensive analysis of the impacts of the Project on the Community evacuation routes and mitigations to avoid or minimize impacts.]

- Preservation and long-term management of the natural landforms and open spaces that help make San Diego unique.

Transportation / Traffic Analysis / Parking

- Coordinate with the California Department of Transportation (Caltrans) early in the development of the Draft Environmental Impact Report (EIR) on traffic impacts from the proposed project. Clearly describe the impacts and delineate requisite mitigations within the State Right of Way (ROW). Utilize the SANDAG Brief Guide of Vehicle Traffic Generation Rates for the San Diego Region to generate the projected trip generation rates associated with the proposed project.

- Conduct comprehensive data collection of baseline traffic volumes and LOS during peak AM and PM periods over several days of the week, not to include holiday periods, at the Carroll Canyon Road/I-15 SB and NB Ramps. Also, address the so-called “scissor” effect on I-15 between the Carroll Canyon SB Ramp and the Miramar Road exit ramp.

- Ensure the Carroll Canyon Road I-15 NB and SB Ramp queuing and deceleration study includes the following conditions:
    - Existing
    - Near term without project
    - Near term with project
    - Near term with project and cumulative
    - Near term and cumulative

- Address regionally significant arterial system segments and impacts on state highway facilities, particularly those providing freeway access or entry/egress from areas east of I-15.

- Evaluate several intersections:

  Scripps Ranch Blvd at Scripps Lake Drive
  Scripps Ranch Blvd at Hibert Street
  Scripps Ranch Blvd at Mira Mesa Blvd
  I-15 at Mira Mesa Blvd
  Scripps Ranch Blvd at Aviary Drive
  Business Park Avenue at Willow Creek Rd.
  Willow Creek Road at Pomerado Rd. (particularly during school dropoff/pickup hours at Marshall Middle School)
  Pomerado Road at I-15.

- Clearly describe traffic mitigations (including ramp widening) in accordance with Caltrans Intersection Control Evaluation policy.

- Conduct a full analysis and simulation of the Carroll Canyon interchange including analysis of the proposed driveways, new signals, and existing Linda Road/Carroll Canyon intersection.

- As stated above, conduct extensive analysis of the impacts of the Project on the Community evacuation routes and mitigations to avoid or minimize impacts.

- Identify financing and funding sources (by percentage) associated with traffic mitigations.

Health and Safety
Address the probable existence of asbestos in the existing buildings, the mitigations to avoid exposing the public to hazardous materials, and the effectiveness of the mitigations.

Health and Safety, and **Public Services and Facilities:**
Please address the implications for Safety and for Police services related to the following:

- Identify any issues and special considerations resulting from the proximity and shared boundary of the proposed project with Scripps Ranch High School.

- Review safety and security issues associated with increased traffic at school crossings and parking lots, including those that occur before and after regular school hours.

- Review any potential increase in criminal activity associated with access to dwelling units, cars, and parking areas, such as burglaries, assaults, sex crimes, and/or drug sales and use, and relate these to safety of High School students and staff.

Cumulative
Ensure Cumulative effects analysis thoroughly evaluates effects of the Project on:

- Traffic volume and LOS at the Carroll Canyon, Pomerado, Hibert, and Mira Mesa intersections with I-15 NB and SB during peak AM and PM periods.

- Traffic volume and LOS at the Carroll Canyon, Pomerado, Hibert, and Mira Mesa intersections with I-15 NB and SB during emergency evacuations.

- Traffic volume and LOS in conjunction with the proposed future Stone Creek development on Carroll Canyon Road between I-15 and I-805.

Missing elements in the NOP:
Please address the following elements in preparation of the project plans and reports:

- Scoping Mtg(s) date/location
- Purpose & Need
- Key Project Elements
- Financing & Funding (of the project) - particularly of interest for this project since (according to the earlier DEIR) only 6-12% of the road improvements would be covered by the Action Proponent.
- Project Schedule

From: Cultural [mailto:Cultural@pauma-nsn.gov]
Sent: Wednesday, August 19, 2015 9:47 AM
To: DSD EAS
Cc: Dixon, Patti; Jeremy Zagarella
Subject: Carroll Canyon Mixed Use, Project No. 240716

The Pauma Band of Luiseno Indians has received the County's notice for the preparation of a Draft Environmental Impact Report for the Carroll Canyon Mixed Use Project. Under the Recommended Findings, the notice did not mention any potential impacts to cultural resources. Being that the project is being developed within the ancestral lands of the Kumeyaay people, we would like an acknowledgement of "Cultural Resources" being included in the Draft EIR.

Thank you,

Chris Devers
Cultural Liaison
Pauma Band of Luiseno Indians

CARROLL CANYON MIXED USE

City of San Diego (Northeast corner of I-15 and Carroll Canyon Rd)
January 27, 2015
Revised April 13, 2015
Revised September 30, 2015
Revised December 2, 2015
Revised January 2, 2016

Transportation Impact Analysis

Prepared for:

Sudberry Development, Inc.
5465 Morehouse Drive, Suite 260
San Diego, CA 92121

Prepared by Justin Rasas (RCE 60690) a principal with:

LOS Engineering, Inc.
11622 El Camino Real, Suite 100, San Diego, CA 92130
Phone 619-890-1253, Fax 619-374-7247

Job #1421

REGISTERED PROFESSIONAL ENGINEER
JUSTIN P. RASAS
NO. TR 2135
EXP. 3/31/2016
TRAFFIC
STATE OF CALIFORNIA

SEALED ON 1/2/2016

Table of Contents

Executive Summary v
1.0 Introduction 1
2.0 Study Methodology 4
2.1 Study Area Criteria 4
2.2 Scenario Criteria 4
2.3 Traffic Analysis Criteria 5
2.3.1 Intersections 5
2.3.2 Street Segments 5
2.3.3 Freeway Segments 6
2.3.4 Metered Freeway On-Ramps 6
2.4 Significance Criteria 7
2.5 Congestion Management Program Criteria 7
3.0 Existing Conditions 8
3.1 Existing Street System 8
3.2 Existing Traffic Volumes and LOS Analyses 10
4.0 Project Description 15
4.1 Project Trip Generation 15
4.2 Project Site Access and On-Site Circulation 16
4.3 Project Distribution and Assignment 16
5.0 Existing with Project Conditions 19
6.0 Near-Term without Project Conditions 24
7.0 Near-Term with Project Conditions 30
8.0 Horizon Year (2035) without Project Conditions 34
9.0 Horizon Year (2035) with Project Conditions 39
10.0 Impacts, Project Features, and Mitigation Measures 44
10.1 Existing and Near-Term Direct Impacts and Proposed Mitigation 44
10.2 Horizon Year (2035) Cumulative Impacts and Proposed Mitigation 45
10.2.1 Proposed Horizon Year (2035) Intersection Mitigation Measures 45
10.2.2 Proposed Segment Mitigation Measures 47
10.3 Impacts and Proposed Mitigation Summary 48
11.0 Parking 50
12.0 Transit and Other Transportation Modes 51
13.0 Conclusions 52

List of Figures

Figure 1: Project Location 2
Figure 2: Site Plan 3
Figure 3: Existing Roadway Conditions 9
Figure 4: Existing Volumes 11
Figure 5: Project Distribution 17
Figure 6: Project Assignment 18
Figure 7: Existing with Project Volumes 20
Figure 8: Cumulative Project Locations and Volumes 26

Figure 9: Near-Term (Existing + Cumulative) Volumes 27
Figure 10: Near-Term with Project Volumes 31
Figure 11: Horizon Year (2035) SANDAG Traffic Model Conditions 35
Figure 12: Horizon Year (2035) without Project Volumes..36
Figure 13: Horizon Year (2035) with Project Volumes 40
Figure 14: Carroll Canyon Rd/I-15 NB Ramp Configuration 44
Figure 15: Carroll Canyon Rd/I-15 SB Ramp Proposed Year 2035 Mitigation..46
Figure 16: Carroll Canyon Rd/I-15 NB Ramp Proposed Year 2035 Mitigation 46

List of Tables

Table 1: Un-Signalized and Signalized Intersection Level of Service (HCM 2000)..5
Table 2: Signalized Intersection ILV Operations (Caltrans)..5
Table 3: Street Segment Daily Capacity and LOS (City of San Diego)..6
Table 4: Freeway Level of Service..6
Table 5: City of San Diego Traffic Impact Significance Thresholds 7
Table 6: Existing Intersection Level of Service..12
Table 7: Existing Segment ADT Volumes and Level of Service 12
Table 8: Existing On-Ramp Observed Average Delay 13
Table 9: Existing On-Ramp Operations..13
Table 10: Existing Intersection 95th Percentile Queuing..14
Table 11: Existing Freeway Volumes and Level of Service..14
Table 12: Project Trip Generation..15
Table 13: Existing with Project Intersection Level of Service..19
Table 14: Existing with Project Segment ADT Volumes and Level of Service 21
Table 15: Existing with Project On-Ramp Operations..21
Table 16: Existing With Project Freeway Volumes and Level of Service..22
Table 17: Existing With Project Intersection 95th Percentile Queuing..23
Table 18: Near-Term (Existing + Cumulative) Intersection Level of Service..25
Table 19: Near-Term (Existing + Cumulative) Segment ADT Volumes and Level of Service 28
Table 20: Near-Term (Existing + Cumulative) On-Ramp Operations..28
Table 21: Near-Term (Existing + Cumulative) Intersection 95th Percentile Queue..28
Table 22: Near-Term (Existing + Cumulative) Freeway Volumes and Level of Service 29
Table 23: Near-Term with Project Intersection Level of Service..30
Table 24: Near-Term with Project Segment ADT Volumes and Level of Service 32
Table 25: Near-Term with Project On-Ramp Operations 32
Table 26: Near-Term with Project Freeway Volumes and Level of Service 32
Table 27: Near-Term With Project Intersection 95th Percentile Queuing 33
Table 28: Horizon Year (2035) without Project Intersection Level of Service..34
Table 29: Horizon Year (2035) without Project Segment ADT Volumes and Level of Service......37
Table 30: Horizon Year (2035) without Project On-Ramp Operations..37
Table 31: Horizon Year (2035) without Project 95th Percentile Queuing 37
Table 32: Horizon Year (2035) without Project Freeway Volumes and Level of Service................38
Table 33: Horizon Year (2035) with Project Intersection Level of Service..39
Table 34: Horizon Year (2035) with Project Segment ADT Volumes and Level of Service 41
Table 35: Horizon Year (2035) with Project On-Ramp Operations..41
Table 36: Horizon Year (2035) with Project Freeway Volumes and Level of Service....................42

Table 37: Horizon Year (2035) With Project Intersection 95th Percentile Queuing 42
Table 38: Carroll Canyon Rd/I-15 NB Ramp Horizon Year LOS With Proposed Mitigation 44
Table 39: Carroll Canyon Rd at Maya Linda, I-15 SB, and I-15 NB Intersection LOS with Mitigation 47
Table 40: Carroll Canyon Road from I-15 to Project Access Mitigation (Horizon Year Conditions) 47
Table 41: Carroll Canyon Road from Project Access to Businesspark Ave Mitigation (Horizon Year Conditions) 48
Table 42: Direct and Cumulative Impact Summary and Proposed Mitigation 48
Table 43: Project Parking Summary...50

Appendices

Appendix A………...………………………….. City of San Diego Traffic Impact Study Screen Check
Appendix B………...………………………………………………………CALTRANS Flow Rates
Appendix C……………………. San Diego On-Ramp Criteria and CALTRANS Ramp Meter Rates
Appendix D………...…………………………………………………SANDAG CMP Arterial System
Appendix E…………... City of San Diego Community Roadway Classification Maps and Land Use
Appendix F……………………………………………... Count Data
Appendix G……………………............................ .... Existing Level of Service Calculations
Appendix H………………….............................City of San Diego Trip Generation Manual Excerpts
Appendix I…………...…….…………………………………………... Signal Warrant Calculations
Appendix J…………………………………....Redirected Traffic Due to Installation of Raised Median
Appendix K………...…………………….. SANDAG Series 12 Year 2035 Select Zone Assignment
Appendix L……….………….........................Existing with Project Level of Service Calculations
Appendix M…………………….....................................Cumulative Project Individual Assignments
Appendix N……………………........................Existing + Cumulative Level of Service Calculations
Appendix O……………….............. Existing + Cumulative + Project Level of Service Calculations
Appendix P……………….................................. Horizon Year (2035) Level of Service Calculations
Appendix Q…...…………………...……………………….. SANDAG 2035 ADTs and Turn Moves
Appendix R……………... Horizon Year (2035) + Project Intersection Level of Service Calculations
Appendix S……....................................... Plus Project Intersection LOS Calculations with Mitigation
Appendix T...Proposed Ultimate Lane Configurations on Carroll Canyon Rd along Project Frontage
Appendix U………….……...Proposed EB to SB Right Turn Lane at Carroll Cyn Rd/I-15 SB Ramp
Appendix V…….. Horizon Year Fair Share Mitigation Calculations
Appendix W……..On-Site Parking Summary
Appendix X…………...…………………………………….......... Transit Map and Schedules
Appendix Y…………………………Excerpts from City of San Diego Bicycle Master Plan Update

Executive Summary
Carroll Canyon Mixed Use

The proposed Carroll Canyon Mixed Use project is a redevelopment project of approximately 9.3 net acres located on the northeast corner of Carroll Canyon Road and I-15 in the Scripps Ranch community of San Diego, California. The redevelopment project with 260 apartments and 12,200 square feet of commercial/retail space will replace an existing mostly vacant office complex of approximately 76,241 square feet. The site is currently zoned as an Industrial Park (IP-2-1) and is proposed to be zoned as Residential (RM-3-7) and Commercial (CC-2-3). The existing project site has one driveway. The applicant proposes to: 1) construct a new signalized primary access generally in the area of the existing project driveway, 2) construct a right-in/right-out driveway between the existing driveway and I-15, and 3) construct a raised median along the project frontage to be compliant with the City of San Diego roadway classification and for mitigation of a direct project impact. The raised median will allow the existing westbound to southbound left turn into the Eucalyptus Square Shopping Center south of the proposed project. The project will include eastbound to northbound dual left turn lanes into the project site. At the easterly edge of the project, the center raised median required to accommodate the proposed traffic signal will result in a transition segment of a raised median extending to the east of the project.

The project traffic generation was calculated using trip rates from the City of San Diego *Trip Generation Manual*, May 2003. Two trip generation rates were applied: a driveway rate for project access points and a cumulative rate (accounts for primary and diverted trips) that was applied for all other analyzed roadways. The project driveway volumes were calculated at 4,004 ADT with 203 AM peak hour trips and 336 PM peak hour trips. The cumulative traffic volumes were calculated at 3,256 ADT with 174 AM peak hour trips and 276 PM peak hour trips.

The project will require a Community Plan Amendment (CPA) to change the land use designation from Industrial Park to Residential with Commercial, and a rezone from IP-2-1 to RM-3-7 and CC-2-3. As part of this transportation impact study, six scenarios were analyzed, which included Existing, Existing with Project, Near-term (existing + cumulative), Near-term with Project, Horizon Year (2035), and Horizon Year (2035) with Project Conditions. Operational findings and project impacts by scenario are summarized below:

1) <u>Under existing conditions</u>, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
    b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM).

   The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM); however, the calculated delays were higher than the maximum observed delays of 2.1 minutes on the southbound ramp (PM) and 2.0 minutes on the northbound ramp (PM).

2) <u>Under existing with project conditions</u>, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:

a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM & PM).

The addition of project traffic resulted in no significant direct project impacts because the addition of project traffic did not exceed the allowable increase in traffic delay thresholds. The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM); however, the project did not result in a significant impact to the metered on-ramps.

3) Under near-term (existing + cumulative) conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
    b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM).

    The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM).

4) Under near-term with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
    b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM & PM).

    The project is calculated to have one near-term direct impact at the intersection of Carroll Canyon Road/I-15 NB Ramp. To mitigate this impact, the owner/applicant, prior to issuance of the first building permit, shall assure by permit and bond the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/driveway entrance westerly to the northbound freeway on-ramp to I-15. The additional westbound right turn lane is conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. dated 12/19/12 (Appendix T). The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM); however, the project did not result in a significant impact to the metered on-ramps.

5) Under horizon year (2035) conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the:
    a. Intersection of Carroll Canyon Road/Maya Linda Road (LOS F AM & LOS E PM),
    b. Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
    c. Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),
    d. Freeway segment of I-15 between Mira Mesa and Carroll Canyon (LOS E SB AM and LOS E NB PM), and
    e. Freeway segment of I-15 between Carroll Canyon and Miramar (LOS E SB AM).

    The freeway on-ramps were calculated to operate with either minimal delay (NB AM) or more noticeable delays (SB AM, SB PM, and NB PM).

6) Under horizon year (2035) with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for:
    a. Intersection of Carroll Canyon Road/Maya Linda Rd (LOS F AM & PM)

b. Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
c. Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),
d. Segment of Carroll Canyon Rd between I-15 and the project access (LOS E Daily),
e. Segment of Carroll Canyon Rd between project access and Businesspark Ave (LOS E Daily),
f. Freeway segment of I-15 between Mira Mesa and Carroll Canyon (LOS E SB AM and LOS E NB PM), and
g. Freeway segment of I-15 between Carroll Canyon and Miramar (LOS E SB AM).

The project is calculated to have five cumulative (horizon year) impacts at locations a) through e) above; however, the project did not have cumulative impacts to the freeway (locations f & g) because the project traffic did not exceed the traffic impact significance thresholds. The metered freeway on-ramps were calculated to operate with either minimal delay (NB AM) or more noticeable delays (SB AM, SB PM, and NB PM); however, the project did not result in a significant impact to the metered on-ramps because the added project delay is less than 2.0 minutes with the freeway calculated to be operating at LOS E. The following details summarize the proposed improvements to mitigate the five cumulative impacts:

i) The intersection of Carroll Canyon Road at Maya Linda Road is calculated to have improved operations (i.e. LOS) as part of near-term and horizon year physical improvements to the adjacent intersections of Carroll Canyon Road/I-15 SB Ramp and Carroll Canyon Road/I-15 NB Ramp because these three intersections are interconnected. When the intersection of Carroll Canyon Road/I-15 SB Ramp has an additional eastbound to southbound right turn lane added (applicant will make a fair share contribution toward a proposed horizon year improvement that is consistent with a previous Public Facilities Financing Plan [PFFP] project) and the intersection of Carroll Canyon Road/I-15 NB Ramp has an additional westbound to northbound right turn lane added (as part of the applicant's proposed near-term improvement to mitigate a near-term impact), their capacities improve, which means more vehicles will get through these two intersections. Since these two intersections are interconnected with Maya Linda Road, the higher intersection capacity at Carroll Canyon Road/I-15 SB Ramp and Carroll Canyon Road/I-15 NB Ramp (due to additional lanes as noted above) will reduce the queuing to Maya Linda, thereby mitigating the cumulative impacts to below a level of significance as shown in Table 39 within this report; however, if the identified improvements at the Carroll Canyon Road/I-15 SB ramp are not completed by the study horizon year, then the cumulative impact at Carroll Canyon Road/Maya Linda Road would not be fully mitigated, thus a finding of overriding consideration would be required,

ii) To mitigate the cumulative impact at the intersection of Carroll Canyon/ I-15 SB Ramps to below a level of significance, the applicant proposes to pay a fair share of 9.4% toward the applicant's proposed eastbound to southbound right turn lane addition to the I-15/Carroll Canyon southbound ramp. If the identified improvement is not completed by the study horizon year of 2035, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required,

iii) To mitigate the cumulative impact at the intersection of Carroll Canyon/I-15 NB Ramps to below a level of significance, the improvement to be constructed by the applicant to mitigate the direct impact at this location will also mitigate the cumulative impact (see item 4 on page vi),

iv) To mitigate the segment of Carroll Canyon Road between I-15 and the project signalized access, prior to issuance of the first building permit, the owner or permittee shall assure by permit and bond the installation or construction of a raised median along the project frontage to the satisfaction of the City Engineer. The improvement shall be completed and accepted by the City Engineer prior to issuance of the first certificate of occupancy. This improvement will reduce the impact to below a level of significance as documented in Table 40 within this report, and

v) To mitigate the segment of Carroll Canyon Road between the signalized project access and Businesspark Avenue, the applicant proposes to pay a fair share of 15.4% toward the cost of a raised median between the signalized project access and Businesspark Avenue. During the construction of the signalized entrance for the project, the applicant will construct the short segment of the raised median just east of the signalized project access as conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. 12/19/12. The cost of constructing the short segment of a raised median just east of the signalized project access will be credited towards the applicant's fair share responsibility of 15.4% for the eventual raised median between the signalized project access and Businesspark Avenue. However, if the roadway is not improved with a raised median by the study horizon year of 2035, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required. With the improvement of a raised median, the segment is calculated to operate at acceptable LOS as documented in Table 41 within this report.

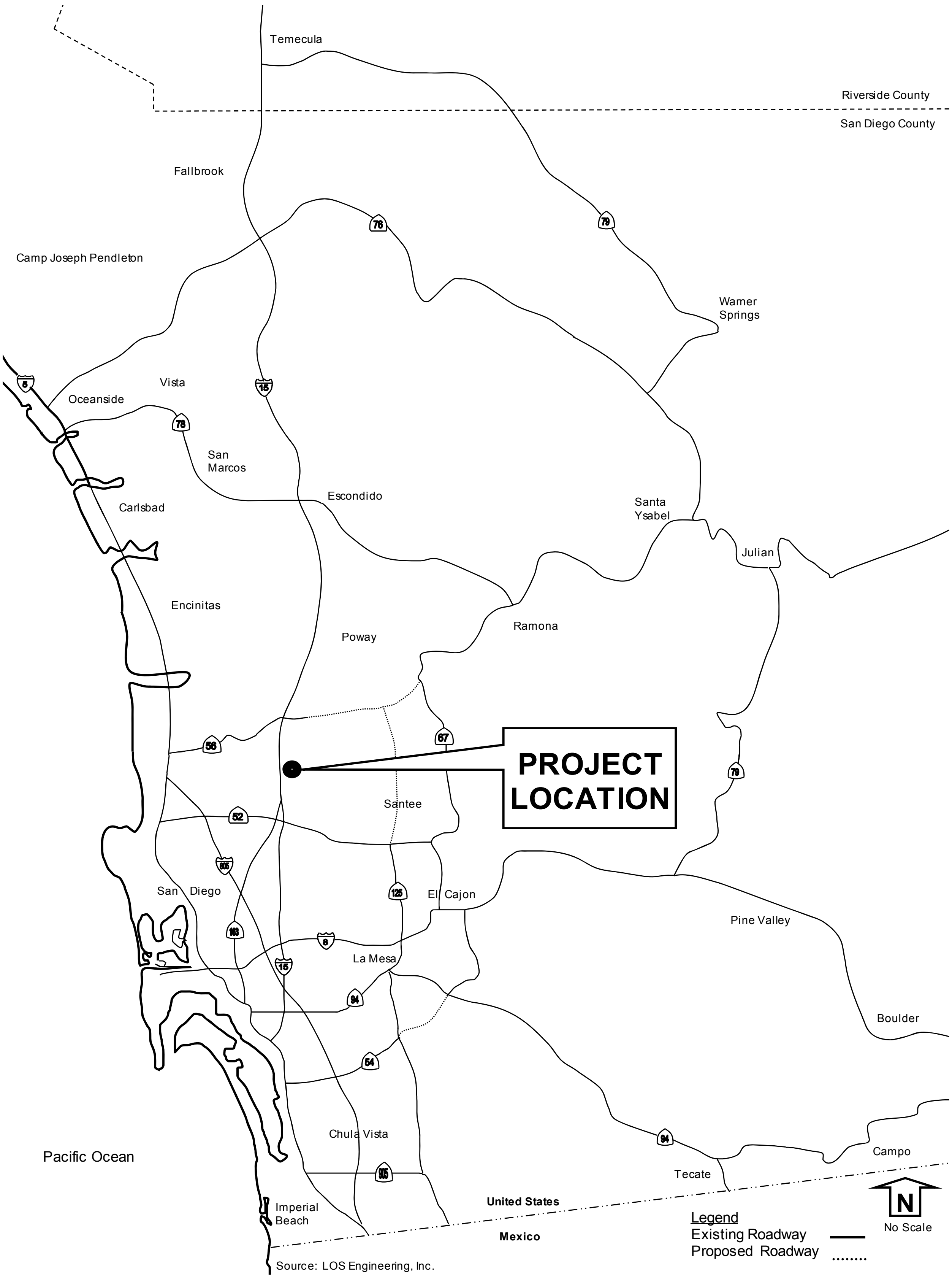
1.0 Introduction

The proposed Carroll Canyon Mixed Use project is a redevelopment project of approximately 9.3 acres located on the northeast corner of Carroll Canyon Road and I-15 in the Scripps Ranch community of San Diego, California. The redevelopment project with 260 apartments and 12,200 square feet of commercial/retail space will replace an existing mostly vacant office complex of approximately 76,241 square feet. The location of the project is shown in **Figure 1** with a preliminary site plan shown in **Figure 2**. The project requires a rezone from Industrial Park (IP-2-1) to Residential (RM-3-7) with Commercial (CC-2-3) and a Community Plan Amendment to change the land use designation from Industrial Park to Residential with Commercial.

This report describes the existing roadway network in the vicinity of the project site and includes a review of the existing and proposed activities for weekday peak AM and PM periods, and daily traffic conditions when the project is completed. Horizon year (2035) conditions without and with the project are also analyzed. The format of this study includes the following chapters:

1.0 Introduction
2.0 Study Methodology
3.0 Existing Conditions
4.0 Project Description
5.0 Existing with Project Conditions
6.0 Near-Term without Project Conditions
7.0 Near-Term with Project Conditions (Opening Day 2016)
8.0 Horizon Year (2035) without Project Conditions
9.0 Horizon Year (2035) with Project Conditions
10.0 Mitigation Measures
11.0 Parking
12.0 Transit and Other Transportation Modes
13.0 Conclusions

Figure 1: Project Location



UNIT SCHEDULE PER BUILDING

Group	Building Number	Unit Name	Unit Type	Unit Count
BUILDING 1 & 1A	BUILDING 1	Unit A	1BR	14
	BUILDING 1	Unit B	1BR	19
	BUILDING 1	Unit CA.1	1BR	6
	BUILDING 1	Unit C	2BR	4
	BUILDING 1	Unit D	2BR	8
	BUILDING 1	Unit G	2BR+DEN	6
				57
	BUILDING 1A	Unit CA	1BR	2
				2
BUILDING 2 & 2A	BUILDING 2	Unit A	1BR	20
	BUILDING 2	Unit B	1BR	16
	BUILDING 2	Unit C	2BR	4
	BUILDING 2	Unit D	2BR	8
	BUILDING 2	Unit G	2BR+DEN	6
				54
	BUILDING 2A	Unit CA	1BR	2
				2
BUILDING 3, 3A & 3B	BUILDING 3	Unit A	1BR	14
	BUILDING 3	Unit B	1BR	3
	BUILDING 3	Unit C	2BR	17
	BUILDING 3	Unit D	2BR	3
	BUILDING 3	Unit F	2BR	6
	BUILDING 3	Unit E	2BR	16
	BUILDING 3	Unit G	2BR+DEN	6
	BUILDING 3	Unit I	3BR	4
				69
	BUILDING 3A	Unit CA	1BR	2
				2
	BUILDING 3B	Unit CA	1BR	2
				2
BUILDING 4 & 4A	BUILDING 4	Unit A	1BR	20
	BUILDING 4	Unit B	1BR	10
	BUILDING 4	Unit E	1BR	1
	BUILDING 4	Unit C	2BR	3
	BUILDING 4	Unit D	2BR	2
	BUILDING 4	Unit E	2BR	7
	BUILDING 4	Unit G	2BR+DEN	6
	BUILDING 4	Unit I	3BR	7
				56
	BUILDING 4A	Unit CA	1BR	2
				2
BUILDING 5	BUILDING 5	Unit B	1BR	2
	BUILDING 5	Unit C	2BR	12
				14
	Grand total			260

57+2 = **59** UNITS | 53+6 = **59** STORAGES
54+2 = **56** UNITS | 50+6 = **56** STORAGES
69+2+2 = **73** UNITS | 61+6+6 = **73** STORAGES
56+2 = **58** UNITS | 52+6 = **58** STORAGES
14 UNITS | **14** STOR.

PERSONAL STORAGE SCHEDULE PER BUILDING

Building Number	Comments	Count	Storage Volume
BUILDING 1	CORRIDOR	19	4,848.75 CF
BUILDING 1	GARAGE	34	9,379.25 CF
		53	14,228 CF
BUILDING 1A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 2	CORRIDOR	23	5,856.75 CF
BUILDING 2	GARAGE	27	7,695 CF
		50	13,551.75 CF
BUILDING 2A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 3	CORRIDOR	32	8,505.57 CF
BUILDING 3	GARAGE	29	8,419.41 CF
		61	16,924.97 CF
BUILDING 3A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 3B	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 4	CORRIDOR	39	10,477.69 CF
BUILDING 4	GARAGE	13	3,515.25 CF
		52	13,992.94 CF
BUILDING 4A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 5	CORRIDOR	14	4,530.75 CF
		14	4,530.75 CF
		260	70,473.41 CF
	AVERAGE		271 CF/UNIT

SITE PLAN LEGEND

Symbol	Description
	CARPORT PARKING / PARK LIFT
8' - 0" / 18' - 0"	TYP. RESIDENTIAL PARKING
8' - 6" / 18' - 0"	TYP. RETAIL PARKING
9' - 0" / 18' - 0"	5'-0" @ TYP HC STALLS 8'-0" @ VAN STALLS ACCESSIBLE PARKING
3' - 0" / 8' - 0"	MOTOCYCLE PARKING
	TRANSFORMER
4' - 0" / 7' - 0"; 3' - 0" / 10' - 0"	TYP. PERSONAL STORAGE (240cf min.)
	BICYCLE RACK (8 BIKES / RACK)
T/R	TRASH / RECYCLE

Carroll Canyon Residential-Mixed Use
Sand Diego, CA
9/30/2015 2014-10199

OVERALL SITE AREA:	404,177 SF =	9.28 Acres
RESIDENTIAL SITE AREA:	347,646 SF =	7.98 Acres
RETAIL SITE AREA:	56,532 SF =	1.30 Acres
TOTAL BUILDING AREA:	388,000	
F.A.R.	0.96	
TOTAL RESIDENTIAL UNITS:	260 DU	
DENSITY (du/ac):	28.02 du/ac	(Overall Site)
	32.58 du/ac	(Net Residential Site)

NET RENTABLE *(SF)* :	235,991 SF
AVG. UNIT SIZE *(SF)* :	908 SF
LEASING OFFICE AREA *(GROSS)* :	3,200 SF
AMENTIES AREA *(GROSS)*:	4,300 SF

RETAIL & LEASING:		Vehicle Parking Req'd (Code)	
RESTAURANT:	8600 SF	15/1000	129 Stalls
RETAIL:	3600 SF	5/1000	18 Stalls
LEASING:	1500 SF	2.5/1000	4 Stalls
Total:	**13700 SF**	**Total:**	**151 Stalls**
		Motorcyle Req'd (Code)	**3 Stalls**
		Bicyle Req'd (Code)	**16 Stalls**

RESIDENTIAL (Code)		Vehicle Parking			Motorcycle		Bicycle (Req'd for units w/o garage)				
		Stalls/du	Parking Required		Stall/du	Req'd		%	DU	Stall/du	Req'd
1BR	125	1.5	188	Stalls	0.1	13	Units w/o Garage **260du-143garage = 117du**	48.1%	56	0.4	22
2BR	124	2	248	Stalls	0.1	12		47.7%	56	0.5	28
3BD	11	2.25	25	Stalls	0.1	1		4.2%	5	0.6	3
Total Required			**461**	Stalls		**26**			117		**53**
		Ratio	1.77	Stalls/du							

Total Parking Req'd by Code (Retail + Residential): 612 Stalls
Total Motorcycle Parking Req'd by Code (Retail + Residential): 29 Stalls
Total Bicycle Parking Req'd by Code (Retail + Residential): 69 Stalls

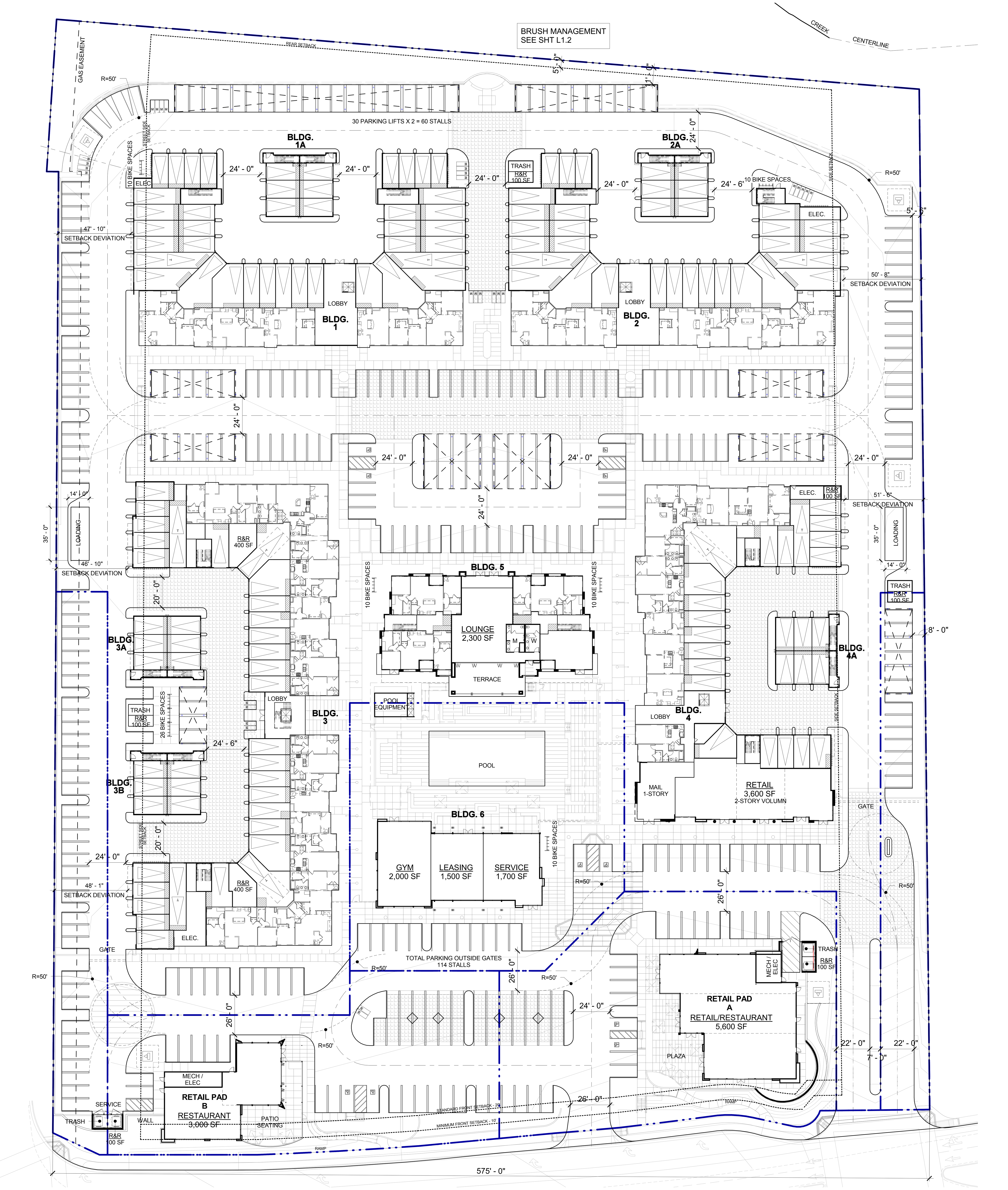
UNIT TYPE		BLDG 1	BLDG 2	BLDG 3	BLDG 4	BLDG 5	BLDG 6	TOTAL			TARGET	RENTABLE S.F.		PRIVATE OPEN SPACE (DECK) S.F.	
1BR	UNIT A	14	20	14	20			**68**	26.2%	48.1%	46.0%	621	42,228	60	4,080
	UNIT B	19	16	3	11	2		**51**	19.6%			745	37,995	60	3,060
	UNIT CA.1	6						**6**	2.3%			871	5,226	60	360
2BR	UNIT D	8	8	3	2			**21**	8.1%	47.7%	46.0%	1,077	22,617	65	1,365
	UNIT E			16	7			**23**	8.8%			1,055	24,265	60	1,380
	UNIT C	4	4	17	3	12		**40**	15.4%			1,100	44,000	60	2,400
	UNIT F			6				**6**	2.3%			1,081	6,486	60	360
	UNIT G	6	6	6	6			**24**	9.2%			1,117	26,808	84	2,016
	UNIT CA	2	2	4	2			**10**	3.8%			1,211	12,110	150	1,500
3BR	UNIT I			4	7			**11**	4.2%	4.2%	8.0%	1,296	14,256	80	880
TOTAL		**59**	**56**	**73**	**58**	**14**		**260**	**100.0%**				**235,991**		**17,401**

GATED PARKING

Covered	Garage	153	263	Stalls
	Carport	50		
	Car Lifts	60		
Open	Gated	156	156	Stalls
Grand Total:			**419**	**Stalls**

OPEN PARKING (NOT GATED) **114** Stalls

Total Parking Provided (Retail + Residential): 533 Stalls
Total Motorcycle Parking Provided (Retail + Residential): 29 Stalls
Total Bicycle Parking Provided (besides private garages): 76 Stalls



SITE PLAN - GROUND LEVEL	ENTITLEMENT SUBMITTAL
1" = 30'-0"	**Carroll Canyon Mixed-Use**
0' 15' 30' 60'	9850 CARROLL CANYON ROAD, SAN DIEGO, CA 92131
	2014.10199 **A 0.1**
	SEPT 30, 2015

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9/30/2015 9:04:00 AM

2.0 Study Methodology

The parameters by which this transportation impact analysis was prepared included the determination of what transportation facilities are to be analyzed, the scenarios to be analyzed and the methods required for analysis. The criteria for each of these parameters are included herein.

2.1 Study Area Criteria

The project study area was determined by the limits or extent of where 50 peak hour project trips would travel to or from the site and where 20 peak hour trips would use metered freeway on-ramps, which are based on City of San Diego *Traffic Impact Study Manual*, July 1998. The study area included the following intersections:

1) Carroll Canyon Road/Maya Linda Road (signalized)
2) Carroll Canyon Road/I-15 Southbound Ramp (signalized)
3) Carroll Canyon Road/I-15 Northbound Ramp (signalized)
4) Carroll Canyon Road/Businesspark Avenue (signalized)

The following street segments were also analyzed as part of this study:

1) Carroll Canyon Road from I-15 to the proposed project access
2) Carroll Canyon Road from the proposed project access to Businesspark Avenue

The following freeway segments were analyzed as part of this study:

1) I-15 from Mira Mesa Blvd to Carroll Canyon Road
2) I-15 from Carroll Canyon Road to Miramar Road

And, the following metered freeway on-ramps were analyzed as part of this study:

1) I-15/Carroll Canyon Road Southbound On-Ramp
2) I-15/Carroll Canyon Road Northbound On-Ramp

2.2 Scenario Criteria

The number of scenarios to be analyzed is typically six. For this project, the following scenarios were included:

1) Existing Conditions
2) Existing with Project Conditions
3) Near-term (existing + cumulative) without Project Conditions
4) Near-term (existing + cumulative) with Project Conditions
5) Horizon Year (2035) without Project Conditions
6) Horizon Year (2035) with Project Conditions

2.3 Traffic Analysis Criteria

The traffic analyses prepared for this study were based on the *2000 Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections, street segments, and freeway segments were measured using the HCM LOS designations, which ranges from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. This traffic study was prepared using the City of San Diego criteria with a completed traffic study checklist included in **Appendix A**. The individual LOS criteria for each roadway component are described below.

2.3.1 Intersections

The study intersections were analyzed based on the **operational analysis** outlined in the 2000 HCM. This process defines LOS in terms of **average control delay** per vehicle, which is measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 8.0 (Trafficware Corporation). The HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 1**.

TABLE 1: UN-SIGNALIZED AND SIGNALIZED INTERSECTION LEVEL OF SERVICE (HCM 2000)

Level of Service	Un-Signalized Average Control Delay (seconds/vehicle)	Signalized Average Control Delay (seconds/vehicle)
A	0-10	0-10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

Source: Highway Capacity Manual 2000.

The accepted methodology by Caltrans for un-signalized intersections is the most current edition of the HCM as noted on page 5 of Caltrans' *Guide for the Preparation of Traffic Impact Studies,* December 2002. For signalized intersections, Caltrans prefers the Intersecting Lane Volume (ILV) methodology, with definitions of Stable, Unstable, and Stop-and-Go (Capacity). A copy of Caltrans' Table 406 that included these definitions is included in Appendix B. The ILV operations are shown below in **Table 2**.

TABLE 2: SIGNALIZED INTERSECTION ILV OPERATIONS (CALTRANS)

Description of Operations	ILV per Hour
Stable - slight delay	<1,200
Unstable - considerable delay	1,200-1,500
Stop-and-Go (Capacity) – Severe Delay	≥ 1,500

Source: Caltrans' *Highway Design Manual* Table 406 page 400-23.

2.3.2 Street Segments

The street segments were analyzed based on the functional classification of the roadway using the City of San Diego *Average Daily Vehicle Trips* capacity lookup table. The roadway segment capacity and LOS standards used to analyze street segments are summarized in **Table 3**.

TABLE 3: STREET SEGMENT DAILY CAPACITY AND LOS (CITY OF SAN DIEGO)

Circulation Element Road Classification	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway – 6 Lanes	<30,000	<42,000	<60,000	<70,000	<80,000
Prime Arterial – 6 Lanes	<25,000	<35,000	<50,000	<55,000	<60,000
Major Arterial – 6 Lanes	<20,000	<28,000	<40,000	<45,000	<50,000
Major Arterial – 4 Lanes	<15,000	<21,000	<30,000	<35,000	<40,000
Collector – 4 Lanes	<10,000	<14,000	<20,000	<25,000	<30,000
Collector (no Center Ln) – 4 Lanes	<5,000	<7,000		<13,000	<15,000
Collector (with TWLTL) – 2 Lanes			<10,000		
Collector – 2 Lanes (no fronting property)	<4,000	<5,500	<7,500	<9,000	<10,000
Collector – 2 Lanes (commercial-industrial fronting)	<2,500	<3,500	<5,000	<6,500	<8,000
Collector – 2 Lanes (multi-family)	<2,500	<3,500	<5,000	<6,500	<8,000
Sub-Collector – 2 Lanes (multi-family)			<2,200		

Source: City of San Diego *Traffic Impact Study Manual* July 1998, page 8.

2.3.3 Freeway Segments

The freeway segments were analyzed based on a multilane highway LOS criteria using a Volume to Capacity (V/C) ratio as outlined in the 2000 HCM. The accepted methodology by Caltrans for the analysis of freeway sections is to use the most current edition of the HCM as noted on page 5 of Caltrans' *Guide for the Preparation of Traffic Impact Studies,* December 2002, which also documents a maximum service flow rate of 2,350 passenger cars per hour per lane. The freeway LOS operations are based on the CALTRANS' *2002 Guide for the Preparation of Traffic Impact Studies* (Dec 2002) V/C ratios as summarized below in **Table 4**. Excerpts from the CALTRANS guide showing Freeway LOS and maximum service flow rate are included in **Appendix B**.

TABLE 4: FREEWAY LEVEL OF SERVICE

Measure of Effectiveness	LOS A	LOS B	LOS C	LOS D	LOS E
Volume/Capacity Ratio	0.30	0.50	0.71	0.89	1.00

Source: Caltrans' Guide for the Preparation of Traffic Impact Studies.

2.3.4 Metered Freeway On-Ramps

Freeway on-ramps at Carroll Canyon Road/I-15 were analyzed based on the City of San Diego ramp metering analysis as outlined in Appendix 2 of the City of San Diego *Traffic Impact Study Manual*, July 1998. Most restrictive meter rates for the study on-ramps were obtained from Caltrans. The SB on-ramp has two Single Occupancy Vehicle (SOV) lanes and the NB on-ramp has a single SOV lane and a single High Occupancy Vehicle (HOV) lane. The usage split between the SOV and HOV lane was calculated from counts collected on Wednesday, March 11, 2015. Excerpts from the City of San Diego traffic study manual, Caltrans' on-ramp meter rates, and SOV/HOV NB usage split are included in **Appendix C**.

2.4 Significance Criteria

A project is considered to have caused a significant impact if the new project traffic has degraded an acceptable LOS to an unacceptable LOS (i.e. E or F) or has decreased the operations on the surrounding roadways by the City of San Diego defined thresholds as shown in **Table 5**.

TABLE 5: CITY OF SAN DIEGO TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service with Project	Allowable Increase Due to Project Impacts[1]				
	Freeways	Roadway Segments		Intersections	Ramp Metering
	V/C	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E[2]	0.01	0.02	1.0	2.0	2.0[3]
F[2]	0.005	0.01	0.5	1.0	1.0[3]

Source: City of San Diego. Notes: [1] If a proposed project's traffic impact exceeds the values shown in the table, then the impacts are deemed "significant." The project applicant shall identify "feasible mitigations" to achieve LOS D or better. [2] The acceptable Level of Service (LOS) standard for roadways and intersections in San Diego is LOS D. However, for undeveloped locations, the goal is to achieve a LOS C. [3] The impact is only considered significant if the total delay exceeds 15 minutes AND freeway is operating at LOS E/F. Delay measured in seconds. V/C = Volume to Capacity Ratio (capacity at LOS E should be used). Speed = Arterial speed measured in miles per hour for CMP analyses.

If a significant impact is calculated due to the addition of project traffic, then a feasible mitigation is required to return the facility to the pre-project condition or better, else the impact may be considered significant and unmitigated.

2.5 Congestion Management Program Criteria

The San Diego Association of Governments (SANDAG) Congestion Management Program (CMP) is intended to determine if a large project (greater than 2,400 ADT or more than 200 peak hour trips) will adversely impact the CMP transportation system. A CMP analysis is included because this project is calculated to generate more than 2,400 ADT and more than 200 peak hour trips. As part of the CMP analysis a SANDAG Select Zone Assignment or traffic model was run and the CMP system roadways were reviewed to determine if an arterial analysis would be required. Since the study area does not include roadways identified in the CMP system roadway list, an arterial analysis was not required. The list of CMP system roadways is included in **Appendix D**.

3.0 Existing Conditions

This section describes the study area street system, peak hour intersection volumes, daily roadway volumes, and existing LOS.

3.1 Existing Street System

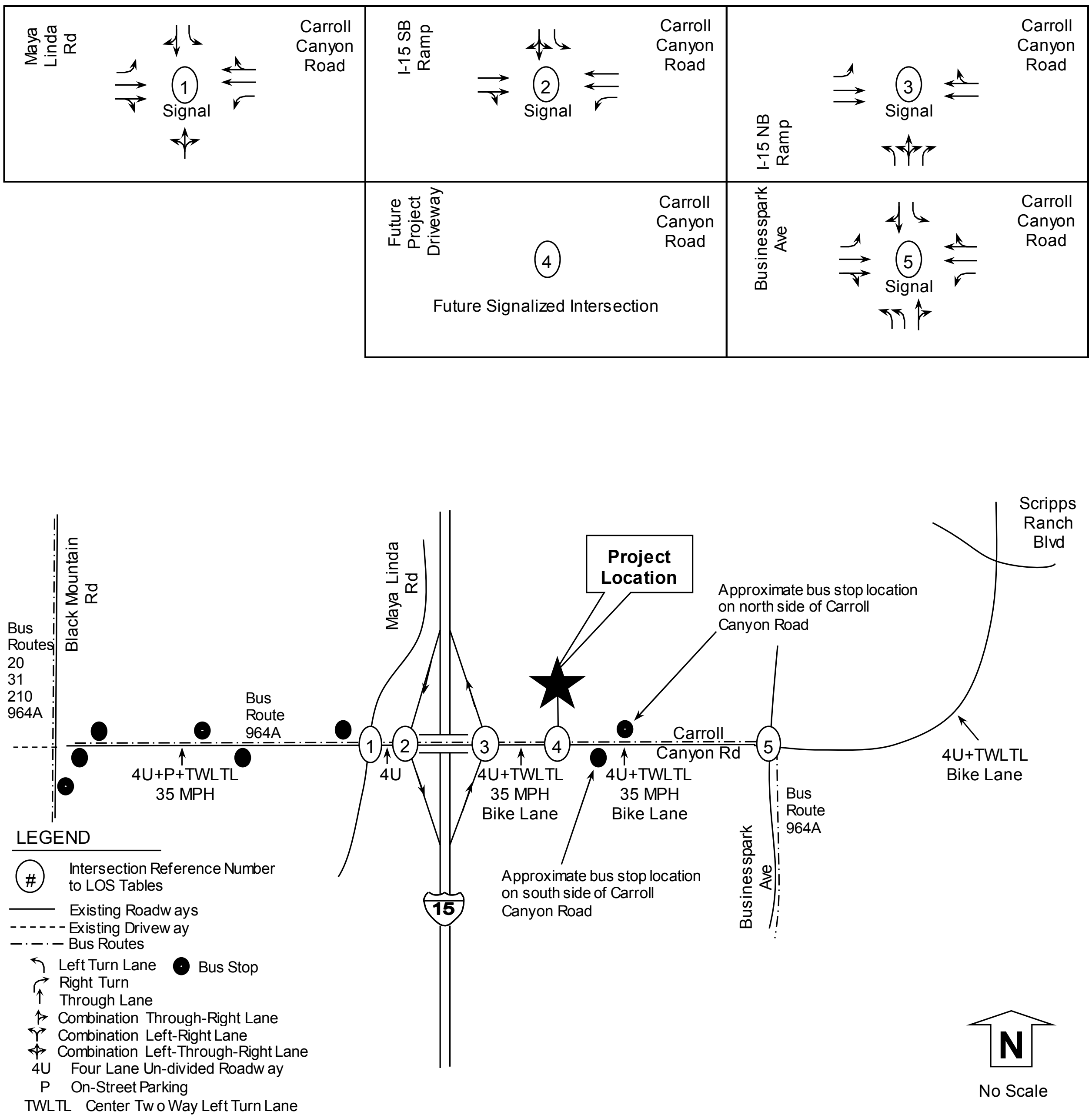
In the vicinity of the project, Interstate 15 and Carroll Canyon Road were analyzed as part of this study.

Interstate 15 (I-15) from Miramar Road/Pomerado Road to Mira Mesa Boulevard is classified as a *Freeway* in the City of San Diego Mira Mesa Community Plan. I-15 from Mira Mesa Boulevard to Carroll Canyon Road is currently built with five northbound mainline lanes, one northbound auxiliary lane, and two controlled access reversible high occupancy vehicle lanes in the freeway median. On this same segment in the southbound direction, I-15 is built with six southbound mainline lanes, one southbound auxiliary lane, and two controlled access reversible high occupancy vehicle lanes in the freeway median. I-15 from Carroll Canyon Road to Miramar Road/Pomerado Road is currently built with six northbound mainline lanes, one northbound auxiliary lane, and two controlled access reversible high occupancy vehicle lanes in the freeway median. On this same segment in the southbound direction, I-15 is built with six southbound mainline lanes, one southbound auxiliary lane, and two controlled access reversible high occupancy vehicle lanes in the freeway median.

Carroll Canyon Road from Maya Linda Road to I-15 is classified as a *4-Lane Major;* and from I-15 to Businesspark Avenue as a *4-Lane Prime* in the City of San Diego Mira Mesa and Scripps Miramar Ranch Community Plans (the project is located within the Scripps Miramar Ranch Community). Carroll Canyon Road from Maya Linda Road to I-15 is currently built within approximately 68 feet of pavement with two-travel lanes in each direction, a center painted median, one driveway on the south side of the roadway with parking prohibited on both side of the roadway. Carroll Canyon Road from I-15 to Businesspark Avenue is built within approximately 68 feet of pavement with two-travel lanes in each direction, a Class II bike lane on both sides of the roadway, and a center Two Way Left Turn Lane (TWLTL), and nine driveways (6 on the south side and 5 on the north side included one existing driveway on the project site). The posted speed limit is 35 Miles Per Hour (MPH) and on-street parking is prohibited on both sides of the roadway. The segment of Carroll Canyon Road between I-15 and Businesspark Avenue is currently functioning as a 4 Lane Collector.

The existing roadway conditions are shown in **Figure 3**. Copies of the City of San Diego community plan roadway classification and land use excerpts are included in **Appendix E**.

Figure 3: Existing Roadway Conditions



3.2 Existing Traffic Volumes and LOS Analyses

Existing counts were collected on Wednesday, November 5, 2014, when Miramar College and local schools were in session. Additionally, the CALTRANS Direct Access Ramps (DAR) project on Hillery Drive west of I-15 that connects Hillery Drive with the center managed lanes on I-15 was opened on Oct 6, 2014; therefore, the traffic patterns with the completed DAR are reflected in the traffic counts.

Existing AM and PM peak hour traffic volumes were obtained for the following intersections with the count dates noted in parentheses (please note the I-15 interchange at Carroll Canyon Road NB and SB Ramps were counted after completion of CALTRANS' bridge improvements):

1) Carroll Canyon Road/Maya Linda Road (Wednesday, 11/5/2014)
2) Carroll Canyon Road/I-15 Southbound Ramp (Wednesday, 11/5/2014)
3) Carroll Canyon Road/I-15 Northbound Ramp (Wednesday, 11/5/2014)
4) Carroll Canyon Road/Businesspark Avenue (Wednesday, 11/5/2014)

Existing street segments daily volumes were obtained for the following locations:

1) Carroll Canyon Road from I-15 to project access (Wednesday, 11/5/2014)
2) Carroll Canyon Road from project access to Businesspark Avenue (Wednesday, 11/5/2014)

Counts for the following freeway segments were obtained from CALTRANS (2013 data):

1) I-15 from Mira Mesa Blvd to Carroll Canyon Road
2) I-15 from Carroll Canyon Road to Miramar Road

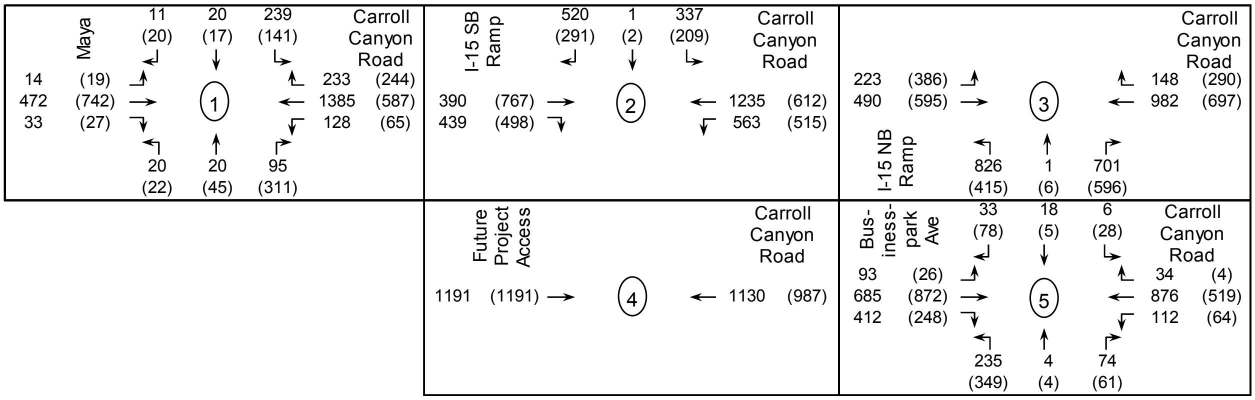
The metered freeway NB and SB on-ramps at Carroll Canyon Road/I-15 were analyzed based on Caltrans provided most restrictive meter rates.

The existing AM, PM, and ADT volumes are shown on **Figure 4**, with count data included in **Appendix F**. LOS, ramp meter operations, and queuing for existing conditions are shown in **Tables 6 through 13**.

Queues for left turns along Carroll Canyon Road at the intersections of Carroll Canyon Road at Maya Linda Road (westbound single left turn lane), I-15 SB Ramps (westbound single left turn lane), and I-15 NB Ramps (eastbound single left turn lane) were reported in Table 12 using the 95^{th} percentile queue lengths in feet as reported in the Synchro output.

For the ILV calculations, the interchange is considered a tight diamond; therefore, the ILV is calculated with both intersections operating simultaneously with only one ILV value reported for both intersections. Existing roadway LOS calculations are included in **Appendix G**.

Figure 4: Existing Volumes



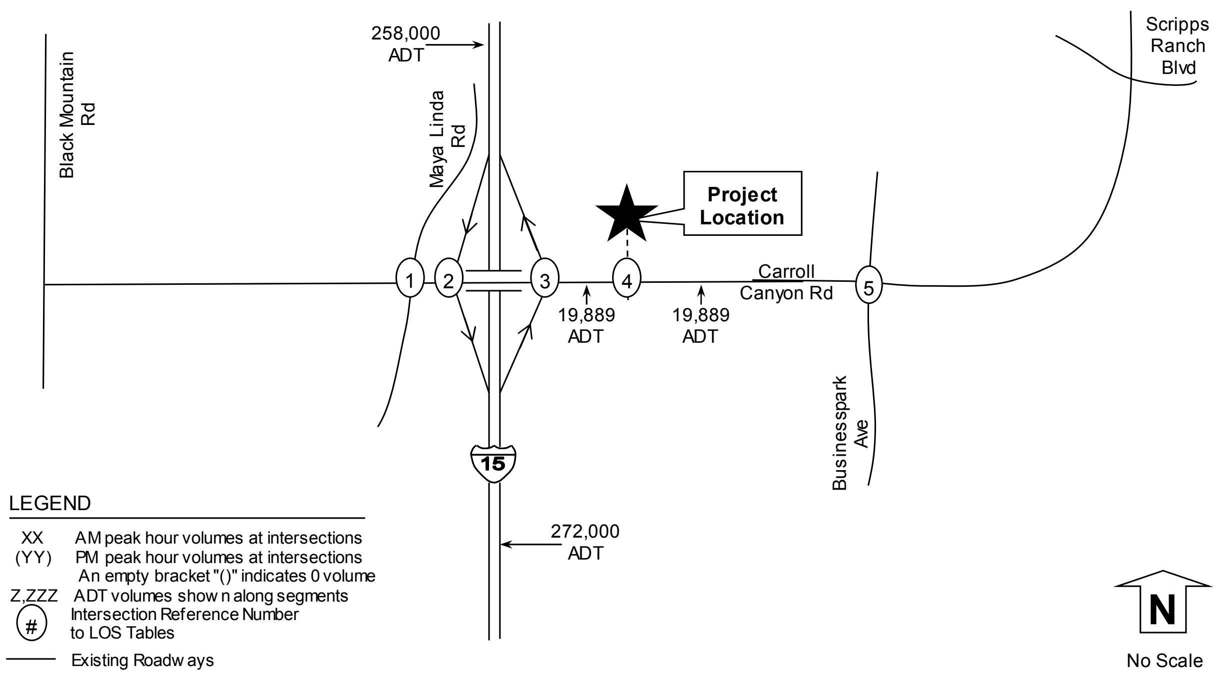


TABLE 6: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing	
			Delay[2]	LOS[3]
1) Carroll Canyon Rd	All	AM	24.1	C
at Maya Linda Rd (S)	All	PM	20.1	C
2) Carroll Canyon Rd	All	AM	66.3	E
at I-15 SB Ramps (S)	All	PM	55.9	E
Caltrans (ILV)	All	AM	1,646	Over Capacity
Caltrans (ILV)	All	PM	1,515	Over Capacity
3) Carroll Canyon Rd	All	AM	55.4	E
at I-15 NB Ramps (S)	All	PM	45.5	D
Caltrans (ILV)	All	AM	1,646	Over Capacity
Caltrans (ILV)	All	PM	1,515	Over Capacity
4a) Carroll Canyon Rd	SBR	AM	DNE	DNE
at Project RIRO Dwy (U)	SBR	PM	DNE	DNE
4b) Carroll Canyon Rd	All	AM	DNE	DNE
at Project Access (S)	All	PM	DNE	DNE
5) Carroll Canyon Rd	All	AM	32.1	C
at Business Park Ave (S)	All	PM	31.9	C

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, ILV for Caltrans. 2) Delay - HCM Average Control Delay in seconds. ILV - Intersecting Lane Volumes (Stb - stable; Un - unstable; Over Capacity). 3) LOS: Level of Service. DNE: Does Not Exist.

TABLE 7: EXISTING SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Functional Classification	Existing				
		Daily Volume	# of lanes	LOS E Capacity	V/C	LOS
Carroll Canyon Road						
I-15 to Project Access	4-Lane Collector	19,889	4	30,000	0.66	C
Project Access to Businesspark Ave	4-Lane Collector	19,889	4	30,000	0.66	C

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 8: EXISTING ON-RAMP OBSERVED AVERAGE DELAY

WED 11-5-14	Highest from either SOV lane		WED 3-11-15	Highest in single SOV lane (1)	
SB On-Ramp Time (5 min blocks)	**Max # of Queued Vehicles**	**Longest Delay in Queue (Sec)**	**NB On-Ramp Time (5 min blocks)**	**Max # of Queued Vehicles**	**Longest Delay in Queue (Sec)**
4:00PM	7	39	4:00PM	6	28
4:05PM	7	40	4:05PM	11	58
4:10PM	10	62	4:10PM	13	69
4:15PM	5	27	4:15PM	11	61
4:20PM	20	120	4:20PM	13	61
4:25PM	21	125	4:25PM	7	34
4:30PM	20	118	4:30PM	8	37
4:35PM	6	36	4:35PM	8	39
4:40PM	6	34	4:40PM	7	35
4:45PM	6	35	4:45PM	7	36
4:50PM	5	29	4:50PM	8	37
4:55PM	5	30	4:55PM	6	30
5:00PM	7	38	5:00PM	15	80
5:05PM	9	54	5:05PM	24	119
5:10PM	7	43	5:10PM	23	113
5:15PM	10	58	5:15PM	23	115
5:20PM	8	54	5:20PM	12	65
5:25PM	6	33	5:25PM	14	77
5:30PM	7	42	5:30PM	9	54
5:35PM	6	31	5:35PM	8	41
5:40PM	7	38	5:40PM	6	30
5:45PM	6	35	5:45PM	6	33
5:50PM	4	20	5:50PM	5	30
5:55PM	4	23	5:55PM	6	31
Maximums	21	125	Maximums	24	119
Maximum Observed Delay = 125 sec = 2.1 min			Maximum Observed Delay = 119 sec = 2.0 min		
Maximum Observed Queue (25ft*21veh) = 525 ft			Maximum Observed Queue (25ft*24veh) = 600 ft		
Calculated Queue (Table 9) = 775 ft			Calculated Queue (Table 9) = 1,260 ft		
Difference btw Calculated and Observed = 250 ft			Difference btw Calculated and Observed = 660 ft		
Difference btw Calculated and Obseved	**32%**		**Difference btw Calculated and Obseved**	**52%**	
This shows that using the most restrictive Caltrans rate for the entire peak hour results in a higher queue than observed by the percentage above					

Notes (1) HOV was observed to have less vehicles (14.9%), thus data based on higher SOV usage (85.1%).

TABLE 9: EXISTING ON-RAMP OPERATIONS

I-15 at Carroll Canyon Ramp & Peak Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	Most Restrictive Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet (3)
AM SB On-Ramp	Existing	1,003	2 SOV	542	1,084	0	0.0	0
PM SB On-Ramp	Existing	1,015	2 SOV	492	984	31	1.9	775
AM NB On-Ramp	Existing	317	1 SOV	Meter Not Turned On		0	0.0	0
AM NB On-Ramp	Existing	55	1 HOV	Meter Not Turned On		0	0.0	0
	Total (SOV & HOV)	372						
PM NB On-Ramp	Existing	580	1 SOV	530	530	50	5.7	1,260
PM NB On-Ramp	Existing	102	1 HOV	530	530	0	0.0	0
	Total (SOV & HOV)	682						

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 85.1% SOV usage and 14.9% HOV usage. (2) Rate provided by CALTRANS (Appendix C). The NB On-Ramp meter was not turned on for AM; therefore, the rate is noted as "meter not turned on". (3) Calculated queue longer than observed queue because ramp meter has a range (i.e. AM NB on-ramp rate is between 530 and 732 to which 530 was used while NB observed had a peak queue of about 600 feet, which is about half of the calculated queue using most restrictive rate).

TABLE 10: EXISTING INTERSECTION 95TH PERCENTILE QUEUING

Intersection of Carroll Canyon at:	Existing 95th % Queue (ft) AM	PM
Maya Linda	Westbound left turn movement has only one lane	
WB LT Queue (ft)	134	61
Available Storage (ft)	55	55
Difference (ft)	-79	-6
I-15 SB Ramps	Westbound left turn movement has only one lane	
WB LT Queue (ft)	641	537
Available Storage (ft)	120	120
Difference (ft)	-521	-417
I-15 NB Ramps	Eastbound left turn movement has only one lane	
EB LT Queue (ft)	282	399
Available Storage (ft)	120	120
Difference (ft)	-162	-279

Notes: Queue lengths (ft) from Synchro output 95th percentile (Synchro output in Appendix). WB=Westbound; EB=Eastbound; LT=Left Turn. Equivalent number of vehicles based on dividing change in queue by 25 ft (City of San Diego Traffic Study Manual average queue based on 25 feet/vehicle, pg 29). Please note the above left turn lanes are single left turn lanes as identified by the single left turn lane arrow within the table.

TABLE 11: EXISTING FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Mira Mesa Blvd to Carroll Canyon Rd				I-15 Carroll Canyon Rd to Miramar			
Existing (Year 2013)								
ADT	258,000				272,000			
Peak Hour	A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	5M+1A+2HOV	6M+1A+2HOV	5M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV
Capacity (1)	15,350	17,700	15,350	17,700	17,700	17,700	17,700	17,700
K Factor (2)	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838
D Factor (3)	0.4044	0.5956	0.5542	0.4458	0.4044	0.5956	0.5542	0.4458
Truck Factor (4)	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624
Peak Hour Volume	8,976	13,380	12,302	10,015	9,464	14,106	12,969	10,558
Volume to Capacity	0.585	0.756	0.801	0.566	0.535	0.797	0.733	0.597
LOS	C	D	D	C	C	D	D	C

Notes: (1) Capacity of 2,350 pcphpl for mainline from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002 and 1,200 for aux lanes and HOV lanes. (2) K factor from Caltrans 2013 data, which is the percentage of AADT in both directions during peak hour. (3) D factor from Caltrans 2013 data, which when multiplied by K and ADT will provide peak hour volume. (4) Truck factor from Caltrans 2007 data. Number of lanes: 6M = 6 main line lanes; 1A = 1 Aux lane; 2HOV = 2 High occupancy vehicle/Fastrak lanes.

Under existing conditions, all of the studied facilities were calculated to operate at LOS D or better except for the intersections of:

1) Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
2) Carroll Canyon Road/I-15 NB Ramp (LOS E AM).

Field observations generally matched the reported 95th percentile left turn queues serving the metered freeway on-ramps. The freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM 1.9 minutes delay and NB PM 5.7 minutes delay); however, the calculated delays were higher than the observed delays.

4.0 Project Description

The proposed Carroll Canyon Mixed Use Project is a redevelopment project with 260 apartments and 12,200 square feet of commercial/retail space that will replace an existing mostly vacant office complex of approximately 76,241 square feet.

The Scripps Miramar Ranch Community Plan identifies the site as Industrial (Appendix E). The site is currently zoned as an Industrial Park (IP-2-1) and is proposed to be zoned as Residential (RM-3-7) and Commercial (CC-2-3). The project requires a Community Plan Amendment to change the land use designation from Industrial Park to Residential with Commercial. The project is anticipated to open in 2016. A trip credit was not taken for the existing office complex due to the site being mostly vacant. The site was generating minimal traffic when existing counts were collected.

4.1 Project Trip Generation

The project trip generation for the project was calculated using trip rates from the City of San Diego *Trip Generation Manual*, May 2003 (excerpt included in **Appendix H**). Two trip generation rates were applied: a driveway rate for project access points and a cumulative rate (accounts for primary and diverted trips) that was applied for all other analyzed roadways. The density of the apartments dictate the trip rate, which for this project with 260 units over 8 acres is about 32.5 dwelling units per acre; therefore, the City's trip rate of 6 trips per dwelling unit for over 20 dwelling units per acre was applied.

The project driveway volumes were calculated at 4,004 ADT with 203 AM peak hour trips (72 inbound and 131 outbound) and 336 PM peak hour trips (206 inbound and 130 outbound). The cumulative traffic volumes were calculated at 3,256 ADT with 174 AM peak hour trips (54 inbound and 120 outbound) and 276 PM peak hour trips (175 inbound and 101 outbound) as shown in **Table 12**.

TABLE 12: PROJECT TRIP GENERATION

Proposed									AM					PM	
Land Use	Rate		Size & Units		ADT	%	Split		IN	OUT	%	Split		IN	OUT
Driveway Rate (for the main entrance)															
Fast Food (w or w/o DT)	700	/KSF	2,400	SF	1,680	4%	0.6	0.4	40	27	8%	0.5	0.5	67	67
Restaurant (Quality)	100	/KSF	6,200	SF	620	1%	0.6	0.4	4	2	8%	0.7	0.3	35	15
Retail	40	/KSF	3,600	SF	144	3%	0.6	0.4	3	2	9%	0.5	0.5	6	6
Apartments	6	/DU	260	DU	1,560	8%	0.2	0.8	25	100	9%	0.7	0.3	98	42
					4,004				**72**	**131**				**206**	**130**
Cumulative Rate (for surrounding study roadways)															
Fast Food (w or w/o DT)	420	/KSF	2,400	SF	1,008	4%	0.6	0.4	24	16	8%	0.5	0.5	40	40
Restaurant (Quality)	90	/KSF	6,200	SF	558	1%	0.6	0.4	3	2	8%	0.7	0.3	31	13
Retail	36	/KSF	3,600	SF	130	3%	0.6	0.4	2	2	9%	0.5	0.5	6	6
Apartments	6	/DU	260	DU	1,560	8%	0.2	0.8	25	100	9%	0.7	0.3	98	42
					3,256				**54**	**120**				**175**	**101**

Source: City of San Diego *Trip Generation Manual*, May 2003. ADT=Average Daily Trips, KSF=1,000 Square Feet; Split=% inbound vs outbound

The apartment portion of the project has some ancillary uses such as a lounge, gym, and leasing office, which are not part of the commercial/retail space; therefore, the trip generation only lists the number of apartments and commercial/retail space. The ancillary uses such as the gym are for residents of the apartments only and not part of the commercial center.

4.2 Project Site Access and On-Site Circulation

The project site has one existing full access driveway for site access. The applicant proposes to improve and signalize the existing driveway, and add a right-in/right-out driveway between the existing driveway and I-15 as shown previously on the site plan in Figure 2. A traffic signal warrant would be satisfied for the proposed traffic signal at the easterly project driveway. The traffic signal warrant is based on the California MUTCD Figure 4C-103 with calculations included in **Appendix I**.

Due to the roadway classification of Carroll Canyon Road along the project frontage, the City of San Diego requires a raised median as part of this project that will restrict left-turns out of the Eucalyptus Square Shopping Center (current location of Carls' Jr and other retail establishments). The project applicant proposes to maintain a left turn into the Eucalyptus Square Shopping Center as shown in Figure 2. The restricted left-turns out of Eucalyptus Square will likely make a u-turn at the proposed signalized project driveway. The additional traffic from the surrounding parcels using the new signalized intersection are documented in **Appendix J** and shown in Figure 6. As shown in Figure 6, intersection number 4b includes project traffic and traffic from the parcels on the south side of Carroll Canyon Road.

There are two on-site gates that separate the apartment and commercial parking areas. The main gate is located on the east side of the project site and the secondary gate is located on the southwest corner of the project site. Turn around areas are provided prior to both gates as shown on the site plan.

4.3 Project Distribution and Assignment

Project traffic was distributed to the adjacent roadway network based on a Series 12 SANDAG Select Zone Assignment (SZA) with a copy included in **Appendix K**. The SANDAG SZA incorporated a 1% internal capture rate due to the mixed land use. The signalized project driveway was assigned a split of about 80% while the un-signalized driveway was assigned about 20%. The project distribution is shown in **Figure 5** and the assignment is shown in **Figure 6**.

Figure 5: Project Distribution

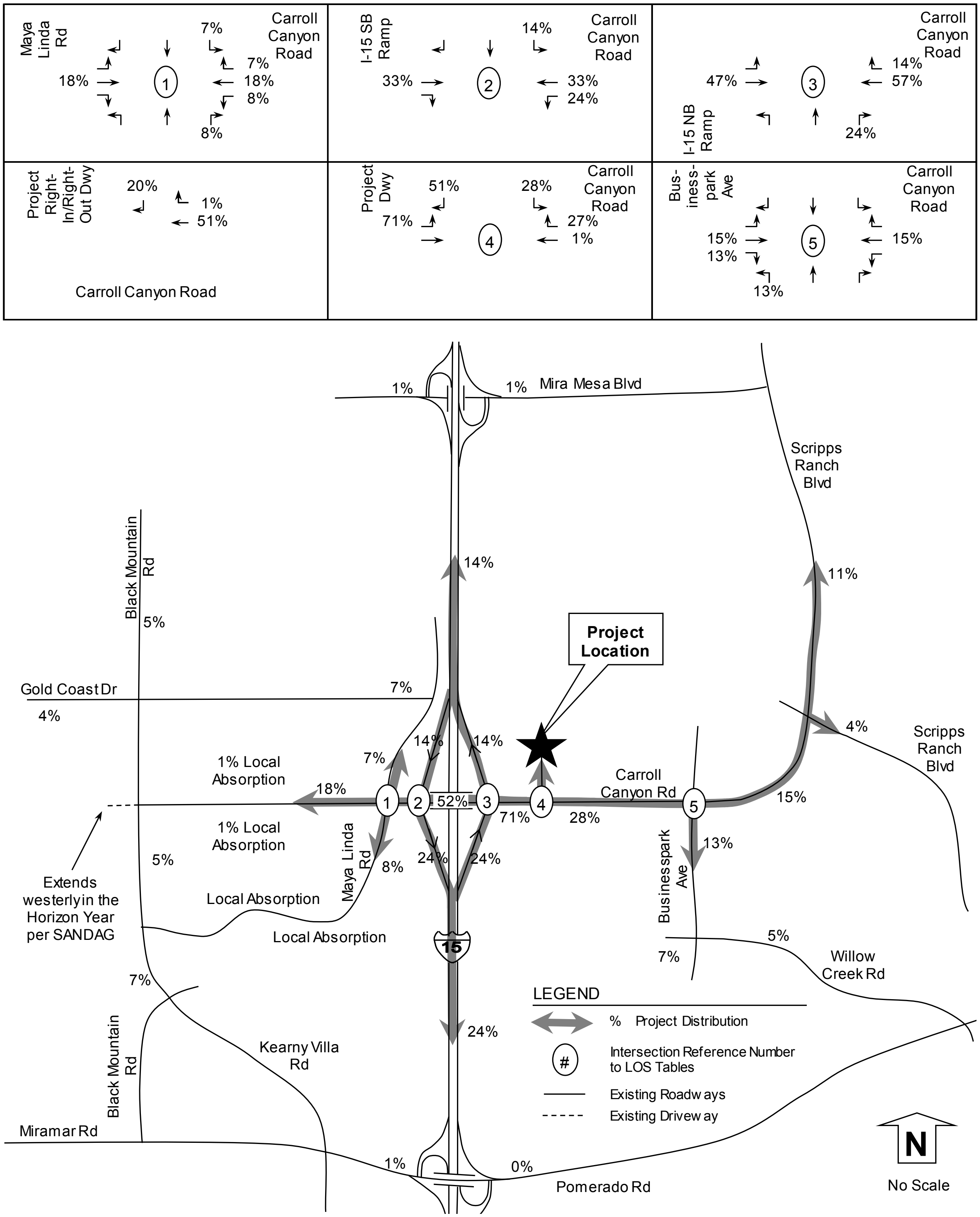
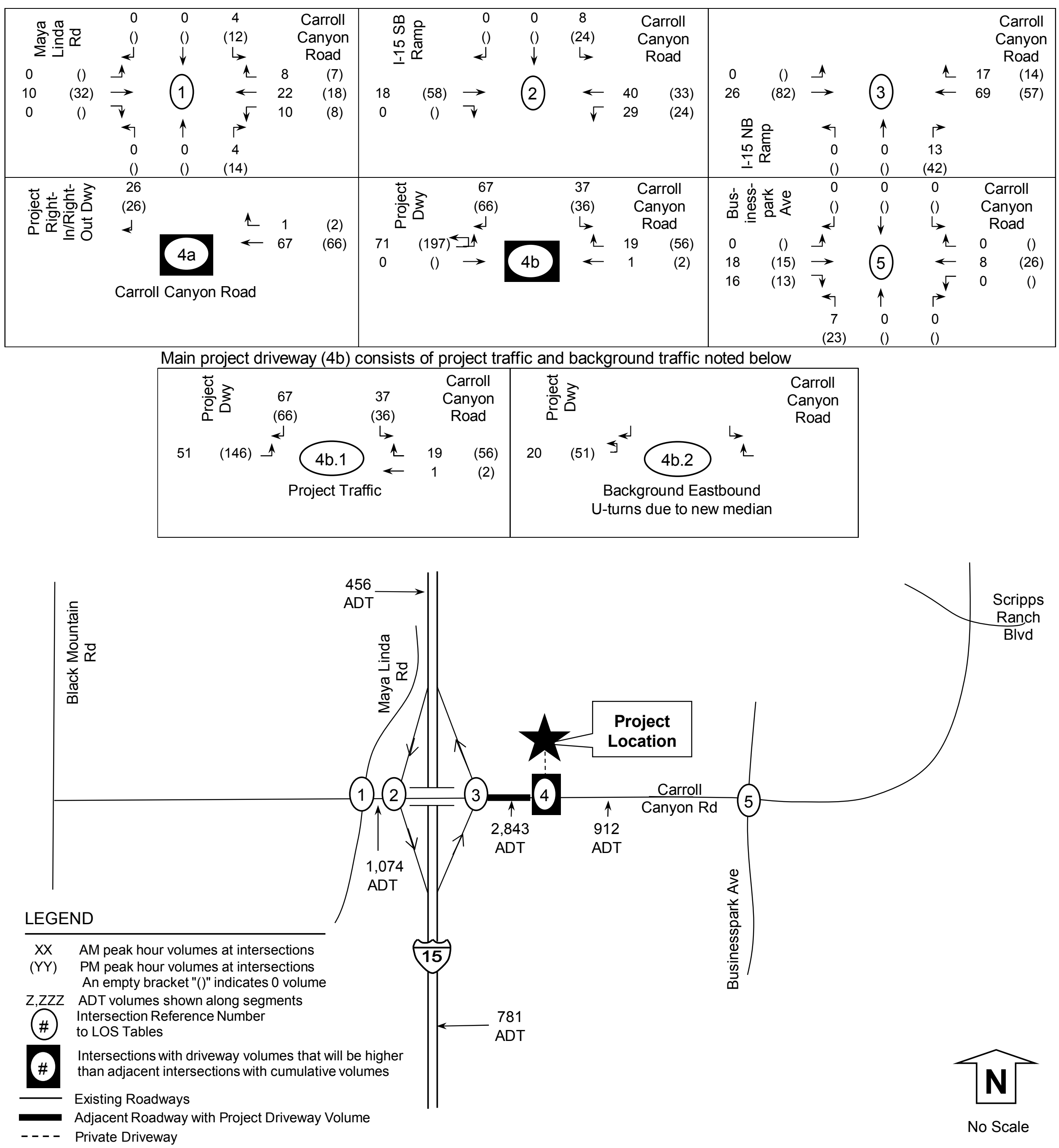


Figure 6: Project Assignment



5.0 Existing with Project Conditions

This scenario documents the addition of project traffic onto existing traffic for AM peak hour, PM peak hour, and daily conditions with volumes shown in **Figure 7**. The existing with project conditions assumed the existing project office buildings to be vacant (the buildings were generating minimal traffic when counts were taken) with the total new project traffic added on top of existing background roadway traffic. The existing office buildings have been occupied in the past, but now are mostly vacant due to the proposed planned development.

The applicant proposes to construct a traffic signal on Carroll Canyon Road at the project driveway along with widening and improving this new signalized intersection (dual eastbound to northbound left turns into project site – details in Appendix T). This analysis is based on the original project driveway being closed and a new signal would be constructed at intersection number 4. In addition to the project traffic, the new traffic signal on Carroll Canyon Road (intersection #4) will have the addition of eastbound U-turns from the Eucalyptus Square Shopping Center as previously described in Section 4.2. The following analyses incorporate this noted change. LOS and ramp meter operations for existing with project conditions are shown in **Tables 13 through 16**. LOS calculations are included in **Appendix L**.

TABLE 13: EXISTING WITH PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Peak	Existing		Existing + Project			
(Analysis)[1]		Hour	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Direct Impact?[5]
1) Carroll Canyon Rd	All	AM	24.1	C	24.7	C	0.6	No
at Maya Linda Rd (S)	All	PM	20.1	C	21.2	C	1.1	No
2) Carroll Canyon Rd	All	AM	66.3	E	67.0	E	0.7	No
at I-15 SB Ramps (S)	All	PM	55.9	E	56.8	E	0.9	No
Caltrans (ILV)	All	AM	1,646	Over Capacity	1,706	Over Capacity	NA	NA
Caltrans (ILV)	All	PM	1,515	Over Capacity	1,613	Over Capacity	NA	NA
3) Carroll Canyon Rd	All	AM	55.4	E	55.8	E	0.4	No
at I-15 NB Ramps (S)	All	PM	45.5	D	47.3	D	1.8	No
Caltrans (ILV)	All	AM	1,646	Over Capacity	1,706	Over Capacity	NA	NA
Caltrans (ILV)	All	PM	1,515	Over Capacity	1,613	Over Capacity	NA	NA
4a) Carroll Canyon Rd	SBR	AM	DNE	DNE	14.4	B	NA	No
at Project RIRO Dwy (U)	SBR	PM	DNE	DNE	16.4	C	NA	No
4b) Carroll Canyon Rd	All	AM	DNE	DNE	20.6	C	NA	No
at Project Access (S)	All	PM	DNE	DNE	23.6	C	NA	No
5) Carroll Canyon Rd	All	AM	32.1	C	32.8	C	0.7	No
at Business Park Ave (S)	All	PM	31.9	C	32.2	C	0.3	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, ILV for Caltrans. 2) Delay - HCM Average Control Delay in seconds. ILV - Intersecting Lane Volumes (Stb - stable; Un - unstable; Cap: at capacity). 3) LOS: Level of Service. DNE: Does Not Exist. 4) Delta is the increase in delay from project. 5) Direct Impact? (yes or no).

Figure 7: Existing with Project Volumes

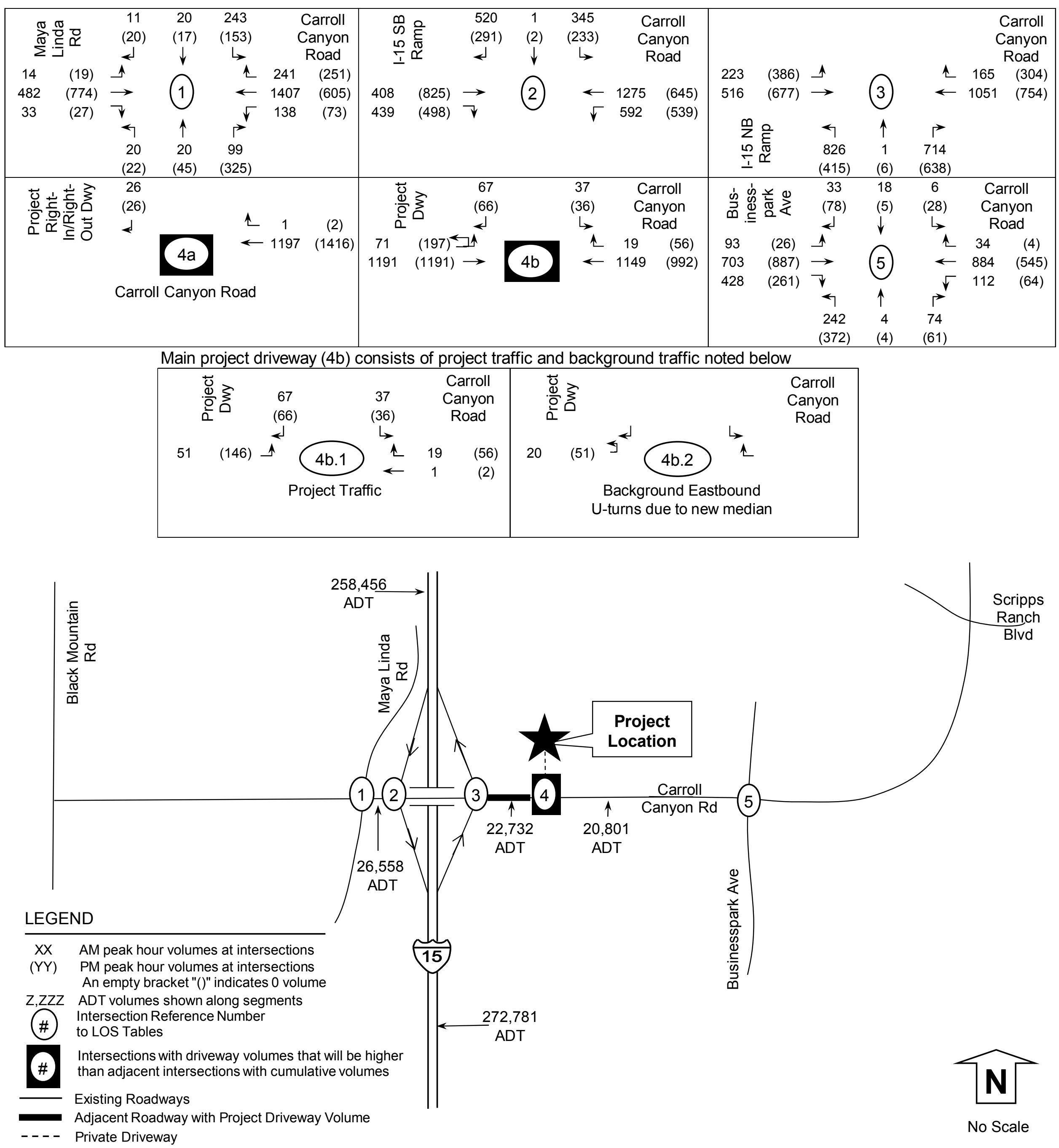


TABLE 14: EXISTING WITH PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Classification	Existing Daily Volume	Existing LOS E Capacity	Existing V/C	Existing LOS	Project Daily Volume	Existing + Project Daily Volume	Existing + Project LOS E Capacity	Existing + Project V/C	Existing + Project LOS	Change in V/C	Direct Impact?
Carroll Canyon Road												
I-15 to Project Access	4-Lane Collector	19,889	30,000	0.663	C	2,843	22,732	30,000	0.758	D	0.095	No
Project Access to Businesspark Ave	4-Lane Collector	19,889	30,000	0.663	C	912	20,801	30,000	0.693	D	0.030	No

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 15: EXISTING WITH PROJECT ON-RAMP OPERATIONS

I-15 at Carroll Canyon Ramp & Peak Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	Most Restrictive Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Impact?
AM SB On-Ramp	E+P	1,032	2 SOV	542	1,084	0	0.0	0	
PM SB On-Ramp	E+P	1,039	2 SOV	492	984	55	3.4	1,375	
Delta due to project (PM E+P 55 - E 31 = 24 veh/hr)						24	**1.5**		No (3)
AM NB On-Ramp	E+P	331	1 SOV	Meter Not Turned On		0	0.0	0	
AM NB On-Ramp	E+P	58	1 HOV	Meter Not Turned On		0	0.0	0	
Total (SOV & HOV)		389							
PM NB On-Ramp	E+P	592	1 SOV	530	530	62	7.1	1,557	
Delta due to project (AM E+P 62 - E 50 = 12 veh/hr)						12	**1.3**		No (3)
PM NB On-Ramp	E+P	104	1 HOV	530	530	0	0.0	0	
Total (SOV & HOV)		696							

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 85.1% SOV usage and 14.9% HOV usage. (2) Rate provided by CALTRANS (Appendix C). The NB On-Ramp meter was not turned on for AM; therefore, the rate is noted as "meter not turned on". (3) Impact only when total delay exceeds 15 minutes and increase in delay is over 2.0 minutes when freeway is at LOS E or delay increase is over 1.0 minute when freeway is at LOS F.

TABLE 16: EXISTING WITH PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Mira Mesa Blvd to Carroll Canyon Rd				I-15 Carroll Canyon Rd to Miramar			
Existing (Year 2013)								
ADT	258,000				272,000			
Peak Hour	A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	5M+1A+2HOV	6M+1A+2HOV	5M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV
Capacity (1)	15,350	17,700	15,350	17,700	17,700	17,700	17,700	17,700
K Factor (2)	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838
D Factor (3)	0.4044	0.5956	0.5542	0.4458	0.4044	0.5956	0.5542	0.4458
Truck Factor (4)	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624
Peak Hour Volume	8,976	13,380	12,302	10,015	9,464	14,106	12,969	10,558
Volume to Capacity	0.585	0.756	0.801	0.566	0.535	0.797	0.733	0.597
LOS	C	D	D	C	C	D	D	C
Project Peak Hour Vol	17	8	14	24	13	29	42	24
Existing + Project								
Peak Hour Volume	8,993	13,388	12,316	10,039	9,477	14,135	13,011	10,582
Volume to Capacity	0.586	0.756	0.802	0.567	0.535	0.799	0.735	0.598
LOS	C	D	D	C	C	D	D	C
Increase in V/C	0.001	0.000	0.001	0.001	0.000	0.002	0.002	0.001
Direct Impact?	No	No	No	No	No	No	No	No

Notes: (1) Capacity of 2,350 pcphpl for mainline from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002 and 1,200 for aux lanes and HOV lanes. (2) K factor from Caltrans 2013 data, which is the percentage of AADT in both directions during peak hour. (3) D factor from Caltrans 2013 data, which when multiplied by K and ADT will provide peak hour volume. (4) Truck factor from Caltrans 2007 data. Number of lanes: 6M = 6 main line lanes; 1A = 1 Aux lane; 2HOV = 2 High occupancy vehicle/Fastrak lanes.

A queuing analysis was performed using Synchro that documents the 95th percentile queue for the eastbound dual left turn lanes into the project signalized driveway at 37 feet (AM peak hour) and 100 feet (PM peak hour). The available left turn storage is approximately 190 feet with a transition of approximately 70 feet. The 95th percentile queuing lengths are included within the LOS calculations within Appendix L.

Queues for left turns along Carroll Canyon Road at the intersections of Carroll Canyon Road at Maya Linda Road, I-15 SB Ramps, and I-15 NB Ramps were reviewed to determine if the project would significantly increase the 95th percentile queue. As shown in **Table 17**, the project is not calculated to significantly increase the 95th percentile queues (ranging from less than one vehicle [0.2 vehicles] to less than two vehicles [1.6 vehicles]). Also shown in Table 17 is the difference between the available storage and what the 95th percentile queue is estimated to occupy. On the bridge, both back to back single left turn lanes are calculated to have a shortage of left turn storage under existing and existing plus project conditions. To address any potential queuing concerns for the intersections operating at LOS E (i.e. Carroll Canyon Road/I-15 SB Ramps and Carroll Canyon/I-15 NB Ramps), the project applicant proposes to construct an additional westbound to northbound right turn lane at the intersection of Carroll Canyon Road/I-15 NB Ramp.

TABLE 17: EXISTING WITH PROJECT INTERSECTION 95TH PERCENTILE QUEUING

Intersection of Carroll Canyon at:	Existing 95th % Queue (ft) AM	Existing 95th % Queue (ft) PM	E+P 95th % Queue (ft) AM	E+P 95th % Queue (ft) PM	Change in 95th % Queue (ft) AM	Change in 95th % Queue (ft) PM	Equivalent # of Vehicles AM	Equivalent # of Vehicles PM
Maya Linda	Westbound left turn movement has only one lane							
WB LT Queue (ft) ↰	134	61	139	77	5	16	0.2	0.6
Available Storage (ft)	55	55	55	55				
Difference (ft)	-79	-6	-84	-22				
I-15 SB Ramps	Westbound left turn movement has only one lane							
WB LT Queue (ft) ↰	641	537	680	573	39	36	1.6	1.4
Available Storage (ft)	120	120	120	120				
Difference (ft)	-521	-417	-560	-453				
I-15 NB Ramps	Eastbound left turn movement has only one lane							
EB LT Queue (ft) ↱	282	399	294	411	12	12	0.5	0.5
Available Storage (ft)	120	120	120	120				
Difference (ft)	-162	-279	-174	-291				

Notes: Queue lengths (ft) from Synchro output 95th percentile (Synchro output in Appendix). WB=Westbound; EB=Eastbound; LT=Left Turn. Equivalent number of vehicles based on dividing change in queue by 25 ft (City of San Diego Traffic Study Manual average queue based on 25 feet/vehicle, pg 29). Please note the above left turn lanes are single left turn lanes as identified by the single left turn lane arrow within the table.

Under existing with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:

1) Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
2) Carroll Canyon Road/I-15 NB Ramp (LOS E AM).

The addition of project traffic resulted in no significant direct project impacts because the addition of project traffic did not exceed the allowable increase in traffic delay thresholds. The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM 3.4 minutes delay and NB PM 7.1 minutes delay); however, the project did not result in a significant impact to the on-ramps.

6.0 Near-Term without Project Conditions

The near-term without project conditions describe the anticipated roadway operations during the opening year of the project anticipated to be in 2016.

No roadway changes from existing conditions were assumed in this scenario. The CALTRANS Direct Access Ramps (DAR) project on Hillery Drive west of I-15 that connects Hillery Drive with the center managed lanes on I-15 was opened on Oct 6, 2014.

This scenario includes surrounding cumulative projects added to the existing traffic volumes. City of San Diego engineering staff provided information on cumulative projects within the immediate surrounding area. Upon review of the cumulative project information, six cumulative projects were identified that are anticipated to add traffic to the study area roadways used by the project. The remaining cumulative projects are anticipated to be built after the completion of the proposed project or are not anticipated to add traffic to the study area roadways. The six cumulative projects anticipated to be constructed and occupied by the time the proposed project is operational include:

1) *Casa Mira View I* – A residential project of 1,848 units, of which 800 multi-family homes located on the west side of I-15 just north of Mira Mesa Boulevard are expected to be occupied by this scenario (about 200 dwelling units per year are anticipated to be built since project inception). The traffic generation for this cumulative project is calculated at 4,800 ADT (for the initial 800 dwelling units anticipated to be occupied by 2014).
2) *Casa Mira View II* – A residential project of 319 multi-family homes located on the west side of I-15 just north of Mira Mesa Boulevard. The traffic generation for this cumulative project is calculated at 1,914 ADT.
3) *Miramar Community College Master Plan* – A master plan for the existing Miramar Community College located on a site west of I-15, east of Black Mountain Road, south of Hillery Drive and north of Gold Coast Drive. Due to fluctuations over time in student attendance, a conservative approach was taken in that all of the traffic identified as part of the near term master plan was incorporated in the near-term without project conditions. The near-term traffic generation for this cumulative project is 980 ADT.
4) *The Glen at Scripps Ranch* – A proposed continuing care retirement community generally located on the southwest corner of Pomerado Road at Chabad Center Road in Scripps Ranch. Traffic generation for this cumulative project is calculated at 1,880 ADT.
5) *The Watermark* - A proposed commercial project located on Scripps Poway Parkway adjacent to I-15. This cumulative project is located approximately 2.3 miles north of the proposed project and will add cumulative traffic to I-15 in the study area. The traffic generation for this cumulative project is calculated at 21,509 ADT.
6) *Stone Creek* – A proposed mixed-use project with multiple phases and a final product of 4,445 residential dwelling units, 174,000 square-feet of retail uses, 200,000 square-feet of office space, 850,000 square-feet of industrial/business park use, 175 room hotel, and 26.2 acres of neighborhood park space. This project is located west of I-15 between

Camino Ruiz and Black Mountain Road on both the north and south sides of Carroll Canyon Road. Stone Creek had several phases to which only Phase 1 (165,000 SF Industrial) is planned for year 2015/2016 and; therefore, was applied to this near-term analysis and is represented in the calculations below.

The following cumulative projects are anticipated to be built after the completion of the proposed project or are located far enough away to be expected to add only a negligible amount of traffic to the study area roadways:

1) *Carroll Canyon Master Plan* – An approved mixed-use project with approximately 69 acres of residential and 40 acres of commercial generally located on the east side of Camino Santa Fe north of Carroll Canyon Road. This cumulative project is located approximately 5.5 miles from the proposed project and is not anticipated to be constructed before the Carroll Canyon Mixed Use.

2) *Fenton Carroll Canyon Tech Center* - An approved 896,000 SF Industrial Park generally located on the west side of Camino Santa Fe north of Carroll Canyon Road. Some of this cumulative project is constructed. This cumulative project is located approximately 5.5 miles from the proposed project and is not anticipated to add a significant amount of traffic to the study area roadways.

Individual cumulative project assignments that are anticipated to add traffic to the study area roadways are included in **Appendix M**. The combined cumulative project traffic volumes are shown on **Figure 8**. Near-term traffic volumes (existing + cumulative) without the project are shown on **Figure 9**. The LOS, 95th percentile queues, and ramp meter operations under near-term conditions (existing + cumulative) are shown in **Tables 18 through 22**. LOS calculations are included in **Appendix N**.

TABLE 18: NEAR-TERM (EXISTING + CUMULATIVE) INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Peak	Existing		Existing + Cumulative	
(Analysis)[1]		Hour	Delay[2]	LOS[3]	Delay[2]	LOS[3]
1) Carroll Canyon Rd	All	AM	24.1	C	25.4	C
at Maya Linda Rd (S)	All	PM	20.1	C	20.2	C
2) Carroll Canyon Rd	All	AM	66.3	E	71.1	E
at I-15 SB Ramps (S)	All	PM	55.9	E	56.1	E
Caltrans (ILV)	All	AM	1,646	Over Capacity	1,683	Over Capacity
Caltrans (ILV)	All	PM	1,515	Over Capacity	1,566	Over Capacity
3) Carroll Canyon Rd	All	AM	55.4	E	59.3	E
at I-15 NB Ramps (S)	All	PM	45.5	D	55.3	E
Caltrans (ILV)	All	AM	1,646	Over Capacity	1,683	Over Capacity
Caltrans (ILV)	All	PM	1,515	Over Capacity	1,566	Over Capacity
4a) Carroll Canyon Rd	SBR	AM	DNE	DNE	DNE	DNE
at Project RIRO Dwy (U)	SBR	PM	DNE	DNE	DNE	DNE
4b) Carroll Canyon Rd	All	AM	DNE	DNE	DNE	DNE
at Project Access (S)	All	PM	DNE	DNE	DNE	DNE
5) Carroll Canyon Rd	All	AM	32.1	C	32.3	C
at Business Park Ave (S)	All	PM	31.9	C	31.9	C

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, ILV for Caltrans. 2) Delay - HCM Average Control Delay in seconds. ILV - Intersecting Lane Volumes (Stb - stable; Un - unstable; Over Capacity). 3) LOS: Level of Service. DNE: Does Not Exist.

Figure 8: Cumulative Project Locations and Volumes

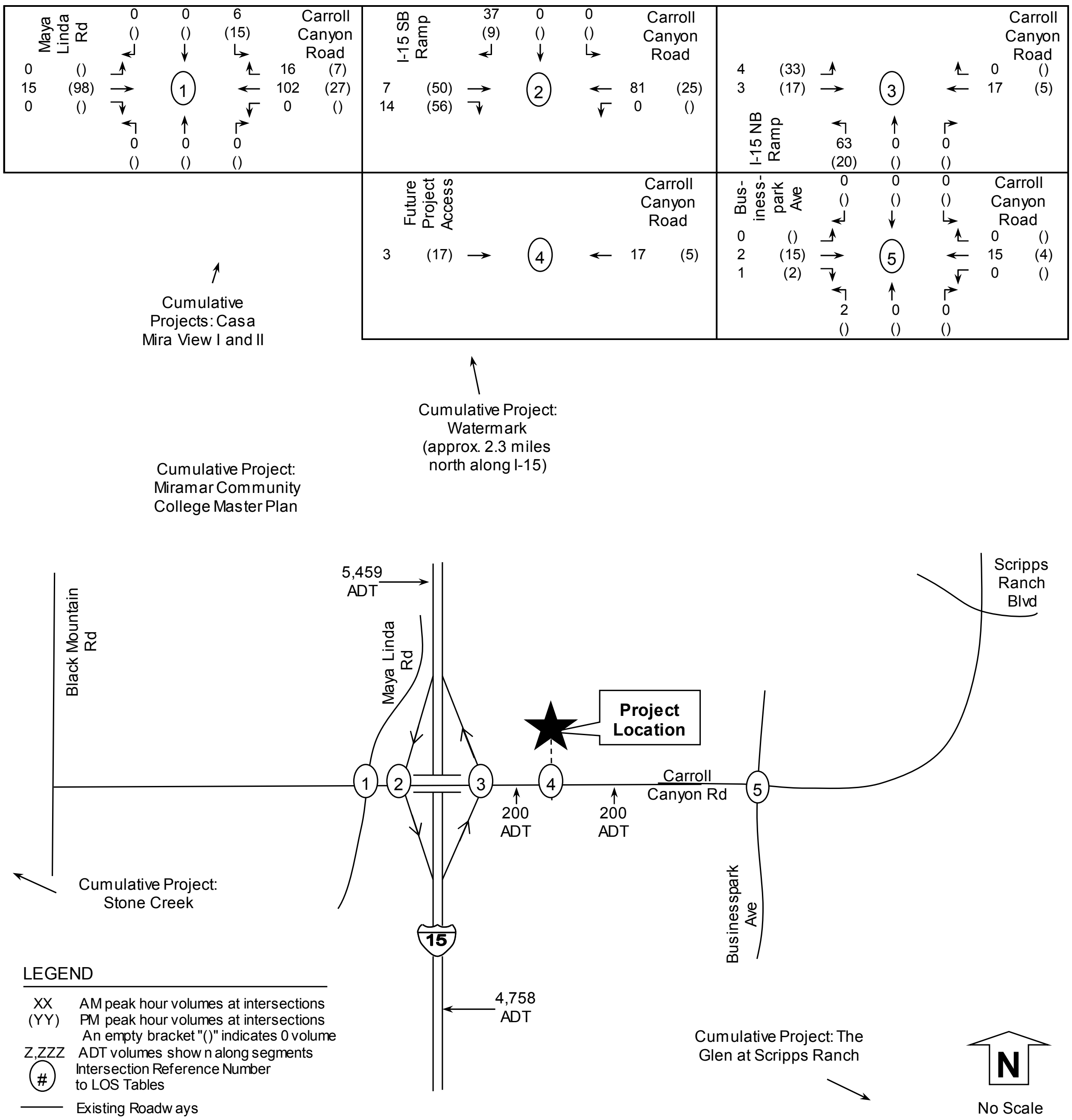


Figure 9: Near-Term (Existing + Cumulative) Volumes

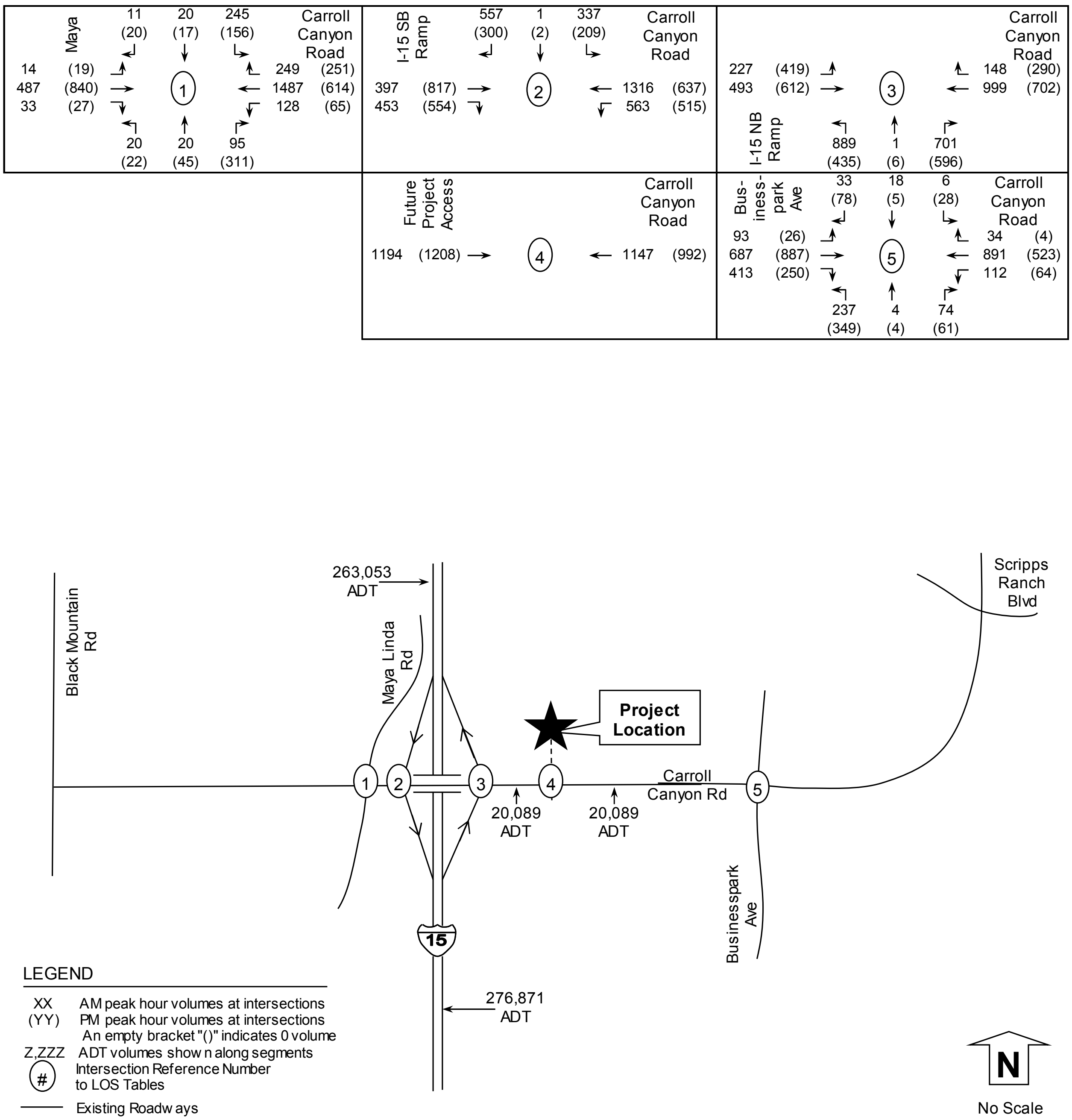


TABLE 19: NEAR-TERM (EXISTING + CUMULATIVE) SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Existing Daily Volume	Existing LOS E Capacity	Existing V/C	Existing LOS	Cumulative Daily Volume	Existing + Cumulative Daily Volume	Existing + Cumulative LOS E Capacity	Existing + Cumulative V/C	Existing + Cumulative LOS
Carroll Canyon Road										
I-15 to Project Access	4-Lane Collector	19,889	30,000	0.663	C	200	20,089	30,000	0.670	D
Project Access to Businesspark Ave	4-Lane Collector	19,889	30,000	0.663	C	200	20,089	30,000	0.670	D

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 20: NEAR-TERM (EXISTING + CUMULATIVE) ON-RAMP OPERATIONS

I-15 at Carroll Canyon Ramp & Peak Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	Most Restrictive Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet
AM SB On-Ramp	E+C	1,017	2 SOV	542	1,084	0	0.0	0
PM SB On-Ramp	E+C	1,071	2 SOV	492	984	87	5.3	2,175
AM NB On-Ramp	E+C	320	1 SOV	Meter Not Turned On		0	0.0	0
AM NB On-Ramp	E+C	56	1 HOV	Meter Not Turned On		0	0.0	0
Total (SOV & HOV)		376						
PM NB On-Ramp	E+C	608	1 SOV	530	530	78	8.9	1,962
PM NB On-Ramp	E+C	107	1 HOV	530	530	0	0.0	0
Total (SOV & HOV)		715						

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 85.1% SOV usage and 14.9% HOV usage. (2) Rate provided by CALTRANS (Appendix C). The NB On-Ramp meter was not turned on for AM; therefore, the rate is noted as "meter not turned on".

TABLE 21: NEAR-TERM (EXISTING + CUMULATIVE) INTERSECTION 95TH PERCENTILE QUEUE

Intersection of Carroll Canyon at	Near-Term 95th % Queue (ft) AM	Near-Term 95th % Queue (ft) PM
Maya Linda	Westbound left turn movement has only one lane	
WB LT Queue (ft) ↰	212	78
Available Storage (ft)	55	55
Difference (ft)	-157	-23
I-15 SB Ramps	Westbound left turn movement has only one lane	
WB LT Queue (ft) ↰	664	624
Available Storage (ft)	120	120
Difference (ft)	-544	-504
I-15 NB Ramps	Eastbound left turn movement has only one lane	
EB LT Queue (ft) ↰	318	434
Available Storage (ft)	120	120
Difference (ft)	-198	-314

Notes: Queue lengths (ft) from Synchro output 95th percentile (Synchro output in Appendix). WB=Westbound; EB=Eastbound; LT=Left Turn. Equivalent number of vehicles based on dividing change in queue by 25 ft (City of San Diego Traffic Study Manual average queue based on 25 feet/vehicle, pg 29). Please note the above left turn lanes are single left turn lanes as identified by the single left turn lane arrow within the table.

TABLE 22: NEAR-TERM (EXISTING + CUMULATIVE) FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Mira Mesa Blvd to Carroll Canyon Rd				I-15 Carroll Canyon Rd to Miramar			
Existing (Year 2013)								
ADT	258,000				272,000			
Peak Hour	A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	5M+1A+2HOV	6M+1A+2HOV	5M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV
Capacity (1)	15,350	17,700	15,350	17,700	17,700	17,700	17,700	17,700
K Factor (2)	0.0808	0.0816	0.0808	0.0816	0.0808	0.0816	0.0808	0.0816
D Factor (3)	0.4189	0.5811	0.5257	0.4743	0.4189	0.5811	0.5257	0.4743
Truck Factor (4)	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624
Peak Hour Volume	9,074	12,712	11,387	10,375	9,566	13,402	12,005	10,938
Volume to Capacity	0.591	0.718	0.742	0.586	0.540	0.757	0.678	0.618
LOS	C	D	D	C	C	D	C	C
Cumulative Pk Hr Vol	220	310	290	263	250	245	254	268
Existing+Cumulative								
Peak Hour Volume	9,294	13,022	11,677	10,638	9,816	13,647	12,259	11,206
Volume to Capacity	0.605	0.736	0.761	0.601	0.555	0.771	0.693	0.633
LOS	C	D	D	C	C	D	C	C

Notes: (1) Capacity of 2,350 pcphpl for mainline from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002 and 1,200 for aux lanes and HOV lanes. (2) Latest K factor from Caltrans (based on 2008 data), which is the percentage of AADT in both directions. (3) Latest D factor from Caltrans (based on 2008 data), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2007E data). Number of lanes: 6M = 6 main line lanes; 1A = 1 Aux lane; 2HOV = 2 High occupancy vehicle/Fastrak lanes.

Under near-term (existing plus cumulative) conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:

1) Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
2) Carroll Canyon Road/I-15 NB Ramp (LOS E AM & PM).

The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM 5.3 minutes delay and NB PM 8.9 minutes delay).

7.0 Near-Term with Project Conditions

This scenario documents the addition of project traffic onto near-term traffic for AM peak hour, PM peak hour, and daily conditions with volumes shown in **Figure 10**. Consistent with the existing conditions, the near-term with project conditions assumed the near-term office buildings to be vacant (as the buildings were generating minimal traffic when counts were taken) with the total new project traffic added on top of near-term roadway traffic. The project office buildings have been occupied in the past, but now are mostly vacant due to the proposed planned development.

The applicant proposes to construct a traffic signal on Carroll Canyon Road at the project driveway along with widening and improving this new signalized intersection (dual eastbound to northbound left turns into project site – details in Appendix T). This analysis is based on the original project driveway being closed and a new signal would be constructed at intersection number 4. The following analyses incorporate these proposed changes. LOS and ramp meter operations for near-term with project conditions are shown in **Tables 23 through 26**. LOS calculations are included in **Appendix O**.

TABLE 23: NEAR-TERM WITH PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Peak	Existing + Cumulative		Existing + Cumulative + Project			
(Analysis)[1]		Hour	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Near-Term Impact[5]
1) Carroll Canyon Rd	All	AM	25.4	C	27.3	C	1.9	No
at Maya Linda Rd (S)	All	PM	20.2	C	21.7	C	1.5	No
2) Carroll Canyon Rd	All	AM	71.1	E	72.7	E	1.6	No
at I-15 SB Ramps (S)	All	PM	56.1	E	57.4	E	1.3	No
Caltrans (ILV)	All	AM	1,683	Over Capacity	1,743	Over Capacity	NA	NA
Caltrans (ILV)	All	PM	1,566	Over Capacity	1,664	Over Capacity	NA	NA
3) Carroll Canyon Rd	All	AM	59.3	E	60.4	E	1.1	No
at I-15 NB Ramps (S)	All	PM	55.3	E	59.7	E	4.4	**Yes**
Caltrans (ILV)	All	AM	1,683	Over Capacity	1,743	Over Capacity	NA	NA
Caltrans (ILV)	All	PM	1,566	Over Capacity	1,664	Over Capacity	NA	NA
4a) Carroll Canyon Rd	SBR	AM	DNE	DNE	14.4	B	NA	No
at Project RIRO Dwy (U)	SBR	PM	DNE	DNE	16.4	C	NA	No
4b) Carroll Canyon Rd	All	AM	DNE	DNE	20.5	C	NA	No
at Project Access (S)	All	PM	DNE	DNE	22.9	C	NA	No
5) Carroll Canyon Rd	All	AM	32.3	C	33.0	C	0.7	No
at Business Park Ave (S)	All	PM	31.9	C	32.7	C	0.8	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, ILV for Caltrans. 2) Delay - HCM Average Control Delay in seconds. ILV - Intersecting Lane Volumes (Stb - stable; Un - unstable; Over Capacity). 3) LOS: Level of Service. DNE: Does Not Exist. 4) Delta is the increase in delay from project. 5) Near-Term Impact? (yes or no).

Figure 10: Near-Term with Project Volumes

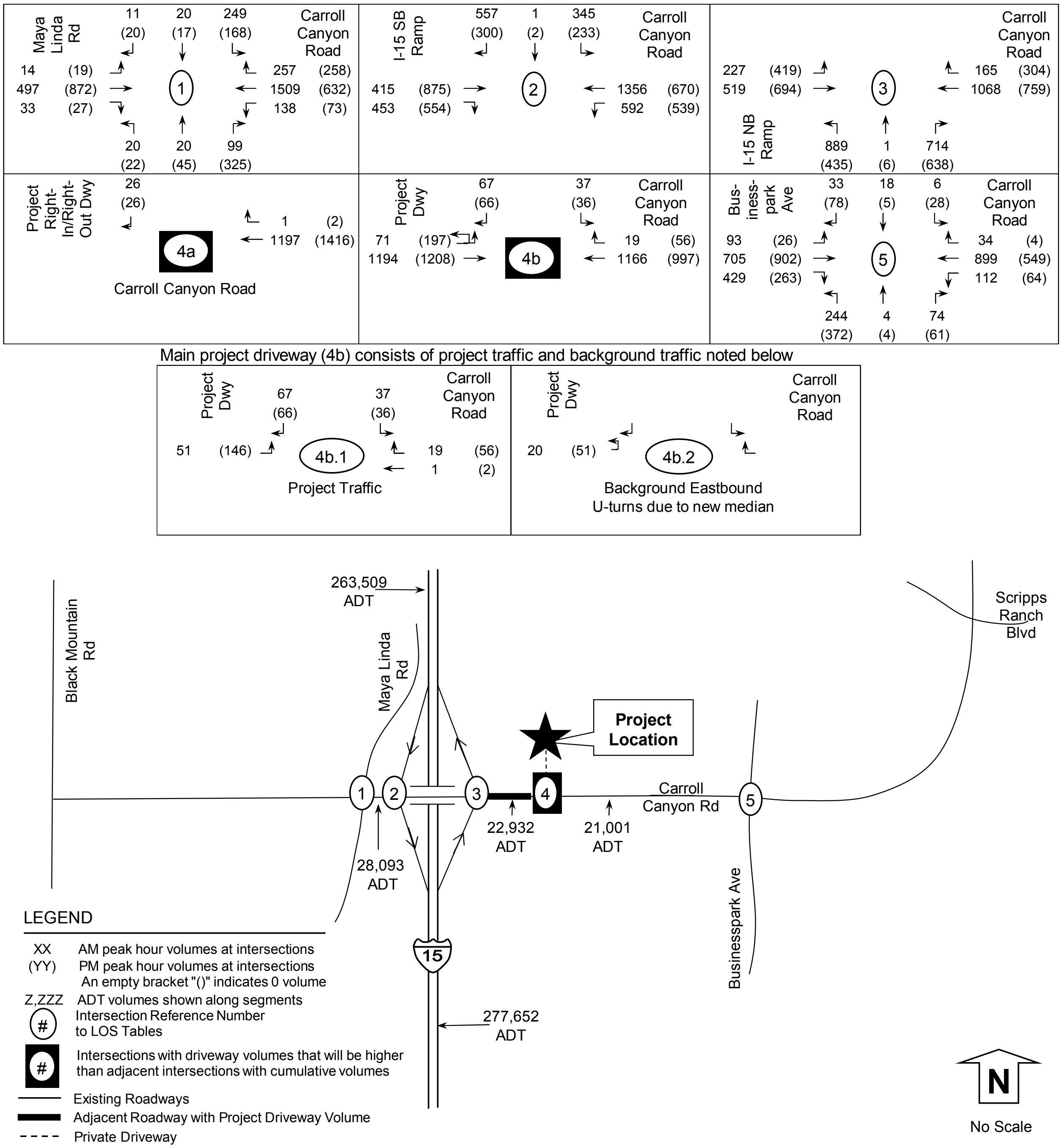


TABLE 24: NEAR-TERM WITH PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Classification	Existing + Cumulative Daily Volume	Existing + Cumulative LOS E Capacity	Existing + Cumulative V/C	Existing + Cumulative LOS	Project Daily Volume	Existing + Cumulative + Project Daily Volume	Existing + Cumulative + Project LOS E Capacity	Existing + Cumulative + Project V/C	Existing + Cumulative + Project LOS	Change in V/C	Near-Term Impact?
Carroll Canyon Road												
I-15 to Project Access	4-Lane Collector	20,089	30,000	0.670	D	2,843	22,932	30,000	0.764	D	0.095	No
Project Access to Businesspark Ave	4-Lane Collector	20,089	30,000	0.670	D	912	21,001	30,000	0.700	D	0.030	No

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 25: NEAR-TERM WITH PROJECT ON-RAMP OPERATIONS

I-15 at Carroll Canyon Ramp & Peak Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	Most Restrictive Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Impact?
AM SB On-Ramp	E+C+P	1,046	2 SOV	542	1,084	0	0.0	0	
PM SB On-Ramp	E+C+P	1,095	2 SOV	492	984	111	6.8	2,775	
	Delta due to project (PM E+C+P 111 - E+C 87 = 24 veh/hr)					24	**1.5**		No (3)
AM NB On-Ramp	E+C+P	334	1 SOV	Meter Not Turned On		0	0.0	0	
AM NB On-Ramp	E+C+P	59	1 HOV	Meter Not Turned On		0	0.0	0	
Total (SOV & HOV)		393							
PM NB On-Ramp	E+C+P	620	1 SOV	530	530	90	10.2	2,259	
	Delta due to project (AM E+C+P 90 - E+C 78 = 12 veh/hr)					12	**1.3**		No (3)
PM NB On-Ramp	E+C+P	109	1 HOV	530	530	0	0.0	0	
Total (SOV & HOV)		729							

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 85.1% SOV usage and 14.9% HOV usage. (2) Rate provided by CALTRANS (Appendix C). The NB On-Ramp meter was not turned on for AM; therefore, the rate is noted as "meter not turned on". (3) Impact only when total delay exceeds 15 minutes and increase in delay is over 2.0 minutes when freeway is at LOS E or delay increase is over 1.0 minute when freeway is at LOS F.

TABLE 26: NEAR-TERM WITH PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Mira Mesa Blvd to Carroll Canyon Rd				I-15 Carroll Canyon Rd to Miramar			
Existing+Cumulative								
Peak Hour Volume	9,196	13,690	12,592	10,278	9,714	14,351	13,223	10,826
Volume to Capacity	0.599	0.773	0.820	0.581	0.549	0.811	0.747	0.612
LOS	C	D	D	C	C	D	D	C
Project Peak Hour Vol	17	8	14	24	13	29	42	24
Existing+Cumulative+Project								
Peak Hour Volume	9,213	13,698	12,606	10,302	9,727	14,380	13,265	10,850
Volume to Capacity	0.600	0.774	0.821	0.582	0.550	0.812	0.749	0.613
LOS	C	D	D	C	C	D	D	C
Increase in V/C	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
Near-Term Impact?	No	No	No	No	No	No	No	No

Notes: (1) Capacity of 2,350 pcphpl for mainline from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002 and 1,200 for aux lanes and HOV lanes. (2) K factor from Caltrans 2013 data, which is the percentage of AADT in both directions during peak hour. (3) D factor from Caltrans 2013 data, which when multiplied by K and ADT will provide peak hour volume. (4) Truck factor from Caltrans 2007 data. Number of lanes: 6M = 6 main line lanes; 1A = 1 Aux lane; 2HOV = 2 High occupancy vehicle/Fastrak lanes.

Queues for left turns along Carroll Canyon Road at the intersections of Carroll Canyon Road at Maya Linda Road, I-15 SB Ramps, and I-15 NB Ramps were reviewed to determine if the project would significantly increase the 95th percentile queue. As shown in **Table 27**, the project is not calculated to significantly increase the 95th percentile queues (ranging from 0 vehicles to less than two vehicles [1.6 vehicles]). Also shown below in Table 27 is the difference between the available storage and what the 95th percentile queue is estimated to occupy. To address any potential queuing concerns for the intersections operating at LOS E (i.e. Carroll Canyon Road/I-15 SB Ramps and Carroll Canyon/I-15 NB Ramps), the project applicant will construct an additional westbound to northbound right turn lane at the intersection of Carroll Canyon Road/I-15 NB Ramp as part of a mitigation measure under near-term conditions.

TABLE 27: NEAR-TERM WITH PROJECT INTERSECTION 95TH PERCENTILE QUEUING

Intersection of Carroll Canyon at:	Near-Term 95th % Queue (ft) AM	PM	Near-Term + P 95th % Queue (ft) AM	PM	Change in 95th % Queue (ft) AM	PM	Equivalent # of Vehicles AM	PM
Maya Linda	Westbound left turn movement has only one lane							
WB LT Queue (ft)	212	78	227	89	15	11	0.6	0.4
Available Storage (ft)	55	55	55	55				
Difference (ft)	-157	-23	-172	-34				
I-15 SB Ramps	Westbound left turn movement has only one lane							
WB LT Queue (ft)	664	624	693	665	29	41	1.2	1.6
Available Storage (ft)	120	120	120	120				
Difference (ft)	-544	-504	-573	-545				
I-15 NB Ramps	Eastbound left turn movement has only one lane							
EB LT Queue (ft)	318	434	318	446	0	12	0	0.5
Available Storage (ft)	120	120	120	120				
Difference (ft)	-198	-314	-198	-326				

Notes: Queue lengths (ft) from Synchro output 95th percentile (Synchro output in Appendix). WB=Westbound; EB=Eastbound; LT=Left Turn. Equivalent number of vehicles based on dividing change in queue by 25 ft (City of San Diego Traffic Study Manual average queue based on 25 feet/vehicle, pg 29). Please note the above left turn lanes are single left turn lanes as identified by the single left turn lane arrow within the table.

Under near-term with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:

1) Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
2) Carroll Canyon Road/I-15 NB Ramp (LOS E AM & PM).

<u>The project is calculated to have a near-term direct impact at the intersection of Carroll Canyon Road/I-15 NB Ramp.</u>

The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM 6.8 minutes delay and NB PM 10.2 minutes delay); however, the project did not result in a significant impact to the on-ramps.

8.0 Horizon Year (2035) without Project Conditions

Horizon Year (2035) without project conditions were analyzed using the San Diego Association of Governments SANDAG's Series 12 Year 2035 forecasted ADTs for the study area roadway segments. The SANDAG Series 12 year 2035 model has the project site coded with the current zoning of industrial/office and not the proposed project with a commercial use. The next chapter documents the year 2035 with project volumes using commercial and residential zoning for the project site. The SANDAG Series 12 year 2035 model also included the extension of Carroll Canyon Road west of Black Mountain Road and CALTRANS' Direct Access Ramps at Hillary Drive. The intersection lane configurations were held constant with what is on the ground today for the horizon year 2035 calculations as shown in **Figure 11**. Intersection volumes were factored up from near-term turn moves based on the increase in ADT for each intersection approach against the horizon year ADTs – calculations included in Appendix P.

The horizon year 2035 volumes without the project are shown in **Figure 12.** LOS, 95th percentile queues, and ramp meter operations are shown in **Tables 28 through 32** with calculations included in **Appendix P**.

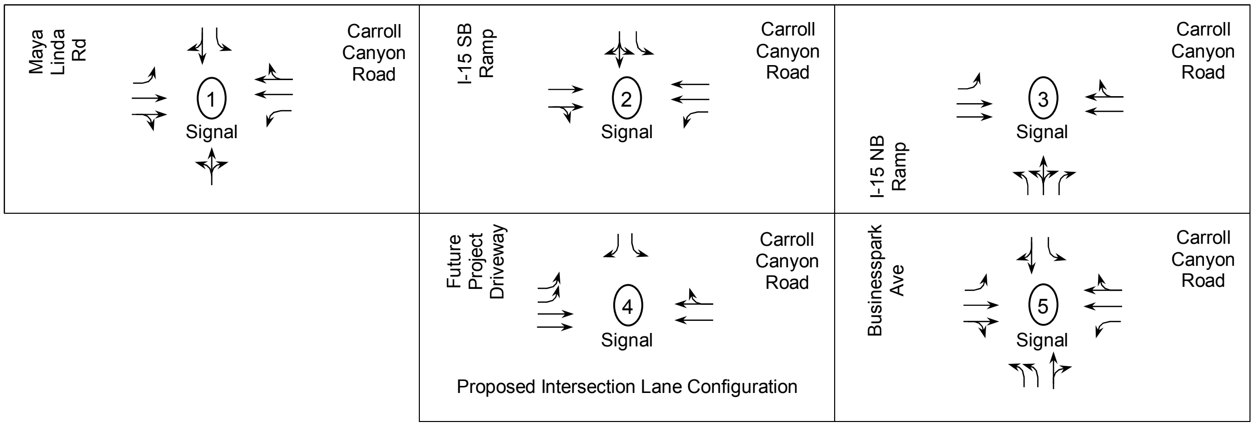
TABLE 28: HORIZON YEAR (2035) WITHOUT PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Horizon Year (2035) Delay[2]	Horizon Year (2035) LOS[3]
1) Carroll Canyon Rd	All	AM	98.1	F
at Maya Linda Rd (S)	All	PM	58.9	E
2) Carroll Canyon Rd	All	AM	138.4	F
at I-15 SB Ramps (S)	All	PM	157.2	F
Caltrans (ILV)	All	AM	2,089	Over Capacity
Caltrans (ILV)	All	PM	2,107	Over Capacity
3) Carroll Canyon Rd	All	AM	109.1	F
at I-15 NB Ramps (S)	All	PM	102.2	F
Caltrans (ILV)	All	AM	2,089	Over Capacity
Caltrans (ILV)	All	PM	2,107	Over Capacity
4a) Carroll Canyon Rd	SBR	AM	DNE	DNE
at Project RIRO Dwy (U)	SBR	PM	DNE	DNE
4b) Carroll Canyon Rd	All	AM	DNE	DNE
at Project Access (S)	All	PM	DNE	DNE
5) Carroll Canyon Rd	All	AM	36.2	D
at Business Park Ave (S)	All	PM	43.0	D

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, ILV for Caltrans. 2) Delay - HCM Average Control Delay in seconds. ILV - Intersecting Lane Volumes (Stb - stable; Un - unstable; Over Capacity). 3) LOS: Level of Service. DNE: Does Not Exist.

Please note that some of the reported intersection delays are excessive and may be beyond the range of reliability; however, the standard of practice HCM software is being used.

Figure 11: Horizon Year (2035) SANDAG Traffic Model Conditions



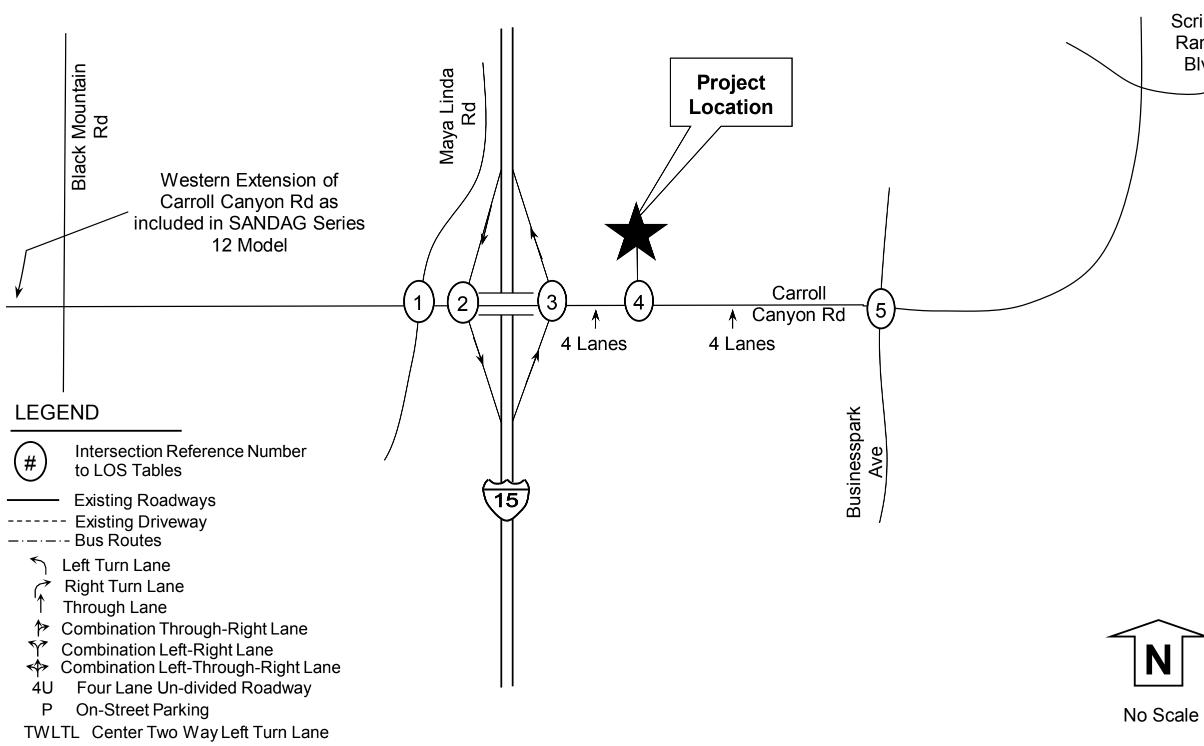
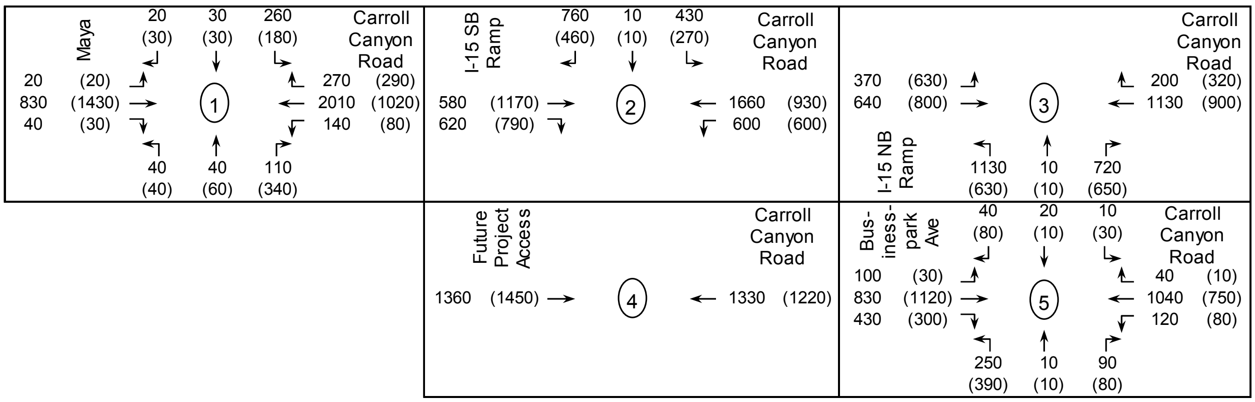


Figure 12: Horizon Year (2035) without Project Volumes



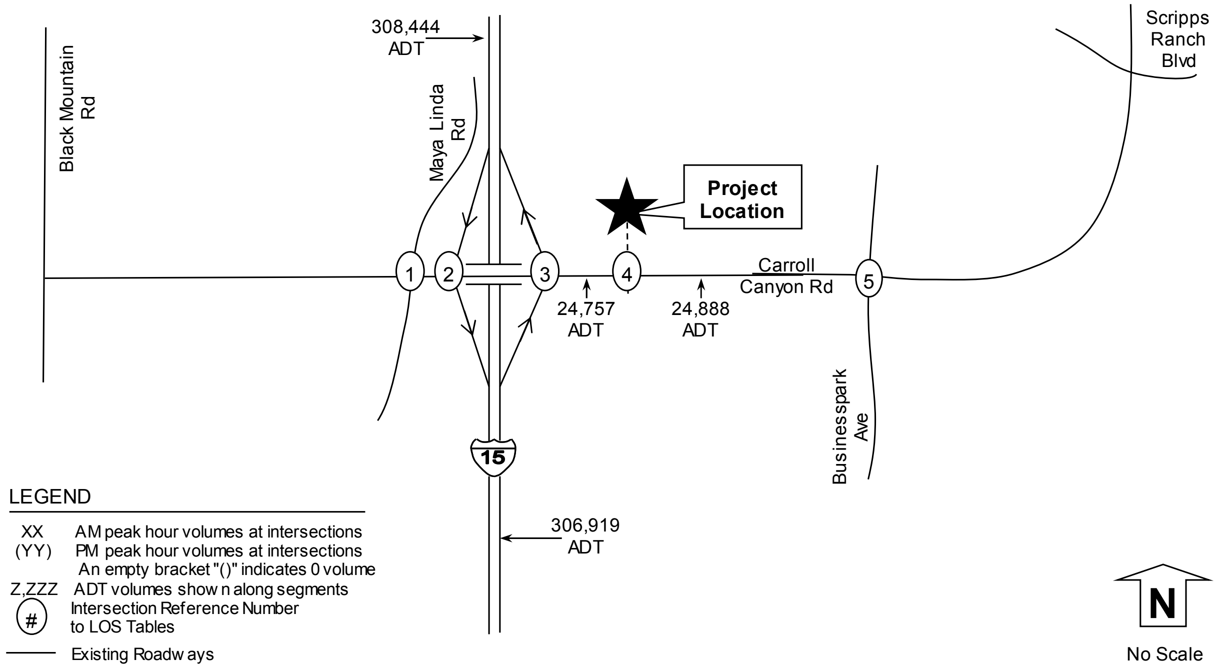


TABLE 29: HORIZON YEAR (2035) WITHOUT PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Horizon Year (2035)			
		Daily Volume	LOS E Capacity	V/C	LOS
Carroll Canyon Road					
I-15 to Project Access	4-Lane Collector	24,757	30,000	0.825	D
Project Access to Businesspark Ave	4-Lane Collector	24,888	30,000	0.830	D

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 30: HORIZON YEAR (2035) WITHOUT PROJECT ON-RAMP OPERATIONS

I-15 at Carroll Canyon Ramp & Peak Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	Most Restrictive Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet (3)
AM SB On-Ramp	Year 2035	1,230	2 SOV	542	1,084	146	8.1	3,650
PM SB On-Ramp	Year 2035	1,400	2 SOV	492	984	416	25.4	10,400
AM NB On-Ramp	Year 2035	494	1 SOV	Meter Not On Under		0	0.0	0
AM NB On-Ramp	Year 2035	86	1 HOV	Existing Conditions		0	0.0	0
Total (SOV & HOV)		580						
PM NB On-Ramp	Year 2035	817	1 SOV	530	530	287	32.5	7,174
PM NB On-Ramp	Year 2035	143	1 HOV	530	530	0	0.0	0
Total (SOV & HOV)		960						

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 85.1% SOV usage and 14.9% HOV usage. (2) Rate provided by CALTRANS (Appendix C). The NB On-Ramp meter was not turned on for AM; therefore, the rate is noted as "meter not on under existing conditions". (3) Calculated queue may be different than actual queue in the horizon year because it is unknown what meter rate Caltrans may apply in year 2035.

TABLE 31: HORIZON YEAR (2035) WITHOUT PROJECT 95TH PERCENTILE QUEUING

Intersection of Carroll Canyon at	Horizon Year 95th % Queue (ft) AM	PM
Maya Linda	Westbound left turn movement has only one lane	
WB LT Queue (ft) ↰	141	98
Available Storage (ft)	55	55
Difference (ft)	-86	-43
I-15 SB Ramps	Westbound left turn movement has only one lane	
WB LT Queue (ft) ↰	776	752
Available Storage (ft)	120	120
Difference (ft)	-656	-632
I-15 NB Ramps	Eastbound left turn movement has only one lane	
EB LT Queue (ft) ↱	481	723
Available Storage (ft)	120	120
Difference (ft)	-361	-603

Notes: Queue lengths (ft) from Synchro output 95th percentile (Synchro output in Appendix). WB=Westbound; EB=Eastbound; LT=Left Turn. Equivalent number of vehicles based on dividing change in queue by 25 ft (City of San Diego Traffic Study Manual average queue based on 25 feet/vehicle, pg 29). Please note the above left turn lanes are single left turn lanes as identified by the single left turn lane arrow within the table.

TABLE 32: HORIZON YEAR (2035) WITHOUT PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Mira Mesa Blvd to Carroll Canyon Rd				I-15 Carroll Canyon Rd to Miramar			
SANDAG (Horizon Year 2035)								
ADT	308,900				307,700			
Peak Hour	A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	5M+1A+2HOV	6M+1A+2HOV	5M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV
Capacity (1)	15,350	17,700	15,350	17,700	17,700	17,700	17,700	17,700
K Factor (2)	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838
D Factor (3)	0.4044	0.5956	0.5542	0.4458	0.4044	0.5956	0.5542	0.4458
Truck Factor (4)	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624
Peak Hour Volume	10,747	16,020	14,729	11,991	10,706	15,958	14,671	11,944
Volume to Capacity	0.700	0.905	0.960	0.677	0.605	0.902	0.829	0.675
LOS	C	E	E	C	C	E	D	C

Notes: (1) Capacity of 2,350 pcphpl for mainline from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002 and 1,200 for aux lanes and HOV lanes. (2) K factor from Caltrans 2013 data, which is the percentage of AADT in both directions during peak hour. (3) D factor from Caltrans 2013 data, which when multiplied by K and ADT will provide peak hour volume. (4) Truck factor from Caltrans 2007 data. Number of lanes: 6M = 6 main line lanes; 1A = 1 Aux lane; 2HOV = 2 High occupancy vehicle/Fastrak lanes.

Under horizon year (2035) without project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for:

1) Intersection of Carroll Canyon Road/Maya Linda Road (LOS F AM & LOS E PM),
2) Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
3) Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),
4) Freeway segment of I-15 between Mira Mesa and Carroll Canyon (LOS E SB AM and LOS E NB PM), and
5) Freeway segment of I-15 between Carroll Canyon and Miramar (LOS E SB AM).

The metered freeway on-ramps were calculated to operate with either minimal delay (NB AM) or delays of SB AM 8.1 minutes, SB PM 25.4 minutes, and NB PM 32.5 minutes.

9.0 Horizon Year (2035) with Project Conditions

The horizon year analysis was prepared according to the City of San Diego, *Traffic Impact Study Manual* that requires a horizon year analysis with additional site traffic if the project deviates from the community plan. Since the proposed project deviates from the community plan, the additional site traffic was reflected in the SANDAG traffic model by removing the existing land use for the site and replacing it with the proposed land use for the site.

This section documents the effects of the project by including the project with the proposed commercial land uses in the SANDAG traffic model. Intersection volumes were factored up from near-term turn moves based on the increase in ADT for each intersection approach against the horizon year ADTs from the SANDAG model with the proposed project for the project site (year 2035 ADT and turn moves are included in **Appendix Q)**.The peak hour intersection volumes and daily traffic volumes are shown in **Figure 13**. LOS and ramp meter operations are shown in **Tables 33 through 36** with calculations included in **Appendix R**.

TABLE 33: HORIZON YEAR (2035) WITH PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Peak	Horizon Year		Horizon Year (2035) + Project			
(Analysis)[1]		Hour	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Cumulative Impact?[5]
1) Carroll Canyon Rd	All	AM	98.1	F	103.3	F	5.2	**Yes**
at Maya Linda Rd (S)	All	PM	58.9	E	71.2	F	12.3	**Yes**
2) Carroll Canyon Rd	All	AM	138.4	F	147.2	F	8.8	**Yes**
at I-15 SB Ramps (S)	All	PM	157.2	F	175.6	F	18.4	**Yes**
Caltrans (ILV)	All	AM	2,089	Over Capacity	2,149	Over Capacity	NA	NA
Caltrans (ILV)	All	PM	2,107	Over Capacity	2,186	Over Capacity	NA	NA
3) Carroll Canyon Rd	All	AM	109.1	F	124.7	F	15.6	**Yes**
at I-15 NB Ramps (S)	All	PM	102.2	F	108.0	F	5.8	**Yes**
Caltrans (ILV)	All	AM	2,089	Over Capacity	2,149	Over Capacity	NA	NA
Caltrans (ILV)	All	PM	2,107	Over Capacity	2,186	Over Capacity	NA	NA
4a) Carroll Canyon Rd	SBR	AM	DNE	DNE	16.2	C	NA	No
at Project RIRO Dwy (U)	SBR	PM	DNE	DNE	15.2	C	NA	No
4b) Carroll Canyon Rd	All	AM	DNE	DNE	19.6	B	NA	No
at Project Access (S)	All	PM	DNE	DNE	19.6	B	NA	No
5) Carroll Canyon Rd	All	AM	36.2	D	39.0	D	2.8	No
at Business Park Ave (S)	All	PM	43.0	D	46.6	D	3.6	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized, ILV for Caltrans. 2) Delay - HCM Average Control Delay in seconds. ILV - Intersecting Lane Volumes (Stb - stable; Un - unstable; Over Capacity). 3) LOS: Level of Service. DNE: Does Not Exist. 4) Delta is the increase in delay from project. 5) Cumulative Impact? (yes or no).

Please note that some of the reported intersection delays are excessive and may be beyond the range of reliability; however, the standard of practice HCM based software is being used.

Figure 13: Horizon Year (2035) with Project Volumes

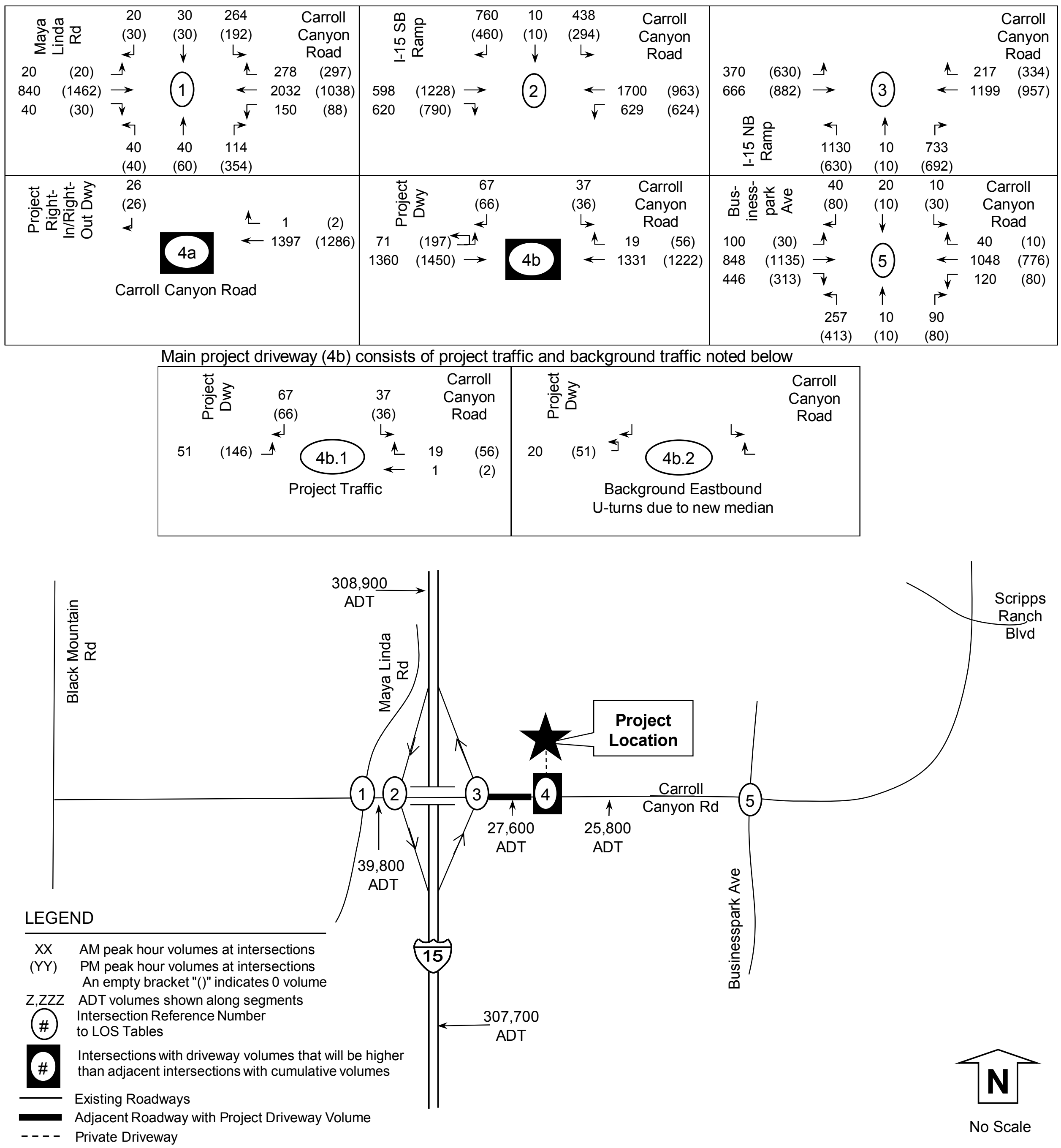


TABLE 34: HORIZON YEAR (2035) WITH PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Classification	Horizon Year 2035				Project	Horizon Year 2035 with Project					
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volume	Daily Volume	LOS E Capacity	V/C	V/C Delta	LOS	Cumlative Impact?
Carroll Canyon Road						See Note (2)						
I-15 to Project Access	4-Lane Collector	24,757	30,000	0.825	D	2,843	27,600	30,000	0.920	0.095	**E**	**Yes**
Project Access to Businesspark Ave	4-Lane Collector	24,888	30,000	0.830	D	912	25,800	30,000	0.860	0.030	**E**	**Yes**

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio. (1) Impact calcualted; however, arterial analysis (next table) to determine in detail if daily segment impact is considered significant. (2) Project volumes are delta between Series 12 with current project zoning and Series 12 with project CPA zoning.

TABLE 35: HORIZON YEAR (2035) WITH PROJECT ON-RAMP OPERATIONS

I-15 at Carroll Canyon Ramp & Peak Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	Most Restrictive Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet (3)	Cumulative Impact?
AM SB On-Ramp	2035 + P	1,259	2 SOV	542	1,084	175	9.7	4,375	
Delta due to project (AM 2035+P 175 - Yr2035 146 = 29 veh/hr)						29	**1.6**		No
PM SB On-Ramp	2035 + P	1,424	2 SOV	492	984	440	26.8	11,000	
Delta due to project (PM 2035+P 440 - Yr2035 416 = 24 veh/hr)						24	**1.5**		No (4)
AM NB On-Ramp	2035 + P	508	1 SOV	Meter Not On Under		0	0.0	0	
AM NB On-Ramp	2035 + P	89	1 HOV	Existing Conditions		0	0.0	0	
Total (SOV & HOV)		597							
PM NB On-Ramp	2035 + P	829	1 SOV	530	530	299	33.8	7,472	
lta due to project (AM 2035+P 299 - Yr2035 287 = 12 veh/hr)						12	**1.3**		No (4)
PM NB On-Ramp	2035 + P	145	1 HOV	530	530	0	0.0	0	
Total (SOV & HOV)		974							

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 85.1% SOV usage and 14.9% HOV usage. (2) Rate provided by CALTRANS (Appendix C). The NB On-Ramp meter was not turned on for AM; therefore, the rate is noted as "meter not on under existing conditions". (3) Calculated queue may be different than actual in the horizon year because it is unknown what meter rate Caltrans may apply in the year 2035. (4) Cumulative impact only when total delay exceeds 15 minutes and increase in delay is over 2.0 minutes when freeway is at LOS E or delay increase is over 1.0 minute when freeway is at LOS F.

The metered freeway on-ramp delay shown in Table 35 is not considered an impact because the added project delay is less than 2.0 minutes when the freeway is operating at LOS E.

TABLE 36: HORIZON YEAR (2035) WITH PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Mira Mesa Blvd to Carroll Canyon Rd				I-15 Carroll Canyon Rd to Miramar			
SANDAG (Horizon Year 2035 without project rezone)								
Peak Hour	A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	5M+1A+2HOV	6M+1A+2HOV	5M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV	6M+1A+2HOV
Capacity (1)	15,350	17,700	15,350	17,700	17,700	17,700	17,700	17,700
K Factor (2)	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838	0.0828	0.0838
D Factor (3)	0.4044	0.5956	0.5542	0.4458	0.4044	0.5956	0.5542	0.4458
Truck Factor (4)	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624	0.9624
Peak Hour Volume	10,747	16,020	14,729	11,991	10,706	15,958	14,671	11,944
Volume to Capacity	0.700	0.905	0.960	0.677	0.605	0.902	0.829	0.675
LOS	C	E	E	C	C	E	D	C
Project Pk Hr Vol	17	8	14	24	13	29	42	24
SANDAG (Horizon Year 2035 + Project with rezone)								
Peak Hour Volume	10,764	16,028	14,743	12,015	10,719	15,987	14,713	11,968
Volume to Capacity	0.701	0.906	0.960	0.679	0.606	0.903	0.831	0.676
LOS	C	E	E	C	C	E	D	C
Increase in V/C	0.001	0.001	0.000	0.002	0.001	0.001	0.002	0.001
Cumulative Impact?	No	No	No	No	No	No	No	No

Notes: (1) Capacity of 2,350 pcphpl for mainline from CALTRANS' Guide for the Preparation of Traffic Impact Studies, December 2002 and 1,200 for aux lanes and HOV lanes. (2) K factor from Caltrans 2013 data, which is the percentage of AADT in both directions during peak hour. (3) D factor from Caltrans 2013 data, which when multiplied by K and ADT will provide peak hour volume. (4) Truck factor from Caltrans 2007 data. Number of lanes: 6M = 6 main line lanes; 1A = 1 Aux lane; 2HOV = 2 High occupancy vehicle/Fastrak lanes.

Queues for left turns along Carroll Canyon Road at the intersections of Carroll Canyon Road at Maya Linda Road, I-15 SB Ramps, and I-15 NB Ramps were reviewed to determine if the project would significantly increase the 95th percentile queue. As shown below in **Table 37**, the project is not calculated to significantly increase the 95th percentile queues (ranging from 0 vehicles to less than two vehicles [1.6 vehicles]). Also shown in Table 37 is the difference between the available storage and what the 95th percentile queue is estimated to occupy. On the bridge, both back to back left turn lanes are calculated to have a shortage of left turn storage under horizon and horizon plus project conditions.

TABLE 37: HORIZON YEAR (2035) WITH PROJECT INTERSECTION 95TH PERCENTILE QUEUING

Intersection of Carroll Canyon at	Horizon Year 95th % Queue (ft) AM	Horizon Year 95th % Queue (ft) PM	Horizon Year + P 95th % Queue (ft) AM	Horizon Year + P 95th % Queue (ft) PM	Change in 95th % Queue (ft) AM	Change in 95th % Queue (ft) PM	Equivalent # of Vehicles AM	Equivalent # of Vehicles PM
Maya Linda	Westbound left turn movement has only one lane							
WB LT Queue (ft)	141	98	150	109	9	11	0.4	0.4
Available Storage (ft)	55	55	55	55				
Difference (ft)	-86	-43	-95	-54				
I-15 SB Ramps	Westbound left turn movement has only one lane							
WB LT Queue (ft)	776	752	816	786	40	34	1.6	1.4
Available Storage (ft)	120	120	120	120				
Difference (ft)	-656	-632	-696	-666				
I-15 NB Ramps	Eastbound left turn movement has only one lane							
EB LT Queue (ft)	481	723	481	735	0	12	0	0.5
Available Storage (ft)	120	120	120	120				
Difference (ft)	-361	-603	-361	-615				

Notes: Queue lengths (ft) from Synchro output 95th percentile (Synchro output in Appendix). WB=Westbound; EB=Eastbound; LT=Left Turn. Equivalent number of vehicles based on dividing change in queue by 25 ft (City of San Diego Traffic Study Manual average queue based on 25 feet/vehicle, pg 29). Please note the above left turn lanes are single left turn lanes as identified by the single left turn lane arrow within the table.

Under horizon year (2035) with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for:

1) Intersection of Carroll Canyon Road/Maya Linda Rd (LOS F AM & PM)
2) Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
3) Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),
4) Segment of Carroll Canyon Rd between I-15 and the project access (LOS E Daily),
5) Segment of Carroll Canyon Rd between project access and Businesspark Ave (LOS E Daily),
6) Freeway segment of I-15 between Mira Mesa and Carroll Canyon (LOS E SB AM and LOS E NB PM), and
7) Freeway segment of I-15 between Carroll Canyon and Miramar (LOS E SB AM).

The freeway on-ramps were calculated to operate with either minimal delay (NB AM) or delays of SB AM 8.1 minutes, SB PM 25.4 minutes, and NB PM 32.5 minutes. The project is not calculated to have an on-ramp impact because the added project delay is less than 2.0 minutes when the freeway is operating at LOS E.

The project is calculated to have five cumulative (horizon year) impacts at the following locations:

1) Intersection of Carroll Canyon Road/Maya Linda Rd (LOS F AM & PM)
2) Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
3) Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),
4) Segment of Carroll Canyon Rd between I-15 and the project access (LOS E Daily), and
5) Segment of Carroll Canyon Rd between project access and Businesspark Ave (LOS E Daily),

Mitigation measures are discussed in Section 10.0.

10.0 Impacts, Project Features, and Mitigation Measures

The project is calculated to have one direct impact under near-term conditions (E+C+P), and five horizon year (2035) cumulative impacts. In addition to the proposed mitigation measures outlined in this section, the applicant proposes the following project features:

1) Construct a new signalized primary access at the easterly project driveway (traffic signal warrant Figure 4C-103 based on estimated ADT is satisfied with calculations included in Appendix I),
2) Construct a new right-in/right-out driveway between the existing primary driveway and I-15, and
3) Widen Carroll Canyon Road to accommodate an eastbound second left turn lane into the project at the project signalized access.

10.1 Existing and Near-Term Direct Impacts and Proposed Mitigation

The one direct impact under Near-Term plus project (existing + cumulative + project) conditions is calculated to occur at the intersection of Carroll Canyon Rd/I-15 NB Ramps due to increasing the intersection delay by more than 2 seconds under LOS E conditions. The proposed mitigation is an additional westbound right turn lane as shown in **Figure 14** to improve the intersection operations as shown in **Table 38** (calculation included in **Appendix S**).

Figure 14: Carroll Canyon Rd/I-15 NB Ramp Configuration

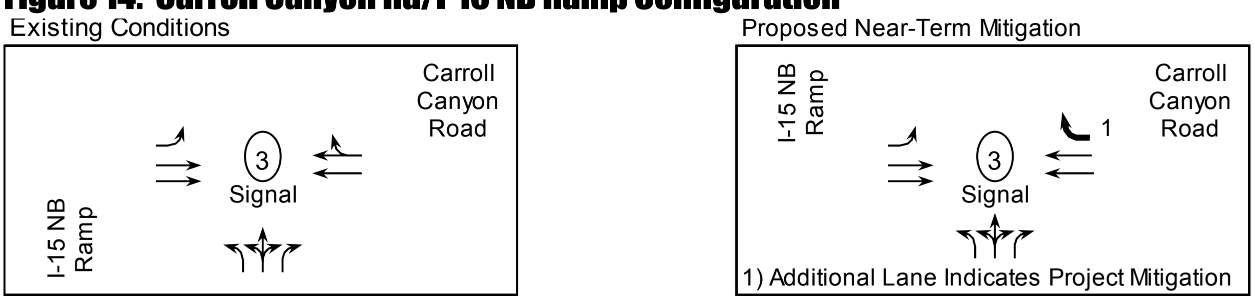


TABLE 38: CARROLL CANYON RD/I-15 NB RAMP HORIZON YEAR LOS WITH PROPOSED MITIGATION

Intersection & (Analysis)[1]	Movement	Peak Hour	Delay[2]	LOS[3]
			Near-Term without Project (no Mit)	
3) Carroll Canyon Rd	All	AM	59.3	E
at I-15 NB Ramps (S)	All	PM	55.3	E
			Near-Term with Project (no Mit)	
3) Carroll Canyon Rd	All	AM	60.4	E
at I-15 NB Ramps (S)	All	PM	59.7	E
			Near-Term with Project (with Mit)	
With Mitigation of additional WB right turn lane		AM	58.1	E
		PM	55.7	E

Notes: 1) Intersection Analysis - (S) Signalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS Level of Service.

As shown in Table 38, the proposed mitigation brings the operations to better than pre-project conditions in the AM (59.3 seconds down to 58.1 seconds), or to within 2 seconds of pre-project conditions in the PM (55.3 seconds to 55.7 seconds for a delta of 0.4 seconds); therefore, the calculated impact is mitigated to below a level of significance. To mitigate the impact as noted above, the owner/applicant, prior to the issuance of the first building permit, shall assure by permit and bond the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/driveway entrance westerly to the northbound freeway on-ramp to I-15. The additional westbound right turn lane is conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. dated 12/19/12 (**Appendix T**).

10.2 Horizon Year (2035) Cumulative Impacts and Proposed Mitigation

The five horizon year (2035) cumulative impacts were calculated at the:

1) Intersection of Carroll Canyon Rd/Maya Linda Road,
2) Intersection of Carroll Canyon Rd/I-15 SB Ramps,
3) Intersection of Carroll Canyon Rd/I-15 NB Ramps,
4) Segment of Carroll Canyon Road between I-15 and the project access, and
5) Segment of Carroll Canyon Road between project access and Businesspark Avenue.

This section documents the proposed mitigation measures.

10.2.1 Proposed Horizon Year (2035) Intersection Mitigation Measures

The intersections that make up the Carroll Canyon Road/I-15 interchange are interconnected with Carroll Canyon Road/Maya Linda Road; therefore, improvements at one or more of these three intersections are calculated to improve the overall operations of all three intersections. The individual intersection improvements that improve the overall operations of these three interconnected signals are described below.

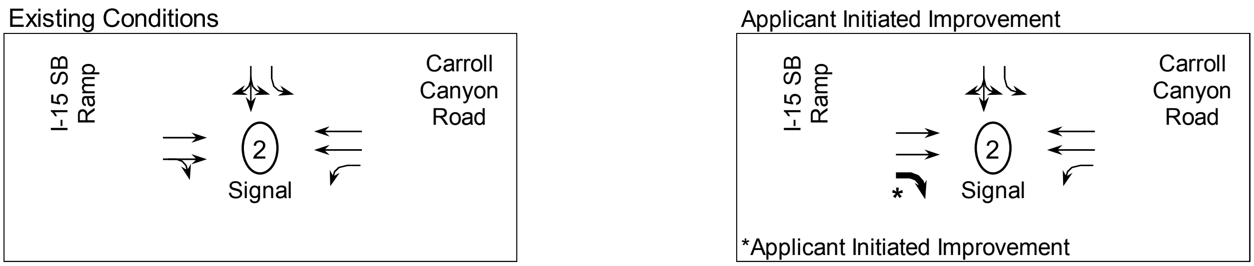
10.2.1.1 Proposed Year 2035 Mitigation at Carroll Canyon/Maya Linda

The intersection operation of Carroll Canyon Road at Maya Linda Road is calculated to have improved operations (i.e. LOS) as part of the physical improvements to the adjacent intersections of Carroll Canyon Road/I-15 SB Ramp and Carroll Canyon Road/I-15 NB Ramp because these three intersections are interconnected. When the intersection of Carroll Canyon Road/I-15 SB Ramp has an additional eastbound to southbound right turn lane added (applicant will make a fair share contribution toward a proposed horizon year improvement that is consistent with a previous PFFP project) and the intersection of Carroll Canyon Road/I-15 NB Ramp has an additional westbound to northbound right turn lane added (as part of the applicant's proposed near-term improvement to mitigate a near-term impact), their capacities improve, which means more vehicles will get through these two intersections. Since these two intersections are interconnected with Maya Linda Road, the higher intersection capacity at Carroll Canyon Road/I-15 SB Ramp and Carroll Canyon Road/I-15 NB Ramp (due to additional lanes) will reduce the queuing to Maya Linda, thereby mitigating the cumulative impact to below a level of significance with intersection calculations included in Section 10.2.1.4. If the identified improvements at the Carroll Canyon Road/I-15 southbound ramp are not completed by the study horizon year, then the cumulative impact at Carroll Canyon Road/Maya Linda Road would not be fully mitigated, thus a finding of overriding consideration would be required.

10.2.1.2 Proposed Year 2035 Mitigation at Carroll Canyon/I-15 SB Ramp

The applicant has identified an improvement to include the construction of an eastbound to southbound right turn lane as shown in **Figure 15**. Details are included in **Appendix U**.

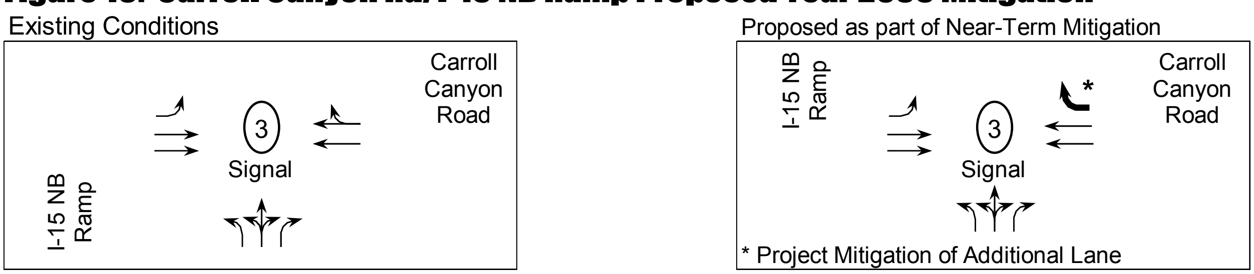
Figure 15: Carroll Canyon Rd/I-15 SB Ramp Proposed Year 2035 Mitigation



10.2.1.3 Proposed Year 2035 Mitigation at Carroll Canyon/I-15 NB Ramp

As part of near-term mitigation described in Section 10.1, the owner/applicant, prior to issuance of the first building permit, shall assure by permit and bond the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/driveway entrance westerly to the northbound freeway on-ramp to I-15 as shown in **Figure 16**.

Figure 16: Carroll Canyon Rd/I-15 NB Ramp Proposed Year 2035 Mitigation



10.2.1.4 Year 2035 Intersection Operations with Mitigation

The near-term mitigation of the westbound to northbound right turn lane at Carroll Canyon Road/I-15 NB Ramp and the applicant initiated eastbound to southbound right turn lane at I-15 southbound ramp are collectively calculated to improve the three study intersections on Carroll Canyon Road at Maya Linda, I-15 SB Ramps and I-15 NB Ramps as shown in **Table 39**.

TABLE 39: CARROLL CANYON RD AT MAYA LINDA, I-15 SB, AND I-15 NB INTERSECTION LOS WITH MITIGATION

Intersection and (Analysis)[1]	Movement	Peak Hour	Horizon Year		Horizon Year (2035) + Project (with Mit)			
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Significant Impact?[5]
1) Carroll Canyon Rd	All	AM	98.1	F	94.2	F	-3.9	No
at Maya Linda Rd (S)	All	PM	58.9	E	58.4	E	-0.5	No
2) Carroll Canyon Rd	All	AM	138.4	F	128.8	F	-9.6	No
at I-15 SB Ramps (S)	All	PM	157.2	F	81.2	F	-76.0	No
3) Carroll Canyon Rd	All	AM	109.1	F	110.0	F	0.9	No
at I-15 NB Ramps (S)	All	PM	102.2	F	80.5	F	-21.7	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. DNE: Does Not Exist. 4) Delta is the increase in delay from project. 5) Significant Impact? (yes or no).

To mitigate the cumulative impacts at the intersections of Carroll Canyon/Maya Linda Rd, I-15 SB Ramps, and I-15 NB Ramps to below a level of significance through the intersection delay improvements noted above, the owner/applicant, prior to issuance of the first building permit, shall assure by permit and bond the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/driveway entrance westerly to the northbound freeway on-ramp to I-15, and pay a fair share of 9.4% toward the applicant initiated eastbound to southbound right turn lane at I-15 southbound ramp (fair share calculations included in **Appendix V**). If the identified improvement at the I-15 southbound ramp is not completed by the study horizon year, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required. LOS calculations to bring this intersection to LOS D or better operations are included at the end of Appendix U.

10.2.2 Proposed Segment Mitigation Measures

The cumulative impact to the segment of Carroll Canyon Road from I-15 to the signalized project access is from an increase in the volume to capacity ratio by more than 0.02 under LOS E conditions. Prior to issuance of the first building permit, the owner/applicant shall assure by permit and bond the construction of a raised median along the project frontage to the satisfaction of the City Engineer. The improvement shall be completed and accepted by the City Engineer prior to issuance of the first certificate of occupancy. The proposed mitigation is the near-term improvement of Carroll Canyon Road with a raised median along the project frontage that will increase the segment capacity and reduce the impact to below a level of significance as shown in **Table 40**.

TABLE 40: CARROLL CANYON ROAD FROM I-15 TO PROJECT ACCESS MITIGATION (HORIZON YEAR CONDITIONS)

Segment	Classification	Horizon Yr + Proj (No Mit.)				Horizon Yr + Proj (With Mit.)			
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volume	LOS E Capacity	V/C	LOS
Carroll Canyon Road when constructed with a raised median along project frontage									
From I-15 to Project Access	4-Lane Prime	27,600	30,000	0.920	E	27,600	40,000	0.690	C

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio. (1) Built to 4 lane Major with raised median for a capacity of 40,000 ADT at LOS E.

The cumulative impact to the segment of Carroll Canyon Road from the signalized project access to Businesspark Avenue is from an increase in the volume to capacity ratio by more than 0.02 under LOS E conditions. To mitigate this cumulative impact to below a level of significance, the applicant proposes to pay a fair share of 15.4% toward the cost of a raised median between the signalized project access and Businesspark Avenue. During the construction of the signalized entrance for the project, the applicant will construct the short segment of the raised median just east of the signalized project access as conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. 12/19/12. The cost of constructing the short segment of a raised median just east of the signalized project access will be credited towards the applicant's fair share responsibility of 15.4% for the eventual raised median between the signalized project access and Businesspark Avenue. However, if the roadway is not improved with a raised median by the study horizon year, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required. With the improvement of a raised median, the segment is calculated to operate at acceptable LOS as shown below in **Table 41** (fair share calculations included in **Appendix V**).

TABLE 41: CARROLL CANYON ROAD FROM PROJECT ACCESS TO BUSINESSPARK AVE MITIGATION (HORIZON YEAR CONDITIONS)

Segment	Classification	Horizon Yr + Proj (No Mit.)				Horizon Yr + Proj (With Mit.)			
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volume	LOS E Cap (1)	V/C	LOS
Carroll Canyon Road when ultimately improved to Community Plan roadway classification (i.e. 4 lane prime)									
From Project Access to Businesspark Ave	4-Lane Prime	25,800	30,000	0.860	E	25,800	40,000	0.645	C

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio. (1) Built to 4 lane Major with raised median for a capacity of 40,000 ADT at LOS E.

10.3 Impacts and Proposed Mitigation Summary

A summary table of calculated impacts is included as **Table 42.**

TABLE 42: DIRECT AND CUMULATIVE IMPACT SUMMARY AND PROPOSED MITIGATION

Roadway Facility	Existing Plus Project Impacts (Direct)	Mitigation
Intersections	None	None
Segments	None	None
Freeways	None	None
On-Ramps	None	None
Roadway Facility	**Near-Term Plus Project Impacts (Direct)**	**Mitigation**
Intersections	1) Carroll Canyon Road/I-15 NB Ramps	1) To mitigate the direct impact to below a level of significance, the owner/applicant, prior to issuance of the first building permit, shall assure by permit and bond the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/ driveway entrance westerly to the northbound freeway on-ramp to I-15. The additional westbound right turn lane is conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. dated 12/19/12.
Segments	None	None
Freeways	None	None
On-Ramps	None	None

CONTINUED ON NEXT PAGE

Roadway Facility	Horizon Year (2035) Plus Project Cumulative Impacts	Mitigation
Intersections	1)Carroll Canyon Rd.at Maya Linda Rd, 2)Carroll Canyon Rd at at I-15 SB Ramps, and 3)Carroll Canyon Rd at I-15 NB Ramps	To mitigate the cumulative impacts to below a level of significance at the intersections of Carroll Canyon/Maya Linda Rd, I-15 SB Ramps, and I-15 NB Ramps, the owner/applicant, prior to issuance of the first building permit assure by permit and bond for the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/driveway entrance westerly to the northbound freeway on-ramp to I-15, which is conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. dated 12/19/12; and pay a fair share of 9.4% toward the applicant initiated additional eastbound to southbound right turn lane at I-15 southbound ramp. However, if the identified improvements at the Carroll Canyon Road/I-15 SB Ramp are not completed by the study horizon year, then the cumulative impacts at Carroll Canyon Road/Maya Linda Road would not be fully mitigated, thus a finding of overriding consideration would be required
Segments	1) Carroll Canyon Road between I-15 and project signalized access 2) Carroll Canyon Road between project signalized access and Businesspark Avenue	1) Prior to issuance of the first building permit, the owner/applicant shall assure by permit and bond the construction of a raised median along the project frontage to the satisfaction of the City Engineer. The improvement shall be completed and accepted by the City Engineer prior to issuance of the first certificate of occupancy. 2) To mitigate this cumulative impact to below a level of significance, the applicant proposes to pay a fair share of 15.4% toward the cost of a raised median between the signalized project access and Businesspark Avenue. During the construction of the signalized entrance for the project, the applicant will construct the short segment of the raised median just east of the signalized project access as conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. 12/19/12. The cost of constructing the short segment of a raised median just east of the signalized project access will be credited towards the applicant's fair share responsibility of 15.4% for the eventual raised median between the signalized project access and Businesspark Avenue. However, if the roadway is not improved with a raised median by the study horizon year, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required. With the improvement of a raised median, the segment is calculated to operate at acceptable LOS as shown in Table 41.
Freeways	None	None
On-Ramps	None	None

11.0 Parking

The total project minimum parking requirement by San Diego Municipal Code, based on individual stand-alone uses, is 612 spaces (151 spaces for retail and 461 spaces for residential). The minimum required parking based on the City of San Diego shared parking approach is 477 spaces on a weekday and 504 spaces on a Saturday. The proposed on-site parking includes 533 stalls (419 gated and 114 non-gated). The project will have a shared parking agreement between the residential and retail components that will provide for residential parking overnight in the non-gated area and retail employee parking during the day in the gated areas during peak demands. The retail employees will be provided access to (by fob or equivalent) and be required to use the gated parking areas that will be enforced through on-site property management. Additionally, retail tenants require open parking in front of their establishments to provide easy access for patrons; therefore, the retail tenants will also enforce employees' use of the gated parking areas. The provided non-gated retail parking rate is 8.3 spaces per 1,000 square feet (114 spaces/13.7 1,000 sf = 8.3 spaces/1,000sf). A copy of the shared parking calculations and details of individual use parking requirements are included in **Appendix W** with a summary shown in **Table 43**.

TABLE 43: PROJECT PARKING SUMMARY

Project Component	Minimum Required Parking By Code (Standalone)	
Retail (13,700sf)*	151 spaces	
Residential (125 one bedroom units)	188 spaces	
Residential (124 two bedroom units)	248 spaces	
Residential (11 three bedroom units)	25 spaces	
	TOTAL = 612 Spaces	
Project Component	**Minimum Required Parking based on Shared Parking****	**Provided Parking**
Combined Retail and Residential	477 Weekday 504 Saturday	533 Weekday 533 Saturday
Other	**Minimum Required**	**Provided**
Motorcycle Parking	29 motorcycle spaces	29 motorcycle spaces
Bicycle Parking	69 bicycle spaces	76 bicycle spaces

Source: *13,700sf includes 12,200sf of retail and restaurant space and 1,500sf leasing office as part of the apartment component. **Shared parking calculations are included in Appendix W.

12.0 Transit and Other Transportation Modes

Transit service currently exists on Carroll Canyon Road along the project frontage as Metropolitan Transit Service bus Route 964a as previously shown in Figure 3. Bus Route 964a has a weekday schedule with service approximately every hour from about 7:30 AM to 7:30 PM (schedule details and a copy of the route are included in **Appendix X**). Bus stops are located approximately 250 feet to the east of the project driveway on the north side of Carroll Canyon Road and approximately 180 feet to the east of the project main driveway on the south side of Carroll Canyon Road. Black Mountain Road, located approximately 3,200 feet (approximately 0.6 miles) to the west is served by Routes 20, 31, and 210 (copies of the route maps and schedules are included in Appendix Y). A trip generation reduction due to transit uses was not applied to reduce the project traffic.

According to the City of San Diego *Bicycle Master Plan Update*, June 2011, there is a Class II bike lane on Carroll Canyon Road along the project frontage (figure included in **Appendix Y**). Carroll Canyon Road currently has a Class II bike lane constructed along the project frontage.

13.0 Conclusions

The proposed Carroll Canyon Mixed Use project is a redevelopment project of approximately 9.3 net acres located on the northeast corner of Carroll Canyon Road and I-15 in the Scripps Ranch community of San Diego, California. The redevelopment project with 260 apartments and 12,200 square feet of commercial/retail space will replace an existing mostly vacant office complex of approximately 76,241 square feet. The site is currently zoned as an Industrial Park (IP-2-1) and is proposed to be zoned as Residential (RM-3-7) and Commercial (CC-2-3). The existing project site has one driveway. The applicant proposes to: 1) construct a new signalized primary access generally in the area of the existing project driveway, 2) construct a right-in/right-out driveway between the existing driveway and I-15, and 3) construct a raised median along the project frontage to be compliant with the City of San Diego roadway classification and for mitigation of a direct project impact. The raised median will allow the existing westbound to southbound left turn into the Eucalyptus Square Shopping Center south of the proposed project. The project will include eastbound to northbound dual left turn lanes into the project site. At the easterly edge of the project, the center raised median required to accommodate the proposed traffic signal will result in a transition segment of a raised median extending to the east of the project.

The project traffic generation was calculated using trip rates from the City of San Diego *Trip Generation Manual*, May 2003. Two trip generation rates were applied: a driveway rate for project access points and a cumulative rate (accounts for primary and diverted trips) that was applied for all other analyzed roadways. The project driveway volumes were calculated at 4,004 ADT with 203 AM peak hour trips and 336 PM peak hour trips. The cumulative traffic volumes were calculated at 3,256 ADT with 174 AM peak hour trips and 276 PM peak hour trips.

The project will require a Community Plan Amendment (CPA) to change the land use designation from Industrial Park to Residential with Commercial, and a rezone from IP-2-1 to RM-3-7 and CC-2-3. As part of this transportation impact study, six scenarios were analyzed, which included Existing, Existing with Project, Near-term (existing + cumulative), Near-term with Project, Horizon Year (2035), and Horizon Year (2035) with Project Conditions. Operational findings and project impacts by scenario are summarized below:

1) <u>Under existing conditions</u>, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
    b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM).

    The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM); however, the calculated delays were higher than the maximum observed delays of 2.1 minutes on the southbound ramp (PM) and 2.0 minutes on the northbound ramp (PM).

2) <u>Under existing with project conditions</u>, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and

b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM & PM).

The addition of project traffic resulted in no significant direct project impacts because the addition of project traffic did not exceed the allowable increase in traffic delay thresholds. The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM); however, the project did not result in a significant impact to the metered on-ramps.

3) Under near-term (existing + cumulative) conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    c. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
    d. Carroll Canyon Road/I-15 NB Ramp (LOS E AM).

    The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM).

4) Under near-term with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the intersections of:
    a. Carroll Canyon Road/I-15 SB Ramp (LOS E AM & PM), and
    b. Carroll Canyon Road/I-15 NB Ramp (LOS E AM & PM).

    The project is calculated to have one near-term direct impact at the intersection of Carroll Canyon Road/I-15 NB Ramp. To mitigate this impact, the owner/applicant, prior to issuance of the first building permit, shall assure by permit and bond the construction of a 14 foot wide right turn lane extending from the west side of the project's signalized intersection/driveway entrance westerly to the northbound freeway on-ramp to I-15. The additional westbound right turn lane is conceptually shown in the *Proposed Ultimate Striping Exhibit (Prime Arterial)* by USA, Inc. dated 12/19/12 (Appendix T). The metered freeway on-ramps were calculated to operate with either minimal delay (SB AM and NB AM) or some delay (SB PM and NB PM); however, the project did not result in a significant impact to the metered on-ramps.

5) Under horizon year (2035) conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for the:
    a. Intersection of Carroll Canyon Road/Maya Linda Road (LOS F AM & LOS E PM),
    b. Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
    c. Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),
    d. Freeway segment of I-15 between Mira Mesa and Carroll Canyon (LOS E SB AM and LOS E NB PM), and
    e. Freeway segment of I-15 between Carroll Canyon and Miramar (LOS E SB AM).

    The freeway on-ramps were calculated to operate with either minimal delay (NB AM) or more noticeable delays (SB AM, SB PM, and NB PM).

6) Under horizon year (2035) with project conditions, all of the study intersections, street segments, and freeway segments were calculated to operate at LOS D or better except for:
    a. Intersection of Carroll Canyon Road/Maya Linda Rd (LOS F AM & PM)
    b. Intersection of Carroll Canyon Road/I-15 SB Ramps (LOS F AM & PM),
    c. Intersection of Carroll Canyon Road/I-15 NB Ramps (LOS F AM & PM),

d. Segment of Carroll Canyon Rd between I-15 and the project access (LOS E Daily),
e. Segment of Carroll Canyon Rd between project access and Businesspark Ave (LOS E Daily),
f. Freeway segment of I-15 between Mira Mesa and Carroll Canyon (LOS E SB AM and LOS E NB PM), and
g. Freeway segment of I-15 between Carroll Canyon and Miramar (LOS E SB AM).

The project is calculated to have five cumulative (horizon year) impacts at locations a) through e) above; however, the project did not have cumulative impacts to the freeway (locations f & g) because the project traffic did not exceed the traffic impact significance thresholds. The metered freeway on-ramps were calculated to operate with either minimal delay (NB AM) or more noticeable delays (SB AM, SB PM, and NB PM); however, the project did not result in a significant impact to the metered on-ramps because the added project delay is less than 2.0 minutes with the freeway calculated to be operating at LOS E. The following details summarize the proposed improvements to mitigate the five cumulative impacts:

i) The intersection of Carroll Canyon Road at Maya Linda Road is calculated to have improved operations (i.e. LOS) as part of near-term and horizon year physical improvements to the adjacent intersections of Carroll Canyon Road/I-15 SB Ramp and Carroll Canyon Road/I-15 NB Ramp because these three intersections are interconnected. When the intersection of Carroll Canyon Road/I-15 SB Ramp has an additional eastbound to southbound right turn lane added (applicant will make a fair share contribution toward a proposed horizon year improvement that is consistent with a previous PFFP project) and the intersection of Carroll Canyon Road/I-15 NB Ramp has an additional westbound to northbound right turn lane added, their capacities improve, which means more vehicles will get through these two intersections. Since these two intersections are interconnected with Maya Linda Road, the higher intersection capacity at Carroll Canyon Road/I-15 SB Ramp and Carroll Canyon Road/I-15 NB Ramp (due to additional lanes as noted above) will reduce the queuing to Maya Linda, thereby mitigating the cumulative impacts to below a level of significance as shown in Table 39 within this report; however, if the identified improvements at the Carroll Canyon Road/I-15 SB ramp are not completed by the study horizon year, then the cumulative impact at Carroll Canyon Road/Maya Linda Road would not be fully mitigated, thus a finding of overriding consideration would be required,

ii) To mitigate the cumulative impact at the intersection of Carroll Canyon/ I-15 SB Ramps to below a level of significance, the applicant proposes to pay a fair share of 9.4% toward the applicant's proposed eastbound to southbound right turn lane addition to the I-15/Carroll Canyon southbound ramp. If the identified improvement is not completed by the study horizon year of 2035, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required,

iii) To mitigate the cumulative impact at the intersection of Carroll Canyon/I-15 NB Ramps to below a level of significance, the improvement to be constructed by the applicant to mitigate the direct impact at this location will also mitigate the cumulative impact (see item 4 on page 52),

iv) To mitigate the segment of Carroll Canyon Road between I-15 and the project signalized access, prior to issuance of the first building permit, the owner or permittee shall assure by permit and bond the installation or construction of a raised median along the project frontage to the satisfaction of the City Engineer. The improvement shall be completed and accepted by the City Engineer prior to issuance of the first certificate of occupancy. This improvement will reduce the impact to below a level of significance as documented in Table 40 within this report, and

v) To mitigate the segment of Carroll Canyon Road between the signalized project access and Businesspark Avenue, the applicant proposes to pay a fair share of 15.4% toward the cost of a raised median between the signalized project access and Businesspark Avenue. During the construction of the signalized entrance for the project, the applicant will construct the short segment of the raised median just east of the signalized project access as conceptually shown in the exhibit titled *Proposed Ultimate Striping (Prime Arterial)* by USA, Inc. 12/19/12. The cost of constructing the short segment of a raised median just east of the signalized project access will be credited towards the applicant's fair share responsibility of 15.4% for the eventual raised median between the signalized project access and Businesspark Avenue. However, if the roadway is not improved with a raised median by the study horizon year of 2035, then the cumulative impact would not be fully mitigated, thus a finding of overriding consideration would be required. With the improvement of a raised median, the segment is calculated to operate at acceptable LOS as documented in Table 41 within this report.

# # #

Appendix A

City of San Diego Traffic Impact Study Screen Check

CITY OF SAN DIEGO
TRANSPORTATION DEVELOPMENT SECTION
TRAFFIC IMPACT STUDY
SCREEN CHECK

To be completed by City Staff:
Date Received ____________
Reviewer ____________
Date Screen Check _____

To be completed by consultant (including page #):
Name of Traffic Study CARROLL CANYON MIXED USE
Consultant LOS ENGINEERING, INC.
Date Submitted ____________

Indicate Page # in report:

Page	Item	Satisfactory YES	NO	NOT REQUIRED
pg. ii	1. Table of contents, list of figures and list of tables.	☐	☐	
pg. v	2. Executive summary.	☐	☐	
pg. 2	3. Map of the proposed project location	☐	☐	
	4. General project description and background information:			
pg. 14	a. Proposed project description (acres, dwelling units....)	☐	☐	
pg. 14	b. Total trip generation of proposed project.	☐	☐	
pg. 14	c. Community plan assumption for the proposed site.	☐	☐	
pg. 7	d. Discuss how project affects the Congestion Management program.	☐	☐	
pg. 14	5. Parking, transit and on-site circulation discussions are included.	☐	☐	
pg. 11	6. Map of the Transportation Impact Study Area and specific intersections studied in the traffic report.	☐	☐	
pg. 9	7. Existing Transportation Conditions:			
	a. Figure identifying roadway conditions including raised medians, median openings, separate left and right turn lanes, roadway and intersection dimensions, bike lanes, parking, number of travel lanes, posted speed, intersection controls, turn restrictions and intersection lane configurations.	☐	☐	
	b. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
	c. Figure or table showing level of service (LOS) for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix).	☐	☐	
	8. Project Trip Generation:			
pg. 14	Table showing the calculated project generated daily (ADT) and the peak hour volumes.	☐	☐	
pg. 16	9. Project Trip Distribution using the current TRANPLAN Computer Traffic Model (provide a computer plot) or manual assignment if previously approved. (Identify which method was used.)	☐	☐	
	10. Project Traffic Assignment:			
pg. 6	a. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
pg. 6	b. Figure showing pass-by-trip adjustments, if cumulative trip rates are used.	☐	☐	☐
	11. Existing + Other Pending Projects:			
pg. 24	a. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
pg. 23-27	b. Figure or table showing the projected LOS for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix).	☐	☐	
pg. 15	c. Traffic signal warrant analysis for appropriate locations (signal warrants included in the appendix).	☐	☐	

Satisfactory
YES NO NOT REQUIRED

12. Existing + Other Pending Projects + Project (short term cumulative):

pg. 28-31 a. Figure or table showing the projected LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix). ☐ ☐

pg. 28-31 b. Figure showing other projects that were included in the study, and the assignment of their site traffic. ☐ ☐

pg. 15 c. Traffic signal warrant analysis for appropriate locations (signal warrants in the appendix). ☐ ☐

13. Build-out Transportation Conditions (if project conforms to the community plan):

pg. NA a. Build-out ADT and street classification that reflect the community plan. ☐ ☐ ☐

pg. NA b. Figure or table showing the build-out LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix). ☐ ☐ ☐

pg. NA c. Traffic signal warrant analysis at appropriate locations (signal warrants included in the appendix). ☐ ☐ ☐

14. Build-out Transportation Conditions (if project does not conform to the community plan).

pg. 32-40 a. Build-out ADT and street classification as shown in the community plan. ☐ ☐ ☐

pg. 32-40 b. Build-out ADT and street classification for two scenarios: with the proposed project and with the land use assumed in the community plan. ☐ ☐ ☐

pg. 32-40 c. Figure or table showing the build-out LOS for intersections during peak hours and roadway sections for two scenarios: with the proposed project and with the land use assumed in the community plan (analysis sheets included in the appendix). ☐ ☐ ☐

pg. NA d. Traffic signal warrant analysis at appropriate locations with the land use assumed in the community plan (signal warrants included in the appendix). ☐ ☐ ☐

pg. 44-45 15. A summary table showing the comparison of Existing, Existing + Other Pending Projects, Existing + Other Pending Projects + Proposed Project, and Buildout, LOS on roadway sections and intersections during peak hours. ☐ ☐

16. Transportation Mitigation Measures.

pg. 44 a. Table identifying the mitigations required that are the responsibility of the developer and others. A phasing plan is required if mitigations are proposed in phases. ☐ ☐

pg. 41, 42 b. Figure showing all proposed mitigations that include: intersection lane configurations, lane widths, raised medians, median openings, roadway and intersection dimensions, right-of-way, offset, etc. ☐ ☐

UPON FINAL VERSION

pg. ___ 17. The traffic study is signed by a California Registered Traffic Engineer. ☐ ☐

pg. 5 18. The Highway Capacity Manual Operational Method or other approved method is used at appropriate locations within the study area. ☐ ☐

pg. 7 19. Analysis complies with Congestion Management requirements. ☐ ☐ ☐

pg. 6 20. Appropriate freeway analysis is included. ☐ ☐ ☐

pg. 7 21. Appropriate freeway ramp metering analysis is included. ☐ ☐ ☐

THE TRAFFIC STUDY SCREEN CHECK FOR THE SUBJECT PROJECT IS:

___________ Approved

___________ Not approved because the following items are missing:

Appendix B

CALTRANS Flow Rates

If a single-lane approach at a normal intersection has a demand volume of 1000 vph, for example, then the intersecting single-lane approach volume cannot exceed 500 vph without delay.

The three examples that follow illustrate the simplicity of analyzing ramp intersections using this 1500 ILV/hr concept.

(b) Diamond Interchange--The critical intersection of a diamond type interchange must accommodate demands of three conflicting travel paths. As traffic volumes approach capacity, signalization will be needed. For the spread diamond (Figure 406A), basic capacity analysis is made on the assumption that 3-phase signalization is employed. For the tight diamond (Figure 406B), it is assumed that 4-phase signal timing is used.

(c) 2 Quadrant Cloverleaf--Because this interchange design (Figure 406C) permits 2-phase signalization, it will have higher capacities on the approach roadways. The critical intersection is shared two ways instead of three ways as in the diamond case.

Table 406

Traffic Flow Conditions at Intersections at Various Levels of Operation

ILV/hr	Description
< 1200:	Stable flow with slight, but acceptable delay. Occasional signal loading may develop. Free midblock operations.
1200-1500:	Unstable flow with considerable delays possible. Some vehicles occasionally wait two or more cycles to pass through the intersection. Continuous backup occurs on some approaches.
1500 (Capacity):	Stop-and-go operation with severe delay and heavy congestion(1). Traffic volume is limited by maximum discharge rates of each phase. Continuous backup in varying degrees occurs on all approaches. Where downstream capacity is restrictive, mainline congestion can impede orderly discharge through the intersection.

(1) The amount of congestion depends on how much the ILV/hr value exceeds 1500. Observed flow rates will normally not exceed 1500 ILV/hr, and the excess will be delayed in a queue.

GUIDE FOR THE PREPARATION

OF

TRAFFIC IMPACT STUDIES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

December 2002

Transition between LOS "C" and LOS "D" Criteria

(Reference Highway Capacity Manual)

BASIC FREEWAY SEGMENTS @ 65 mi/hr

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum v/c	Maximum Service Flow Rate (pc/hr/ln)
A	11	65.0	0.30	710
B	18	65.0	0.50	1170
C	26	64.6	0.71	1680
D	35	59.7	0.89	2090
E	45	52.2	1.00	2350

SIGNALIZED INTERSECTIONS and RAMP TERMINALS

LOS	Control Delay per Vehicle (sec/veh)
A	≤ 10
B	> 10 - 20
C	> 20 - 35
D	> 35 - 55
E	> 55 - 80
F	> 80

MULTI-LANE HIGHWAYS @ 55 mi/hr

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum v/c	Maximum Service Flow Rate (pc/hr/ln)
A	11	55.0	0.29	600
B	18	55.0	0.47	990
C	26	54.9	0.68	1430
D	35	52.9	0.88	1850
E	41	51.2	1.00	2100

▪▪▪▪▪ Dotted line represents the transition between LOS "C" and LOS "D"

									AM PEAK								PM PEAK						
									1 WAY	%	%	%					1 WAY	%	%	%			
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	PHV	K	D	KD	HR	DAY	MNTH	Dir	PHV	K	D	KD	HR	DAY	MNTH
10	012	CAL		9.927	91	B	13	E	305	8.03	66.45	5.34	7	WED	APR	E	299	8.66	60.4	5.23	17	FRI	JAN
10	012	CAL		9.927	157	A	13	E	481	7.76	69.91	5.42	7	WED	APR	W	499	9.11	61.76	5.63	17	THU	JAN
04	013	ALA		4.262	27	A	12	N	2800	10.39	54.03	5.62	8	FRI	DEC	N	2572	7.68	67.19	5.16	17	THU	SEP
04	013	ALA		13.18	125	B	12	S	1890	12.75	64	8.16	8	THU	MAR	N	1538	11.06	60.06	6.64	16	TUE	MAR
04	013	ALA		13.91	240	B	12	S	1981	9.52	66.66	6.34	8	MON	DEC	N	1490	8.88	53.77	4.77	17	TUE	DEC
07	014	LA	R	26	779	A	12	S	8418	6.9	77.56	5.35	6	MON	APR	N	8178	7.77	66.86	5.2	17	WED	MAR
07	014	LA	R	32.24	403	B	13	S	6394	6.75	86.75	5.85	5	TUE	NOV	S	6241	9.61	59.47	5.71	16	FRI	JAN
07	014	LA	R	59.80	338	A	12	S	3092	6.92	52.39	3.62	7	WED	NOV	S	3931	8.21	56.11	4.61	17	WED	FEB
07	014	LA	R	73	63	O	13	N	1748	7.34	67.28	4.94	6	THU	SEP	S	2486	10.59	66.29	7.02	15	FRI	JUN
06	014	KER	R	0	927	A	13	N	1400	7.07	67.44	4.76	6	TUE	OCT	S	1664	9.5	59.64	5.66	16	MON	FEB
06	014	KER	L	16.87	912	O	13	S	782	8.38	59.51	4.99	12	FRI	MAY	N	1038	10.28	64.43	6.62	17	SUN	JUL
06	014	KER		22.15	298	A	13	S	466	11.55	68.53	7.91	11	THU	DEC	N	603	14.26	71.79	10.24	15	SUN	AUG
06	014	KER		57.77	301	B	13	N	354	10.72	65.31	7	11	THU	DEC	S	541	13.83	77.4	10.7	14	MON	JAN
06	014	KER		57.77	302	A	13	S	391	12.13	69.08	8.38	12	SUN	JUN	S	580	15.2	81.81	12.43	17	MON	MAY
06	014	KER		64.56	971	B	13	S	297	14.7	68.59	10.08	11	SUN	NOV	S	482	21.01	77.87	16.36	16	TUE	JAN
11	015	SD		.405	909	A	13	S	4482	7.91	57.7	4.56	6	TUE	APR	N	5071	9.46	54.54	5.16	15	MON	AUG
11	015	SD		2.226	836	B	13	S	5096	7.85	54.54	4.28	6	THU	MAY	N	6163	9.74	53.15	5.18	15	THU	AUG
11	015	SD	R	6.132	813	B	13	N	8314	8.06	62.33	5.03	7	THU	FEB	S	8012	8.58	56.47	4.84	16	THU	FEB
11	015	SD	R	6.132	911	A	13	N	9910	7.75	64.01	4.96	7	MON	JUN	S	9308	7.98	58.37	4.66	16	FRI	AUG
11	015	SD	M	12.12	912	A	13	S	13083	8.47	52.91	4.48	7	THU	JAN	N	13619	8.45	55.21	4.66	16	MON	DEC
11	015	SD	M	15	999	X	13	S	12323	8.38	59.56	4.99	7	TUE	JAN	N	11330	8.28	55.42	4.59	16	THU	JAN
11	015	SD	M	20.57	980	B	13	S	10477	7.93	57.67	4.57	7	MON	MAY	N	10357	7.89	57.28	4.52	16	TUE	MAY
11	015	SD	M	26.03	934	B	13	S	9758	7.16	69.6	4.98	6	WED	JUN	N	9751	8.02	62.05	4.98	16	TUE	JAN
11	015	SD	M	26.03	935	A	13	S	9934	7.76	63.3	4.91	7	TUE	JUL	N	10500	8.44	61.44	5.19	17	WED	JUL
11	015	SD	R	28.77	914	B	13	S	10308	7.81	64.14	5.01	7	TUE	DEC	N	9559	8.08	57.53	4.65	17	FRI	JUN
11	015	SD	R	30.63	918	B	13	S	9624	7.45	63.96	4.76	7	THU	JUL	N	10488	8.54	60.77	5.19	16	THU	SEP
11	015	SD	R	31.52	915	A	13	S	6968	6.74	79.06	5.33	6	WED	JUL	N	7143	8.89	61.44	5.46	15	FRI	AUG
11	015	SD	R	36.64	916	A	13	S	7361	7.98	75.83	6.05	7	WED	SEP	N	6811	8.65	64.77	5.6	16	FRI	FEB
11	015	SD	R	54.07	917	B	13	S	7982	7.49	79.56	5.96	6	THU	NOV	N	7055	7.69	68.43	5.26	16	WED	JAN
11	015	SD	R	54.07	919	A	13	S	7537	7.21	78.32	5.65	6	WED	MAY	N	6926	7.54	68.8	5.19	16	WED	JAN
08	015	RIV		38.69	849	A	12	S	6140	6.33	59.55	3.77	7	TUE	NOV	N	6363	6.87	56.82	3.9	15	TUE	NOV
08	015	RIV		44.66	156	A	13	S	5304	7.02	51.92	3.65	7	TUE	DEC	S	5591	7.19	53.47	3.84	15	WED	MAR
08	015	SBD		40.51	801	A	12	N	3961	8.67	58.54	5.08	11	TUE	DEC	S	4191	8.31	64.61	5.37	14	MON	AUG

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK AADT By Axle 2	3	4	5+	% TRUCK AADT By Axle 2	3	4	5+	EAL 2-WAY (1000)	YEAR VER/ EST
015	11	SD	R 3.367	B	JCT. RTE. 805	113000	5763	5.10	2951	980	288	1544	51.20	17.00	5.00	26.80	768	85E
015	11	SD	R 3.367	A	JCT. RTE. 805	160000	3519	2.20	2541	359	109	510	72.20	10.20	3.10	14.50	314	85V
015	11	SD	R 6.132	B	JCT. RTE. 8	165000	3631	2.20	2621	374	113	523	72.20	10.30	3.10	14.40	323	85E
015	11	SD	R 6.132	A	JCT. RTE. 8	200000	9959	4.98	6219	712	234	2794	62.44	7.15	2.35	28.05	1281	07V
015	11	SD	R 9.995	X	CLAIREMONT MESA BLVD	148000	7273	4.91	3755	602	246	2670	51.63	8.28	3.38	36.71	1143	13E
015	11	SD	M 12.124	A	JCT. RTE. 163	292000	10892	3.73	6692	784	301	3115	61.44	7.20	2.76	28.60	1425	07E
015	11	SD	M 14.285	B	SAN DIEGO, MIRAMAR/ POMERADO RD	289000	10866	3.76	6676	782	300	3108	61.44	7.20	2.76	28.60	1422	07E
015	11	SD	M 14.285	A	SAN DIEGO, MIRAMAR/ POMERADO RD	272000	10608	3.90	6216	1114	414	2864	58.60	10.50	3.90	27.00	1369	85V
015	11	SD	M 18.176	B	SAN DIEGO, POWAY RD	236000	16755	7.10	8177	1893	938	5747	48.80	11.30	5.60	34.30	2581	96E
015	11	SD	M 18.176	A	SAN DIEGO, POWAY RD	207000	14697	7.10	7172	1661	823	5041	48.80	11.30	5.60	34.30	2264	96E
015	11	SD	M 27.65	A	ESCONDIDO, SOUTH JUNCTION OF CENTRE CITY PARKWAY	206000	14626	7.10	7137	1653	819	5017	48.80	11.30	5.60	34.30	2253	96E
015	11	SD	R 30.627	B	VALLEY PARKWAY	202000	14342	7.10	6999	1621	803	4919	48.80	11.30	5.60	34.30	2209	96E
015	11	SD	R 31.517	X	JCT. RTE. 78	122000	8676	7.11	4660	517	262	3237	53.71	5.96	3.02	37.31	1366	13E
015	11	SD	R 31.517	B	JCT. RTE. 78	217000	15408	7.10	7519	1741	863	5285	48.80	11.30	5.60	34.30	2374	96E
015	11	SD	R 31.517	A	JCT. RTE. 78	131000	13231	10.10	5848	1138	688	5557	44.20	8.60	5.20	42.00	2328	80V
015	11	SD	R 36.636	A	DEER SPRINGS RD	122000	16103	13.20	5685	1304	676	8438	35.30	8.10	4.20	52.40	3329	86V
015	11	SD	R 46.491	B	JCT. RTE. 76	117000	11970	10.23	3809	952	408	6801	31.82	7.95	3.41	56.82	2627	00E

Appendix C

San Diego On-Ramp Criteria and CALTRANS Ramp Meter Rates

TRAFFIC IMPACT STUDY MANUAL

JULY
1998

APPENDIX 2. RAMP METERING ANALYSIS

Ramp metering analysis should be performed for each horizon year scenario in which ramp metering is expected. The following table shows relevant information that should be included in the ramp meter analysis (calculations are shown in the footnotes):

LOCATION	DEMAND[1] (veh/hr)	METER RATE[2] (veh/hr)	EXCESS DEMAND[3] (veh/hr)	AVERAGE DELAY[4] (veh/hr)	AVERAGE QUEUE[5] (feet)
I-5/Carmel Mountain Road (SB/AM Peak)	985	788	197	15.0[6]	4,925
I-5/Carmel Mountain Road (SB/PM Peak)	510	1,000	0	0	0

Notes:

1 DEMAND is the peak hour demand expected to use the on-ramp.

2 METER RATE is the peak hour capacity expected to be processed through the ramp meter. This value is usually available from Caltrans.

3 EXCESS DEMAND = (DEMAND) – (METER RATE) or zero, whichever is greater

4 AVERAGE DELAY = $\frac{\text{EXCESS DEMAND}}{\text{METER RATE}}$ * 60 minutes/hour

5 AVERAGE QUEUE = (EXCESS DEMAND) * 25 feet/vehicle

6 Ramp meter delays above 15 minutes are not acceptable.

Location (I.D.)	Route	Dir	Period	Cars per green	Sec./ Cycle	(per lane) Veh./hr	Total # lanes	HOV
Carroll Cyn Rd (11907)	15	NB	1400 - 1900	2	9.8 - 13.6	732 - 530	2	Lt
Carroll Cyn Rd (11905)	15	SB	0530 - 0930	2	7.2 - 13.3	996 - 542	2	No
			1500 - 1900		7.2 - 14.6	996 - 492		

The meters normally operate in a traffic responsive mode.
There are 15 separate rates or steps between the slowest and the fastest discharge rate that depend on the mainlane volumes.

I-15 NB RAMP & CARROL CANYON
Wednesday 3/11/15

NB ON RAMP 5 MIN INTERVALS	SOV Lane # of Vehicles	HOV Lane # of Vehicles	TOTAL
WED 03-11-15			
4:45PM	33	6	39
4:50PM	57	7	64
4:55PM	40	6	46
5:00PM	56	12	68
5:05PM	56	4	60
5:10PM	47	12	59
5:15PM	47	12	59
5:20PM	55	11	66
5:25PM	52	6	58
5:30PM	42	10	52
5:35PM	52	9	61
5:40PM	36	5	41
TOTALS	**573**	**100**	**673**
Percent Split btw SOV/HOV	**85.1%**	**14.9%**	

Appendix D

SANDAG CMP Arterial System

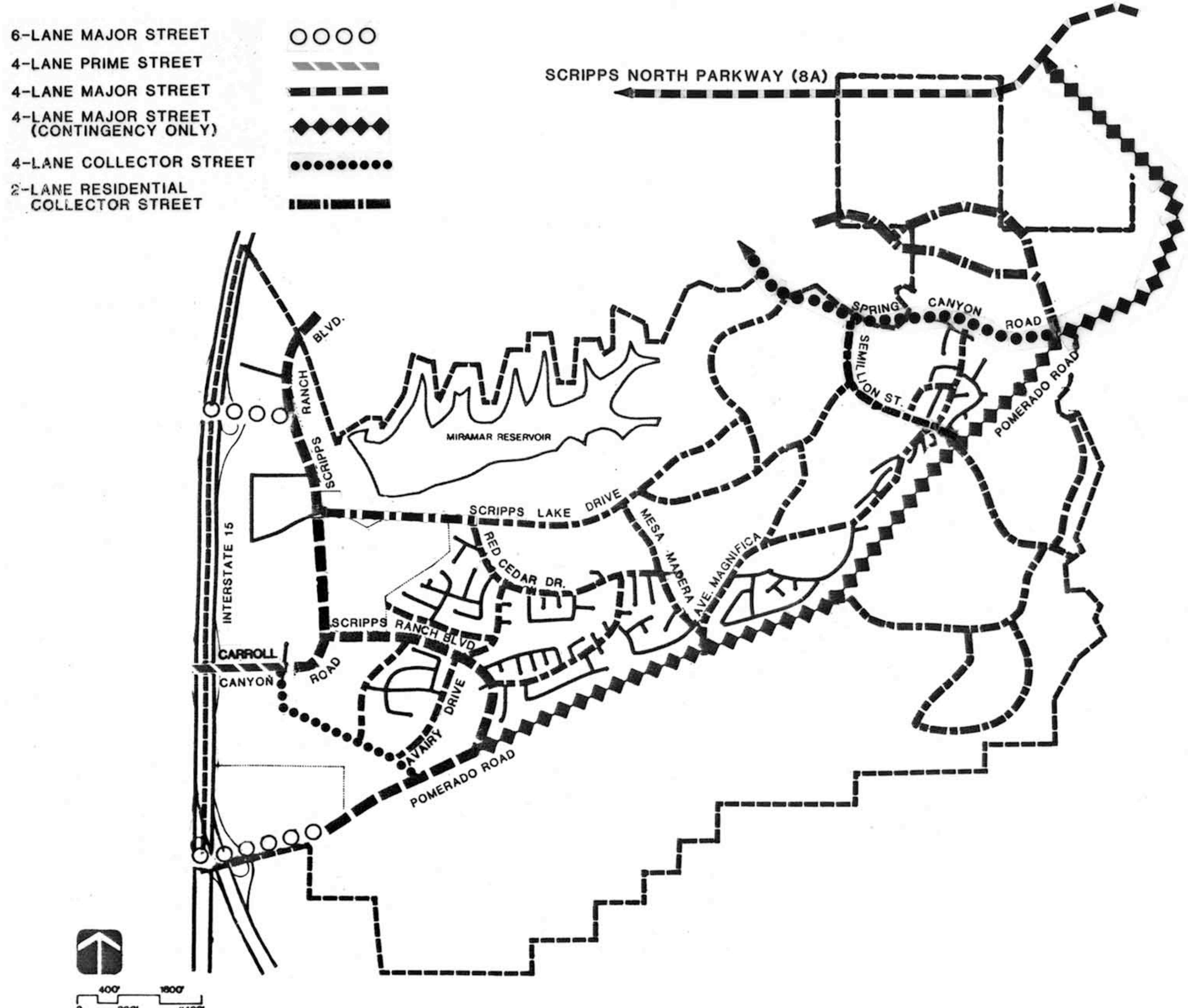
Exhibit 4-1
List of CMP System Roadways

CMP Freeways:
Interstate 5: Orange County Line to U.S./Mexico Border
Interstate 8: Nimitz Boulevard to Imperial County Line
Interstate 15: Riverside County Line to I-5
Interstate 805: I-5 (North) to I-5 (South)
State Route 52: I-5 to SR 25
State Route 54: I-5 to Briarwood Road
State Route 56: I-5 to Carmel Valley Road and I-15 to Black Mountain Road
State Route 67: Mapleview Street to I-8
State Route 78: I-5 to North Broadway
State Route 94: I-5 to Avocado Boulevard
State Route 125: SR 54 to SR 94
State Route 163: I-15 to I-5
State Route 905: Oro Vista Road to Otay Mesa Road
CMP Highways:
State Route 54: I-8 to SR 94
State Route 67: SR 78 to Mapleview Valley
State Route 75: I-5 (North) to I-5 (South)
State Route 76: Coast Highway to SR 79
State Route 78: North Broadway to Imperial County Line
State Route 79: Riverside County Line to I-8
State Route 94: Avocado Boulevard to Old Highway 80
State Route 282: Alameda Boulevard to Orange Avenue
CMP Arterials:
(1) Balboa Avenue: I-5 to I-15[1]
(2) Centre City Parkway: I-15 (North) to I-15 (South)
(3) Fletcher Parkway/Broadway/E. Main Street/Greenfield Drive: I-8 (West) to I-8 (East)
(4) La Jolla Village Drive/Miramar Road: I-5 to I-15
(5) Manchester Avenue/El Camino Real: I-5 to SR 76/Mission Avenue
(6) Nimitz Blvd./North Harbor Dr./Grape & Hawthorne Streets/Pacific Highway/Harbor Drive: I-8 to I-5
(7) Olivenhain Road/Rancho Santa Fe Road: El Camino Real to SR 78
(8) Otay Mesa Road-Interim SR 905: SR 905 (West) to SR 905 (East)[2]
(9) Palomar Airport Road/San Marcos Boulevard: I-5 to SR 78
(10) Sea World Drive/Friars Road/Mission Gorge Road/Woodside Avenue: I-5 to SR 67
(11) Scripps Poway Parkway: I-15 to SR 67
(12) SR 54 & Sweetwater Road-Interim SR 125: I-805 to Broadway[2]

[1]This CMP Arterial was formerly designated as CMP State Highway 274.
[2]These CMP Arterials are designated as interim facilities on the CMP network and will be replaced by a state highway following their construction.

Appendix E

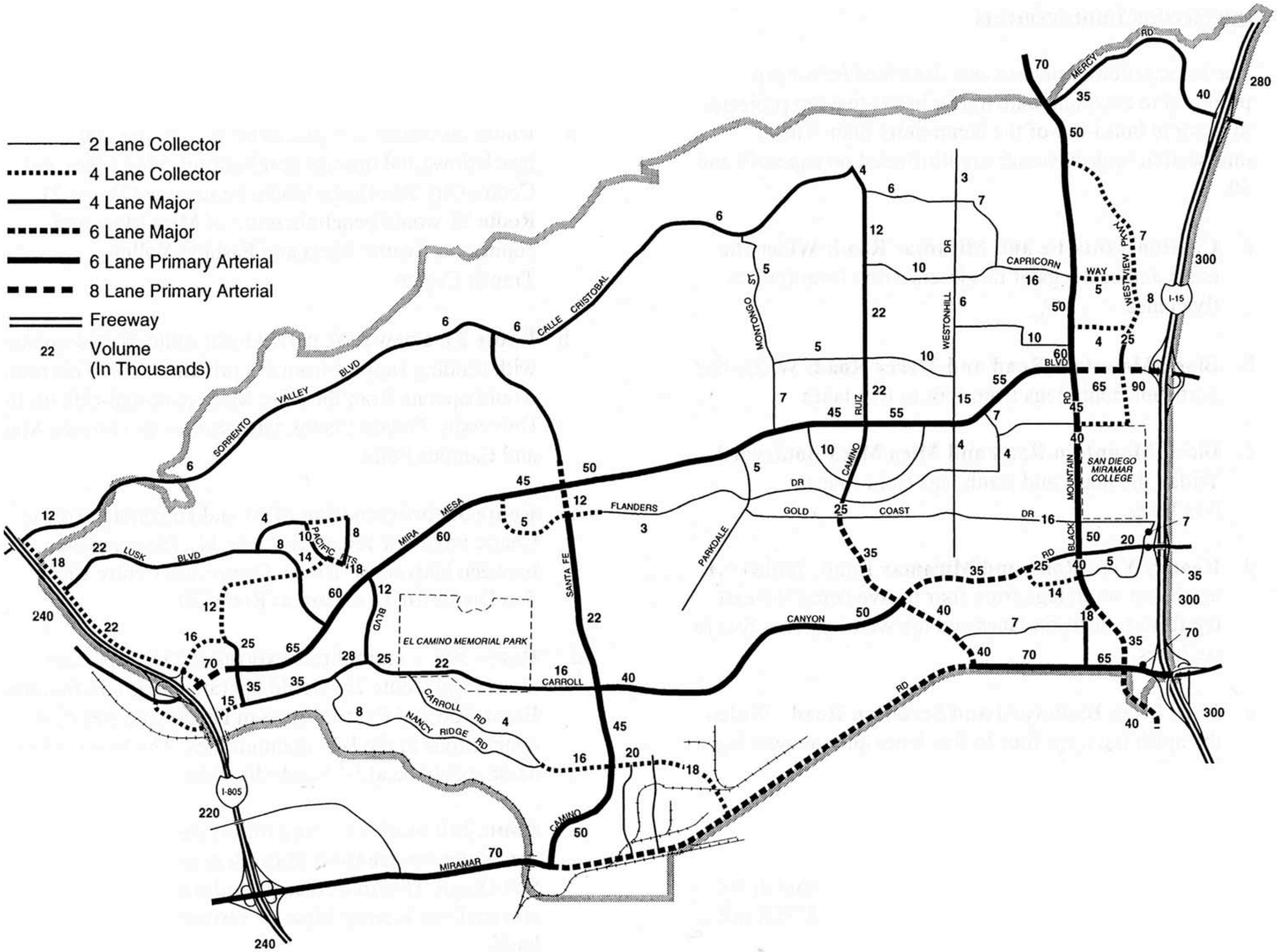
City of San Diego Community Roadway Classification Maps and Land Use



Circulation Element

Scripps Miramar Ranch Community Plan

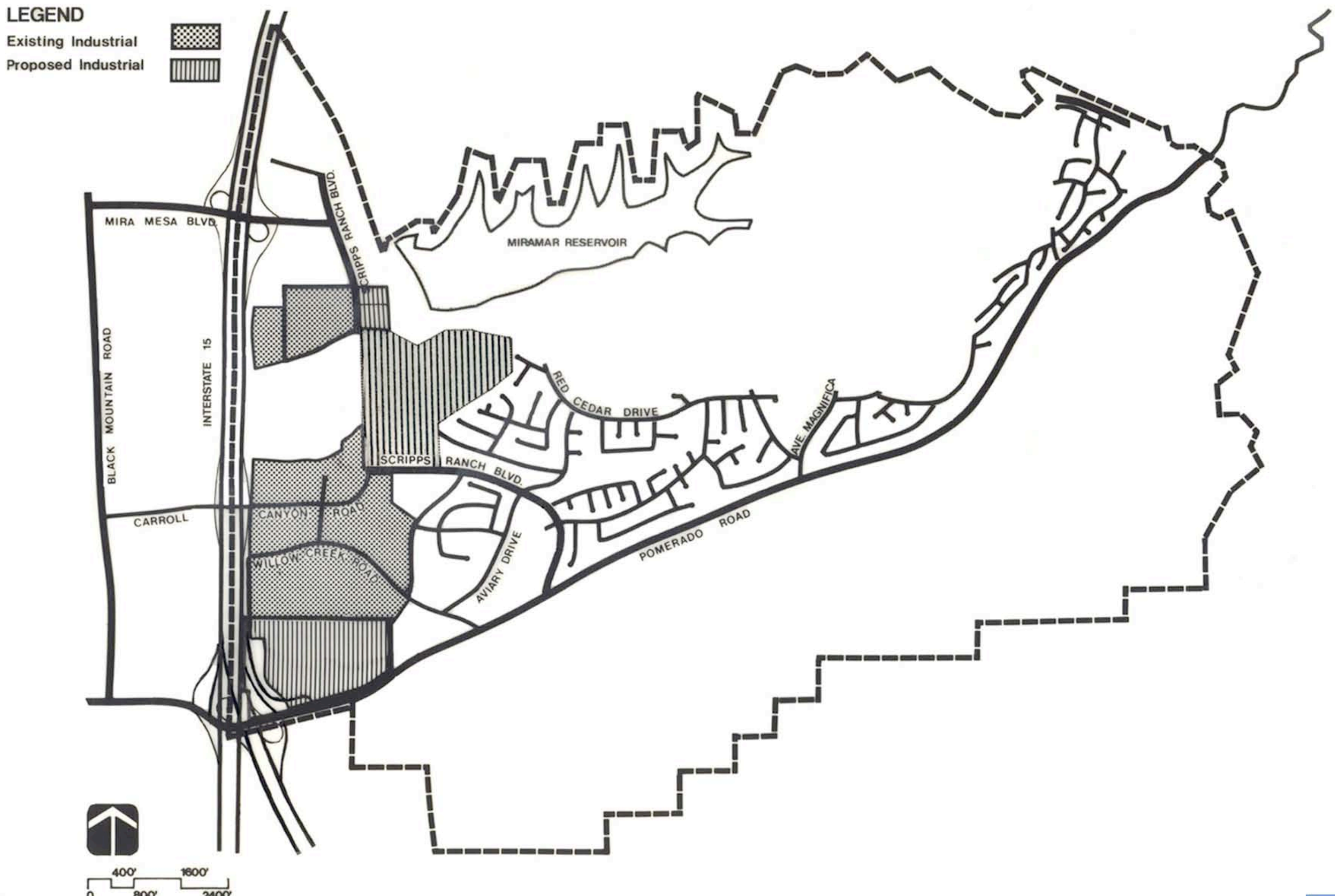
15
FIGURE



Horizon Year Average Daily Traffic and Recommended Street Classifications

Mira Mesa Community Plan

10 FIGURE



Industrial Element

Scripps Miramar Ranch Community Plan

9
FIGURE

Appendix F

Count Data

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

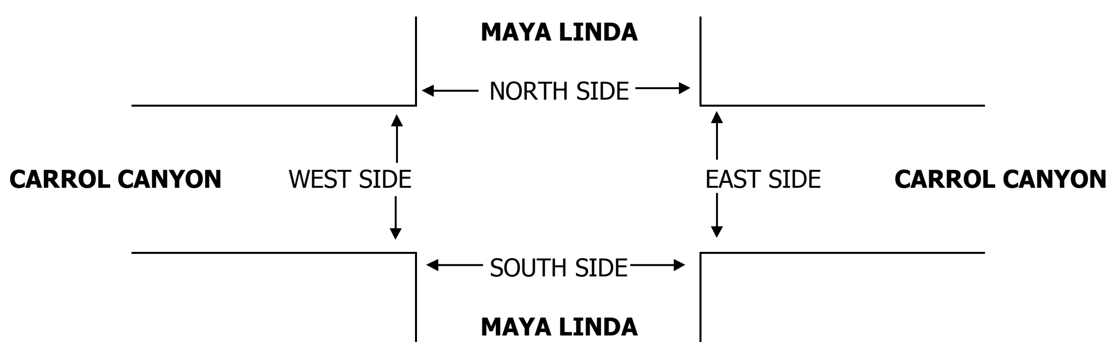
DATE:	LOCATION:	MIRA MESA	PROJECT #:	PTD14-1107-02
11/5/14	NORTH & SOUTH:	MAYA LINDA	LOCATION #:	1
WEDNESDAY	EAST & WEST:	CARROL CANYON	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND MAYA LINDA			SOUTHBOUND MAYA LINDA			EASTBOUND CARROL CANYON			WESTBOUND CARROL CANYON			
	LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM	7:00 AM	3	16	25	57	5	4	1	120	7	18	261	60	577
	7:15 AM	7	11	16	68	6	1	2	131	5	20	312	48	627
	7:30 AM	6	6	28	74	5	3	4	122	5	24	362	54	693
	7:45 AM	5	3	28	44	3	2	3	118	12	28	372	65	683
	8:00 AM	2	0	23	53	6	5	5	101	11	56	339	66	667
	8:15 AM	5	1	18	50	3	2	1	83	12	42	310	45	572
	8:30 AM	3	3	15	43	2	5	2	90	4	40	281	51	539
	8:45 AM	2	3	20	27	2	9	4	105	2	34	303	36	547
	VOLUMES	33	43	173	416	32	31	22	870	58	262	2,540	425	4,905
	APPROACH %	13%	17%	69%	87%	7%	6%	2%	92%	6%	8%	79%	13%	
	APP/DEPART	249	/	490	479	/	352	950	/	1,459	3,227	/	2,604	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	20	20	95	239	20	11	14	472	33	128	1,385	233	2,670
	APPROACH %	15%	15%	70%	89%	7%	4%	3%	91%	6%	7%	79%	13%	
	PEAK HR FACTOR		0.844			0.823			0.940			0.939		0.963
	APP/DEPART	135	/	267	270	/	181	519	/	806	1,746	/	1,416	0
PM	4:00 PM	2	7	45	38	1	4	4	217	6	15	116	62	517
	4:15 PM	5	8	39	31	1	5	7	239	5	15	147	50	552
	4:30 PM	3	4	62	23	5	1	4	223	5	10	137	72	549
	4:45 PM	7	15	55	36	3	4	2	215	7	16	141	66	567
	5:00 PM	2	10	79	29	4	5	6	168	7	14	156	61	541
	5:15 PM	5	8	84	37	2	5	6	177	7	22	148	67	568
	5:30 PM	8	12	93	39	8	6	5	182	6	13	142	50	564
	5:45 PM	2	6	81	55	2	1	4	197	6	21	113	70	558
	VOLUMES	34	70	538	288	26	31	38	1,618	49	126	1,100	498	4,416
	APPROACH %	5%	11%	84%	83%	8%	9%	2%	95%	3%	7%	64%	29%	
	APP/DEPART	642	/	606	345	/	201	1,705	/	2,444	1,724	/	1,165	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	22	45	311	141	17	20	19	742	27	65	587	244	2,240
	APPROACH %	6%	12%	82%	79%	10%	11%	2%	94%	3%	7%	66%	27%	
	PEAK HR FACTOR		0.836			0.840			0.879			0.945		0.986
	APP/DEPART	378	/	308	178	/	109	788	/	1,194	896	/	629	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

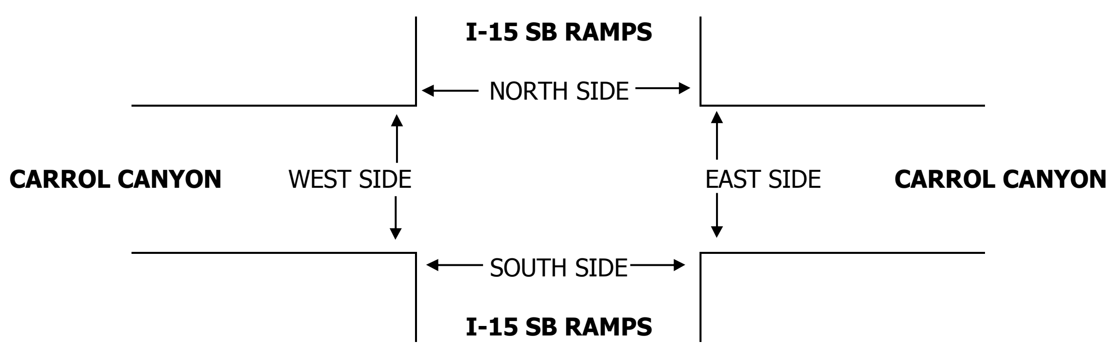
DATE:	LOCATION:	MIRA MESA	PROJECT #:	PTD14-1003-01
11/5/14	NORTH & SOUTH:	I-15 SB RAMPS	LOCATION #:	2
WEDNESDAY	EAST & WEST:	CARROL CANYON	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

N ▲ ◄ W E ► S ▼

	NORTHBOUND I-15 SB RAMPS			SOUTHBOUND I-15 SB RAMPS			EASTBOUND CARROL CANYON			WESTBOUND CARROL CANYON			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	X	X	1.3	0.3	0.3	X	2	0	1	2	X	
AM 7:00 AM				77	0	70		84	116	124	232		703
7:15 AM				84	0	116		99	121	133	284		837
7:30 AM				81	0	124		105	120	165	313		908
7:45 AM				95	1	142		91	101	144	333		907
8:00 AM				77	0	138		95	97	121	305		833
8:15 AM				91	0	126		99	70	78	278		742
8:30 AM				77	0	117		84	64	77	284		703
8:45 AM				80	0	118		77	70	81	226		652
VOLUMES	0	0	0	662	1	951	0	734	759	923	2,255	0	6,285
APPROACH %	0%	0%	0%	41%	0%	59%	0%	49%	51%	29%	71%	0%	
APP/DEPART	0	/	0	1,614	/	1,683	1,493	/	1,396	3,178	/	3,206	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	0	0	0	337	1	520	0	390	439	563	1,235	0	3,485
APPROACH %	0%	0%	0%	39%	0%	61%	0%	47%	53%	31%	69%	0%	
PEAK HR FACTOR		0.000			0.901			0.921			0.940		0.960
APP/DEPART	0	/	0	858	/	1,003	829	/	727	1,798	/	1,755	0
PM 4:00 PM				38	0	66		145	135	129	135		648
4:15 PM				55	0	80		170	140	135	134		714
4:30 PM				59	0	81		161	138	126	151		716
4:45 PM				42	0	74		181	121	145	161		724
5:00 PM				44	1	77		180	138	135	150		725
5:15 PM				58	0	75		190	121	114	166		724
5:30 PM				65	1	65		216	118	121	135		721
5:45 PM				69	0	66		213	103	101	121		673
VOLUMES	0	0	0	430	2	584	0	1,456	1,014	1,006	1,153	0	5,645
APPROACH %	0%	0%	0%	42%	0%	57%	0%	59%	41%	47%	53%	0%	
APP/DEPART	0	/	0	1,016	/	2,022	2,470	/	1,886	2,159	/	1,737	0
BEGIN PEAK HR		4:45 PM											
VOLUMES	0	0	0	209	2	291	0	767	498	515	612	0	2,894
APPROACH %	0%	0%	0%	42%	0%	58%	0%	61%	39%	46%	54%	0%	
PEAK HR FACTOR		0.000			0.944			0.947			0.921		0.998
APP/DEPART	0	/	0	502	/	1,015	1,265	/	976	1,127	/	903	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

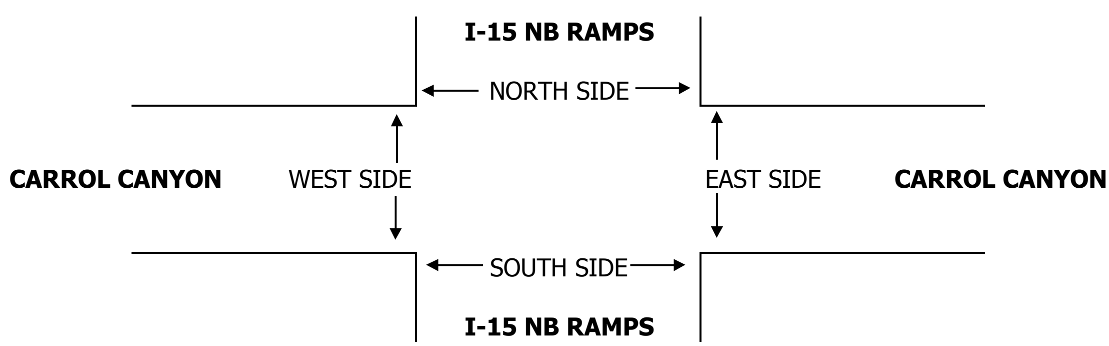
DATE:	LOCATION:	MIRA MESA	PROJECT #:	PTD14-1107-02
11/5/14	NORTH & SOUTH:	I-15 NB RAMPS	LOCATION #:	3
WEDNESDAY	EAST & WEST:	CARROL CANYON	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND I-15 NB RAMPS			SOUTHBOUND I-15 NB RAMPS			EASTBOUND CARROL CANYON			WESTBOUND CARROL CANYON			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
7:00 AM	164	0	180				44	145			199	45	777
7:15 AM	182	0	164				65	117			245	48	821
7:30 AM	231	0	178				62	103			250	38	862
7:45 AM	242	0	186				55	138			222	36	879
8:00 AM	171	1	173				41	132			265	26	809
8:15 AM	163	0	162				37	152			186	27	727
8:30 AM	163	0	145				37	104			176	28	653
8:45 AM	151	1	141				61	102			152	30	638
VOLUMES	1,467	2	1,329	0	0	0	402	993	0	0	1,695	278	6,166
APPROACH %	52%	0%	47%	0%	0%	0%	29%	71%	0%	0%	86%	14%	
APP/DEPART	2,798	/	682	0	/	0	1,395	/	2,322	1,973	/	3,162	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	826	1	701	0	0	0	223	490	0	0	982	148	3,371
APPROACH %	54%	0%	46%	0%	0%	0%	31%	69%	0%	0%	87%	13%	
PEAK HR FACTOR		0.893			0.000			0.924			0.964		0.959
APP/DEPART	1,528	/	372	0	/	0	713	/	1,191	1,130	/	1,808	0
PM													
4:00 PM	101	1	113				105	82			174	77	653
4:15 PM	108	1	135				113	114			182	61	714
4:30 PM	102	1	137				98	126			182	76	722
4:45 PM	118	1	148				99	136			168	56	726
5:00 PM	93	1	139				80	133			176	102	724
5:15 PM	104	0	147				103	139			202	80	775
5:30 PM	100	4	162				104	187			151	52	760
5:45 PM	96	4	139				111	180			124	65	719
VOLUMES	822	13	1,120	0	0	0	813	1,097	0	0	1,359	569	5,793
APPROACH %	42%	1%	57%	0%	0%	0%	43%	57%	0%	0%	70%	30%	
APP/DEPART	1,955	/	1,395	0	/	0	1,910	/	2,217	1,928	/	2,181	0
BEGIN PEAK HR		4:45 PM											
VOLUMES	415	6	596	0	0	0	386	595	0	0	697	290	2,985
APPROACH %	41%	1%	59%	0%	0%	0%	39%	61%	0%	0%	71%	29%	
PEAK HR FACTOR		0.952			0.000			0.843			0.875		0.963
APP/DEPART	1,017	/	682	0	/	0	981	/	1,191	987	/	1,112	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

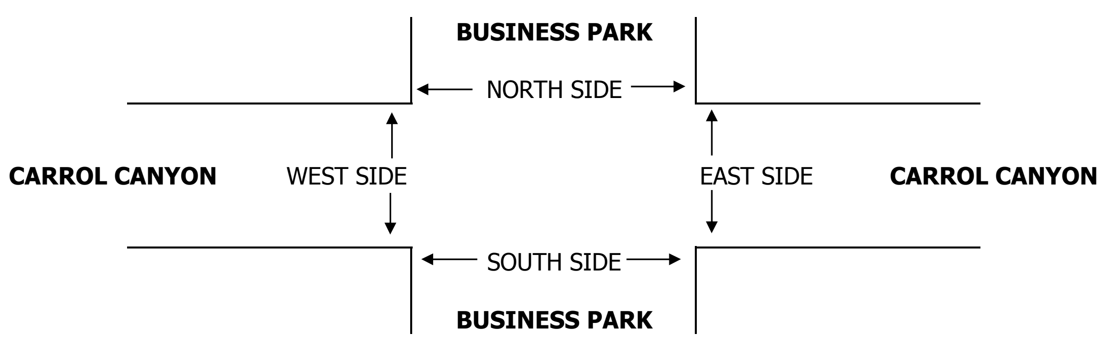
DATE:	LOCATION:	MIRA MESA	PROJECT #:	PTD14-1003-01
11/5/14	NORTH & SOUTH:	BUSINESS PARK	LOCATION #:	4
WEDNESDAY	EAST & WEST:	CARROL CANYON	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND BUSINESS PARK			SOUTHBOUND BUSINESS PARK			EASTBOUND CARROL CANYON			WESTBOUND CARROL CANYON			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	2	1	0	1	1	0	1	2	0	1	2	0	
AM	7:00 AM	55	0	18	1	2	10	10	181	88	44	174	11	594
AM	7:15 AM	50	1	22	3	1	9	22	168	80	51	235	12	654
AM	7:30 AM	68	2	26	2	2	10	26	177	95	22	235	8	673
AM	7:45 AM	51	1	15	0	8	11	23	184	121	19	212	9	654
AM	8:00 AM	66	0	11	1	7	3	22	156	116	20	194	5	601
AM	8:15 AM	42	1	9	2	2	2	15	162	105	25	162	4	531
AM	8:30 AM	68	0	12	1	4	4	20	135	88	26	151	3	512
AM	8:45 AM	55	0	11	0	1	5	16	144	70	11	144	2	459
AM	VOLUMES	455	5	124	10	27	54	154	1,307	763	218	1,507	54	4,678
AM	APPROACH %	78%	1%	21%	11%	30%	59%	7%	59%	34%	12%	85%	3%	
AM	APP/DEPART	584	/	213	91	/	1,008	2,224	/	1,441	1,779	/	2,016	0
AM	BEGIN PEAK HR		7:15 AM											
AM	VOLUMES	235	4	74	6	18	33	93	685	412	112	876	34	2,582
AM	APPROACH %	75%	1%	24%	11%	32%	58%	8%	58%	35%	11%	86%	3%	
AM	PEAK HR FACTOR		0.815			0.750			0.907			0.857		0.959
AM	APP/DEPART	313	/	131	57	/	542	1,190	/	765	1,022	/	1,144	0
PM	4:00 PM	88	3	12	2	0	10	7	131	50	12	132	3	450
PM	4:15 PM	70	2	10	6	1	15	5	152	40	11	126	6	444
PM	4:30 PM	84	1	21	7	2	33	8	165	55	15	138	5	534
PM	4:45 PM	95	0	22	12	1	30	11	188	68	18	128	1	574
PM	5:00 PM	96	1	16	8	0	25	7	222	70	20	144	0	609
PM	5:15 PM	88	2	11	3	3	12	6	220	44	15	135	1	540
PM	5:30 PM	70	1	12	5	1	11	2	242	66	11	112	2	535
PM	5:45 PM	54	0	15	1	1	10	1	242	60	10	116	2	512
PM	VOLUMES	645	10	119	44	9	146	47	1,562	453	112	1,031	20	4,198
PM	APPROACH %	83%	1%	15%	22%	5%	73%	2%	76%	22%	10%	89%	2%	
PM	APP/DEPART	774	/	77	199	/	574	2,062	/	1,725	1,163	/	1,822	0
PM	BEGIN PEAK HR		4:45 PM											
PM	VOLUMES	349	4	61	28	5	78	26	872	248	64	519	4	2,258
PM	APPROACH %	84%	1%	15%	25%	5%	70%	2%	76%	22%	11%	88%	1%	
PM	PEAK HR FACTOR		0.885			0.645			0.924			0.895		0.927
PM	APP/DEPART	414	/	34	111	/	317	1,146	/	961	587	/	946	0



WEDNESADAY - NOVEMBER 5TH, 2014 CITY: MIRA MESA PROJECT: PTD14-1107-02

CARROLL CANYON BTN I-15 NB RAMPS & BUSINESS PARK

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			6		9			12:00			135		165		
00:15			5		8			12:15			140		164		
00:30			1		9			12:30			167		141		
00:45			2	14	0	26	40	12:45			167	609	133	603	1212
01:00			2		4			13:00			153		135		
01:15			3		0			13:15			143		126		
01:30			2		6			13:30			179		123		
01:45			3	10	5	15	25	13:45			141	616	128	512	1128
02:00			1		4			14:00			167		146		
02:15			1		2			14:15			191		170		
02:30			3		4			14:30			187		285		
02:45			2	7	1	11	18	14:45			172	717	169	770	1487
03:00			3		4			15:00			185		170		
03:15			6		3			15:15			179		192		
03:30			3		1			15:30			211		215		
03:45			13	25	0	8	33	15:45			199	774	182	759	1533
04:00			7		6			16:00			185		244		
04:15			14		4			16:15			234		198		
04:30			15		5			16:30			256		222		
04:45			34	70	11	26	96	16:45			253	928	199	863	1791
05:00			37		13			17:00			246		255		
05:15			47		15			17:15			263		211		
05:30			89		28			17:30			317		161		
05:45			141	314	37	93	407	17:45			333	1159	170	797	1956
06:00			97		43			18:00			251		182		
06:15			159		68			18:15			206		123		
06:30			198		107			18:30			123		149		
06:45			260	714	149	367	1081	18:45			83	663	96	550	1213
07:00			278		238			19:00			71		98		
07:15			255		269			19:15			64		77		
07:30			255		247			19:30			66		55		
07:45			279	1067	215	969	2036	19:45			55	256	52	282	538
08:00			261		240			20:00			38		54		
08:15			269		174			20:15			47		45		
08:30			216		201			20:30			36		39		
08:45			211	957	142	757	1714	20:45			38	159	21	159	318
09:00			162		126			21:00			51		33		
09:15			131		114			21:15			46		40		
09:30			127		86			21:30			32		23		
09:45			127	547	100	426	973	21:45			22	151	19	115	266
10:00			100		107			22:00			14		20		
10:15			85		89			22:15			20		17		
10:30			98		85			22:30			10		22		
10:45			99	382	123	404	786	22:45			16	60	11	70	130
11:00			91		135			23:00			11		11		
11:15			126		132			23:15			13		8		
11:30			90		176			23:30			7		19		
11:45			118	425	158	601	1026	23:45			10	41	3	41	82
Total Vol.				4532		3703	**8235**					6133		5521	**11654**

Daily Totals

NB	SB	EB	WB	Combined
		10665	9224	**19889**

	AM			PM		
	EB	WB	Combined	EB	WB	Combined
Split %	55.0%	45.0%	**41.4%**	52.6%	47.4%	**58.6%**
Peak Hour	07:00	07:15	**07:00**	17:15	16:30	**17:00**
Volume	1067	971	**2036**	1164	887	**1956**
P.H.F.	0.96	0.90	**0.97**	0.87	0.87	**0.97**

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak AADT	Ahead AADT
11	15	SD	R	9.995	CLAIREMONT MESA BOULEVARD	13100	171000	169000	13200	154000	151000
11	15	SD	R	10.58	JCT. RTE. 52	13200	154000	151000	13800	180000	178000
11	15	SD	M	12.002	ROUTE 15S HOV LANES	13800	180000	178000	13300	173000	172000
11	15	SD	M	12.124	JCT. RTE. 163	13300	173000	172000	25500	302000	292000
11	15	SD	M	13.334	SAN DIEGO, MIRAMAR WAY	25500	302000	292000	23700	297000	289000
11	15	SD	M	14.285	SAN DIEGO, MIRAMAR/ POMERADO ROADS	23700	297000	289000	22200	278000	272000
11	15	SD	M	15	CARROLL CANYON ROAD	22200	278000	272000	21900	266000	258000
11	15	SD	M	15.924	MIRA MESA BOULEVARD	21900	266000	258000	19600	258000	249000
11	15	SD	M	17.311	SAN DIEGO, MERCY ROAD	19600	258000	249000	18800	247000	236000
11	15	SD	M	18.176	SAN DIEGO, POWAY ROAD	18800	247000	236000	16900	222000	207000
11	15	SD	M	19.468	JCT. RTE. 56	16900	222000	207000	18800	237000	229000

Appendix G

Existing Level of Service Calculations

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	15	549	139	1758	147	260	34
v/c Ratio	0.17	0.32	0.63	0.80	0.30	0.89	0.07
Control Delay	45.8	15.7	50.1	17.2	10.6	64.5	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	15.7	50.1	17.2	10.6	64.5	17.6
Queue Length 50th (ft)	8	103	75	357	18	136	9
Queue Length 95th (ft)	29	145	134	#653	63	#267	31
Internal Link Dist (ft)		856		730	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	90	1692	255	2203	542	323	518
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.32	0.55	0.80	0.27	0.80	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	472	33	128	1385	233	20	20	95	239	20	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3504		1770	3463			1674		1770	1764	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.60	1.00	
Satd. Flow (perm)	1770	3504		1770	3463			1624		1121	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	513	36	139	1505	253	22	22	103	260	22	12
RTOR Reduction (vph)	0	6	0	0	13	0	0	76	0	0	9	0
Lane Group Flow (vph)	15	543	0	139	1745	0	0	71	0	260	25	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	47.0		7.4	53.6			23.6		23.6	23.6	
Effective Green, g (s)	0.8	47.0		7.4	53.6			23.6		23.6	23.6	
Actuated g/C Ratio	0.01	0.52		0.08	0.60			0.26		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	15	1829		145	2062			425		293	462	
v/s Ratio Prot	0.01	0.16		c0.08	c0.50						0.01	
v/s Ratio Perm								0.04		c0.23		
v/c Ratio	1.00	0.30		0.96	0.85			0.17		0.89	0.05	
Uniform Delay, d1	44.6	12.2		41.1	14.8			25.6		31.9	24.8	
Progression Factor	1.00	1.00		0.99	0.87			1.00		1.00	1.00	
Incremental Delay, d2	232.4	0.4		44.6	2.6			0.2		25.9	0.0	
Delay (s)	277.0	12.6		85.5	15.6			25.8		57.8	24.9	
Level of Service	F	B		F	B			C		E	C	
Approach Delay (s)		19.6			20.7			25.8			54.0	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	901	612	1342	329	603
v/c Ratio	0.75	1.25	0.61	0.68	1.25
Control Delay	22.3	157.9	11.8	36.5	158.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	157.9	11.8	36.5	158.1
Queue Length 50th (ft)	156	~438	221	173	~430
Queue Length 95th (ft)	230	#641	283	273	#648
Internal Link Dist (ft)	500		564		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1204	491	2202	485	481
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	1.25	0.61	0.68	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	390	439	563	1235	0	0	0	0	337	1	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.92		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3258		1770	3539					1681	1516	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3258		1770	3539					1681	1516	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	424	477	612	1342	0	0	0	0	366	1	565
RTOR Reduction (vph)	0	227	0	0	0	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	674	0	612	1342	0	0	0	0	329	560	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		27.0		25.0	56.0					26.0	26.0	
Effective Green, g (s)		27.0		25.0	56.0					26.0	26.0	
Actuated g/C Ratio		0.30		0.28	0.62					0.29	0.29	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		977		491	2202					485	437	
v/s Ratio Prot		c0.21		c0.35	0.38					0.20	c0.37	
v/s Ratio Perm												
v/c Ratio		0.69		1.25	0.61					0.68	1.28	
Uniform Delay, d1		27.8		32.5	10.3					28.3	32.0	
Progression Factor		1.11		1.05	0.92					1.00	1.00	
Incremental Delay, d2		2.0		116.7	0.4					3.8	142.9	
Delay (s)		32.7		150.9	10.0					32.1	174.9	
Level of Service		C		F	A					C	F	
Approach Delay (s)		32.7			54.1			0.0			124.5	
Approach LOS		C			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	66.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	242	533	1228	575	560	526
v/c Ratio	0.95	0.27	0.96	0.96	0.97	0.71
Control Delay	85.2	10.9	45.0	59.1	59.0	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.2	10.9	45.0	59.1	59.0	15.9
Queue Length 50th (ft)	138	77	348	332	317	103
Queue Length 95th (ft)	#282	107	#495	#557	#557	237
Internal Link Dist (ft)		501	585		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	255	1966	1284	597	577	737
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.27	0.96	0.96	0.97	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	223	490	0	0	982	148	826	1	701	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.98		1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (prot)	1770	3539			3470		1681	1543	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (perm)	1770	3539			3470		1681	1543	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	533	0	0	1067	161	898	1	762	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	29	220	0	0	0
Lane Group Flow (vph)	242	533	0	0	1215	0	575	531	306	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	12.0	52.0			36.0		30.0	30.0	30.0			
Effective Green, g (s)	12.0	52.0			36.0		30.0	30.0	30.0			
Actuated g/C Ratio	0.13	0.58			0.40		0.33	0.33	0.33			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	236	2044			1388		560	514	501			
v/s Ratio Prot	c0.14	0.15			c0.35		0.34	c0.34				
v/s Ratio Perm									0.20			
v/c Ratio	1.03	0.26			0.88		1.03	1.03	0.61			
Uniform Delay, d1	39.0	9.4			24.9		30.0	30.0	25.1			
Progression Factor	0.69	1.62			2.11		1.00	1.00	1.00			
Incremental Delay, d2	53.9	0.2			6.1		45.0	48.3	5.5			
Delay (s)	80.7	15.5			58.7		75.0	78.3	30.6			
Level of Service	F	B			E		E	E	C			
Approach Delay (s)		35.9			58.7			62.1			0.0	
Approach LOS		D			E			E			A	

Intersection Summary			
HCM 2000 Control Delay	55.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	101	1193	122	989	255	84	7	56
v/c Ratio	0.44	0.87	0.64	0.73	0.66	0.14	0.08	0.15
Control Delay	42.2	29.2	54.0	27.0	46.5	7.1	43.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	29.2	54.0	27.0	46.5	7.1	43.5	16.2
Queue Length 50th (ft)	52	274	67	261	72	1	4	9
Queue Length 95th (ft)	105	365	#137	318	112	36	18	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	251	1510	207	1450	403	615	83	384
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.79	0.59	0.68	0.63	0.14	0.08	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	685	412	112	876	34	235	4	74	6	18	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3340		1770	3519		3433	1597		1770	1683	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3340		1770	3519		3433	1597		1770	1683	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	745	448	122	952	37	255	4	80	7	20	36
RTOR Reduction (vph)	0	104	0	0	3	0	0	53	0	0	29	0
Lane Group Flow (vph)	101	1089	0	122	986	0	255	31	0	7	27	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.6	33.4		9.3	33.1		12.9	30.2		0.8	18.1	
Effective Green, g (s)	9.6	33.4		9.3	33.1		12.9	30.2		0.8	18.1	
Actuated g/C Ratio	0.11	0.37		0.10	0.37		0.14	0.34		0.01	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	189	1243		183	1298		493	537		15	339	
v/s Ratio Prot	0.06	c0.33		0.07	c0.28		c0.07	0.02		c0.00	c0.02	
v/s Ratio Perm												
v/c Ratio	0.53	0.88		0.67	0.76		0.52	0.06		0.47	0.08	
Uniform Delay, d1	37.9	26.2		38.7	24.8		35.5	20.1		44.2	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	7.2		8.8	2.6		0.9	0.2		21.2	0.5	
Delay (s)	40.8	33.4		47.6	27.4		36.4	20.3		65.5	29.5	
Level of Service	D	C		D	C		D	C		E	C	
Approach Delay (s)		34.0			29.6			32.4			33.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	21	836	71	903	411	153	40
v/c Ratio	0.12	0.53	0.34	0.46	0.68	1.01	0.08
Control Delay	26.6	16.8	29.4	10.7	13.8	100.0	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	16.8	29.4	10.7	13.8	100.0	8.3
Queue Length 50th (ft)	7	121	24	70	56	~55	5
Queue Length 95th (ft)	25	#212	#61	#235	108	#128	19
Internal Link Dist (ft)		856		923	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	171	1568	207	1957	831	242	752
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.53	0.34	0.46	0.49	0.63	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	742	27	65	587	244	22	45	311	141	17	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96			0.89		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3521		1770	3383			1651		1770	1709	
Flt Permitted	0.95	1.00		0.95	1.00			0.98		0.30	1.00	
Satd. Flow (perm)	1770	3521		1770	3383			1630		564	1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	807	29	71	638	265	24	49	338	153	18	22
RTOR Reduction (vph)	0	3	0	0	54	0	0	159	0	0	16	0
Lane Group Flow (vph)	21	833	0	71	849	0	0	252	0	153	24	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.9	26.0		5.6	30.7			16.4		16.4	16.4	
Effective Green, g (s)	0.9	26.0		5.6	30.7			16.4		16.4	16.4	
Actuated g/C Ratio	0.02	0.43		0.09	0.51			0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	26	1525		165	1730			445		154	467	
v/s Ratio Prot	0.01	c0.24		c0.04	0.25						0.01	
v/s Ratio Perm								0.15		c0.27		
v/c Ratio	0.81	0.55		0.43	0.49			0.57		0.99	0.05	
Uniform Delay, d1	29.5	12.6		25.7	9.6			18.7		21.7	16.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	94.5	1.4		1.8	1.0			1.7		70.3	0.0	
Delay (s)	124.0	14.0		27.5	10.5			20.4		92.0	16.1	
Level of Service	F	B		C	B			C		F	B	
Approach Delay (s)		16.7			11.8			20.4			76.3	
Approach LOS		B			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1375	560	665	204	341
v/c Ratio	1.00	0.96	0.25	0.76	0.67
Control Delay	49.4	61.9	3.9	54.5	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	61.9	3.9	54.5	12.7
Queue Length 50th (ft)	362	~327	53	115	12
Queue Length 95th (ft)	#528	#537	72	#211	98
Internal Link Dist (ft)	647		849		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1376	581	2656	298	529
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.00	0.96	0.25	0.68	0.64

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	767	498	515	612	0	0	0	0	209	2	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.94		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3330		1770	3539					1681	1519	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3330		1770	3539					1681	1519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	834	541	560	665	0	0	0	0	227	2	316
RTOR Reduction (vph)	0	105	0	0	0	0	0	0	0	0	265	0
Lane Group Flow (vph)	0	1270	0	560	665	0	0	0	0	204	76	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		30.3		33.3	67.6					14.4	14.4	
Effective Green, g (s)		30.3		33.3	67.6					14.4	14.4	
Actuated g/C Ratio		0.34		0.37	0.75					0.16	0.16	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1121		654	2658					268	243	
v/s Ratio Prot		c0.38		c0.32	0.19					c0.12	0.05	
v/s Ratio Perm												
v/c Ratio		1.13		0.86	0.25					0.76	0.31	
Uniform Delay, d1		29.8		26.1	3.4					36.2	33.4	
Progression Factor		1.00		0.77	0.30					1.00	1.00	
Incremental Delay, d2		71.1		6.1	0.1					12.0	0.7	
Delay (s)		101.0		26.3	1.2					48.2	34.1	
Level of Service		F		C	A					D	C	
Approach Delay (s)		101.0			12.6			0.0			39.4	
Approach LOS		F			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	55.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	420	647	1073	383	367	356
v/c Ratio	0.92	0.29	0.92	0.82	0.65	0.57
Control Delay	59.7	7.8	41.1	46.8	17.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	7.8	41.1	46.8	17.5	10.2
Queue Length 50th (ft)	230	77	292	213	76	30
Queue Length 95th (ft)	#399	105	#427	#370	186	115
Internal Link Dist (ft)		731	751		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	472	2241	1167	466	567	626
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.29	0.92	0.82	0.65	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	386	595	0	0	697	290	415	6	596	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	1770	3539			3383		1681	1479	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	1770	3539			3383		1681	1479	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	420	647	0	0	758	315	451	7	648	0	0	0
RTOR Reduction (vph)	0	0	0	0	51	0	0	156	250	0	0	0
Lane Group Flow (vph)	420	647	0	0	1022	0	383	211	106	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	21.0	62.0			37.0		20.0	20.0	20.0			
Effective Green, g (s)	21.0	62.0			37.0		20.0	20.0	20.0			
Actuated g/C Ratio	0.23	0.69			0.41		0.22	0.22	0.22			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	413	2437			1390		373	328	334			
v/s Ratio Prot	c0.24	0.18			c0.30		c0.23	0.14				
v/s Ratio Perm									0.07			
v/c Ratio	1.02	0.27			0.74		1.03	0.64	0.32			
Uniform Delay, d1	34.5	5.3			22.4		35.0	31.8	29.3			
Progression Factor	0.62	2.35			2.19		1.00	1.00	1.00			
Incremental Delay, d2	33.8	0.1			3.0		53.6	9.4	2.5			
Delay (s)	55.1	12.7			52.1		88.6	41.2	31.7			
Level of Service	E	B			D		F	D	C			
Approach Delay (s)		29.4			52.1			54.6			0.0	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	1218	70	568	379	70	30	90
v/c Ratio	0.14	0.89	0.56	0.42	0.75	0.11	0.28	0.21
Control Delay	34.2	32.6	58.9	22.4	46.7	7.5	48.0	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	32.6	58.9	22.4	46.7	7.5	48.0	9.4
Queue Length 50th (ft)	16	316	40	94	108	2	17	2
Queue Length 95th (ft)	37	#425	#98	196	#170	31	45	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	205	1503	127	1702	534	621	106	429
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.81	0.55	0.33	0.71	0.11	0.28	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

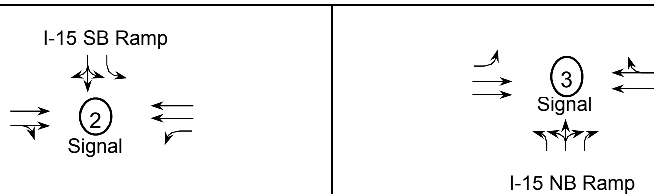
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	872	248	64	519	4	349	4	61	28	5	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3422		1770	3535		3433	1599		1770	1599	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3422		1770	3535		3433	1599		1770	1599	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	948	270	70	564	4	379	4	66	30	5	85
RTOR Reduction (vph)	0	30	0	0	1	0	0	43	0	0	67	0
Lane Group Flow (vph)	28	1188	0	70	567	0	379	27	0	30	23	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.7	35.0		4.5	32.8		14.2	30.7		2.8	19.3	
Effective Green, g (s)	6.7	35.0		4.5	32.8		14.2	30.7		2.8	19.3	
Actuated g/C Ratio	0.08	0.39		0.05	0.37		0.16	0.34		0.03	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	1345		89	1302		547	551		55	346	
v/s Ratio Prot	0.02	c0.35		c0.04	0.16		c0.11	0.02		c0.02	c0.01	
v/s Ratio Perm												
v/c Ratio	0.21	0.88		0.79	0.44		0.69	0.05		0.55	0.07	
Uniform Delay, d1	38.7	25.1		41.8	21.1		35.3	19.4		42.5	27.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	7.2		35.5	0.2		3.8	0.2		10.6	0.4	
Delay (s)	39.5	32.3		77.3	21.4		39.1	19.6		53.1	28.1	
Level of Service	D	C		E	C		D	B		D	C	
Approach Delay (s)		32.5			27.5			36.1			34.3	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Signalized Intersection
CAPACITY ANALYSIS

Location: I-15/Carroll Canyon Rd **Existing**

DIAGRAM AND TRAFFIC FLOWS:



Intersection 2 (I-15 SB Ramp)

Approach	Movement	AM	(PM)
Southbound	Right	520	(291)
Southbound	Through	1	(2)
Southbound	Left	337	(209)
Eastbound	Through	390	(767)
Eastbound	Right	439	(498)
Westbound	Through	1235	(612)
Westbound	Left	563	(515)

Intersection 3 (I-15 NB Ramp)

Approach	Movement	AM	(PM)
Eastbound	Left	223	(386)
Eastbound	Through	490	(595)
Westbound	Right	148	(290)
Westbound	Through	982	(697)
Northbound	Left	826	(415)
Northbound	Through	1	(6)
Northbound	Right	701	(596)

LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
112 (193); 123 (149); 123 (149) 327 (533); 327 (533) RTOR	RTOR 261 (147); 337 (209) 112 (193); 123 (149); 123 (149)	309 (153); 309 (153); 282 (258) 439 (279); 439 (279); 439 (279) RTOR	RTOR 543 (494); 543 (494) 309 (153); 309 (153); 282 (258)

RTOR: Right Turn on Red Observed

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1 AM	(PM)	PHASE 2 AM	(PM)	PHASE 3 AM	(PM)	PHASE 4 AM	(PM)
327	(533)	337	(209)	439	(279)	543	(494)

TOTAL OPERATING LEVEL (ILV/HR)

AM Total	1646
(PM) Total	(1515)

STATUS
AM **At Capacity**
(PM) **At Capacity**

AM	(PM)	
-	-	< 1,200 ILV/HR.
-	-	> 1,200 but < 1,500 ILV/HR.
X	X	> 1,500 ILV/HR (CAPACITY)

Appendix H

City of San Diego Trip Generation Manual Excerpts

San Diego Municipal Code

Land Development Code

Trip Generation Manual

Revised May 2003

Printed on recycled paper

This information, document, or portions thereof, will be made available in alternative formats upon request.

TABLE 1

May 2003

TRIP GENERATION RATE SUMMARY
(WEEKDAY)

LAND USE	DRIVEWAY [1][2] VEHICLE TRIP RATE	CUMULATIVE [8] VEHICLE TRIP RATE	PEAK HOUR AND IN/OUT RATIO AM (IN:OUT)	PM IN:OUT)
AGRICULTURE (OPEN SPACE) [3]	2 trips/acre	2 trips/acre	- -	- -
AIRPORT [3]				
Commercial	100 trips/flight; 60 trips/acre	100 trips/flight; 60 trips/acre	6% (6:4)	7% (5:5)
General Aviation	2 trips/flight; 6 trips/acre	2 trips/flight; 6 trips/acre	- -	- -
CEMETERY	5 trips/acre	5 trips/acre	- -	- -
COMMERCIAL-RETAIL [4] [5]				
Automobile Services:				
Car Dealer	50 trips/1,000 sq. ft.; 300 trips/acre	45 trips/1,000 sq. ft.; 297 trips/acre	5% (7:3)	8% (4:6)
Carwash:				
Full service	900 trips/site; 600 trips/acre	450 trips/site; 300 trips/acre	4% (5:5)	9% (5:5)
Self service	100 trips/wash stall	50 trips/wash stall	4% (5:5)	8% (5:5)
Gasoline Stations:	130 trips/vehicle fueling space; 750 trips/station	26 trips/vehicle fueling space; 150 trips/station	7% (5:5)	11% (5:5)
With food mart	150 trips/vehicle fueling space	30 trips/vehicle fueling space	8% (5:5)	8% (5:5)
With fully automated carwash	135 trips/vehicle fueling space	27 trips/vehicle fueling space	- -	- -
With food mart & fully automated carwash	155 trips/vehicle fueling space	31 trips/vehicle fueling space	8% (5:5)	9% (5:5)
Parts Sale	62 trips/1,000 sq. ft.	56 trips/1,000 sq. ft.	4% (5:5)	10% (5:5)
Repair Shop	20 trips/1,000 sq. ft.; 20 trips/service stall; 400 trips acre	18 trips/1,000 sq. ft.; 19 trips/service stall	8% (7:3)	11% (4:6)
Tire Store	25 trips/1,000 sq. ft.; 30 trips/service stall	23 trips/1,000 sq. ft.; 27 trips/service stall	7% (6:4)	11% (5:5)
Convenience Market Chain:				
Open Up to 16 Hours Per Day	500 trips/1,000 sq. ft.	250 trips/1,000 sq. ft.	8% (5:5)	8% (5:5)
Open 24 Hours	700 trips/1,000 sq. ft.	350 trips/1,000 sq. ft.	9% (5:5)	7% (5:5)
Discount Store/Discount Club	70 trips/1,000 sq. ft.	49 trips/1,000 sq. ft.	2% (6:4)	10% (5:5)
Drugstore	90 trips/1,000 sq. ft.	40 trips/1,000 sq. ft.	4% (6:4)	10% (5:5)
Furniture Store	6 trips/1,000 sq. ft.; 100 trips/acre	5.4 trips/1,000 sq. ft.	4% (7:3)	9% (5:5)
Lumber/Home Improvement Store	30 trips/1,000 sq. ft.; 150 trips/acre	27 trips/1,000 sq. ft.; 135 trips/acre	7% (6:4)	9% (5:5)
Nursery	40 trips/1,000 sq. ft.; 90 trips/acre	36 trips/1,000 sq. ft.; 81 trips/acre	3% (6:4)	10% (5:5)
Restaurant:				
Quality	100 trips/1,000 sq. ft.; 3 trips/seat; 500 trips/acre	90 trips/1,000 sq. ft.; 2.7 trips/seat; 450 trips/acre	1% (6:4)	8% (7:3)
High Turnover (sit-down)	130 trips/1,000 sq. ft.; 7 trips/seat; 1,200 trips/acre	104 trips/1,000 sq. ft.; 5.6 trips/seat; 460 trips/acre	8% (5:5)	8% (6:4)
Fast Food (with or without drive-through)	700 trips/1,000 sq. ft.; 22 trips/seat; 3,000 trips/acre	420 trips/1,000 sq. ft.; 13.2 trips/seat; 1,800 trips/acre	4% (6:4)	8% (5:5)
Shopping Center:				
Neighborhood (30,000 sq. ft. or more GLA on 4 or more acres)	120 trips/1,000 sq. ft. GLA; 1,200 trips/acre	72 trips/1,000 sq. ft.; 720 trips/acre	4% (6:4)	11% (5:5)
Community (100,000 sq. ft. or more GLA on 10 or more acres)	70 trips/1,000 sq. ft. GLA; 700 trips/acre	49 trips/1,000 sq. ft.; 490 trips/acre	3% (6:4)	10% (5:5)
Regional (300,000 sq. ft. or more GLA) (6)	Ln(T) = 0.756 Ln(x) + 5.25 *	0.8 [Ln (T) = 0.756 Ln (x) + 5.25] *	2% (7:3)	9% (5:5)
Specialty Retail Center/Strip Commercial	40 trips/1,000 sq. ft.; 400 trips/acre	36 trips/1,000 sq. ft.; 360 trips/acre	3% (6:4)	9% (5:5)
Supermarket	150 trips/1,000 sq. ft.; 2,000 trips/acre	90 trips/1,000 sq. ft.; 2,000 trips/acre	4% (7:3)	10% (5:5)

* See Table 2

TABLE 1 (Continued)

TRIP GENERATION RATE SUMMARY
(WEEKDAY)

LAND USE	DRIVEWAY (1) (2) VEHICLE TRIP RATE	CUMULATIVE (8) VEHICLE TRIP RATE	PEAK HOUR AND IN/OUT RATIO AM (IN:OUT)	PM (IN:OUT)
RESIDENTIAL (3)				
Congregate Care Facility	2 trips/dwelling unit	2 trips/dwelling unit	3% (6:4)	8% (5:5)
Estate Housing	12 trips/dwelling unit	12 trips/dwelling unit	- -	- -
Mobile Home	5 trips/dwelling unit; 40 trips/acre	5 trips/dwelling unit; 40 trips/acre	9% (3:7)	12% (6:4)
Multiple Dwelling Unit:				
Under 20 dwelling units/acre	8 trips/dwelling unit	8 trips/dwelling unit	8% (2:8)	10% (7:3)
Over 20 dwelling units/acre	6 trips/dwelling unit	6 trips/dwelling unit	8% (2:8)	9% (7:3)
Retirement/Senior Citizen Housing	4 trips/dwelling unit	4 trips/dwelling unit	- -	- -
Single Family Detached:				
Urbanized Area (1)	9 trips/dwelling unit	9 trips/dwelling unit	8% (2:8)	10% (7:3)
Urbanizing Area (1)	10 trips/dwelling unit	10 trips/dwelling unit	8% (2:8)	10% (7:3)
TRANSPORTATION FACILITIES (3)				
Bus Depot	25 trips/1,000 sq. ft.	25 trips/1,000 sq. ft.		
Park & Ride Lots	400 trips/acre; 600 trips/paved acre	400 trips/acre; 600 trips/paved acre	14% (7:3)	15% (3:7)
Transit Station (rail)	300 trips/acre	300 trips/acre	14% (7:3)	15% (3:7)

Notes:

(1) From the 1990 Trip Generation Manual. Driveway rates reflect trips that are generated by a site. These rates are used to calculate the total number of trips that impact the project and its immediate vicinity.

(2) Does not include trip rates for Centre City area. See Table 5.

(3) San Diego Association of Governments (SANDAG), "Traffic Generators," San Diego, California, December 1996, and July 1998.

(4) City of San Diego memo, "Trip Generation Rate for Churches," December 9, 1992.

(5) Refer to Cumulative Vehicle Trip Rate column for reduced trip rates.

(6) Ln = Natural logarithm; fitted curve logarithmic equation is used for Commercial Office and Regional Shopping Center. For example, the trip generation of an Office Building with 100,000 sq. ft. of GLA is: Ln(T) = 0.756 Ln(100) + 3.95, or Ln(T) = 0.756 (4.60517) + 3.95, or Ln(T) = 3.481509 + 3.95, or Ln(T) = 7.431509, which is 1,688 trips. The trip generation of a Regional Shopping Center with 1,000,000 sq. ft. of GLA is: Ln(T) = 0.756 Ln(1,000) + 5.25, or Ln(T) = 0.756 (6.907755) + 5.25, or Ln(T) = 5.222263 + 5.25, or Ln(T) = 10.47226, which is 35,322 trips. See Table 2 for calculated trip generation for selected sizes of Regional Shopping Centers, and Table 3 for calculated trip generation for selected sizes of Commercial Offices. GLA = Gross Leasable Area; T = trips; x = GLA in 1,000 square feet.

(7) Institute of Transportation Engineers, "Trip Generation," 5th and 6th Editions, Washington, District of Columbia, 1991 and 1998.

(8) Trips made to a site are Pass-By and Cumulative trips. See Appendix A for definitions of these trips. Cumulative rates are used to determine the community-wide impact of a new project.

Appendix I

Signal Warrant Calculations

EXISTING + PROJECT

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

CARROLL CANYON POSTED AT 35 MPH EAST OF I-15

COUNT DATE ______

CALC ______ DATE ______

CHK ______ DATE ______

DIST ______ CO ______ RTE ______ PM ______

Major St: CARROLL CANYON RD Critical Approach Speed . 42* mph

Minor St: PROJECT MAIN DRIVEWAY Critical Approach Speed ______ mph

35 MPH

*CITY OF SAN DIEGO 2006 SURVEY

Speed limit or critical speed on major street traffic > 40 mph .... ☐ or
In built up area of isolated community of < 10,000 population .... ☐ } **RURAL (R)**

☒ **URBAN (U)**

(Based on Estimated Average Daily Traffic - See Note)

URBAN ..... ✓ ..... RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume Satisfied ______ Not Satisfied ✓	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban	Rural	Urban	Rural
1 .... / 1	8,000	5,600	2,400	1,680
2 or More .... / 1	9,600	6,720	2,400	1,680
2 or More 19889 (FIG 4) / 2 or More 1,602*	9,600 ✓	6,720	3,200 ✗	2,240
1 .... / 2 or More	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic Satisfied ✓ Not Satisfied ______	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban	Rural	Urban	Rural
1 .... / 1	12,000	8,400	1,200	850
2 or More .... / 1	14,400	10,080	1,200	850
2 or More 19889 / 2 or More 1,602*	14,400 ✓	10,080	1,600 ✓	1,120
1 .... / 2 or More	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B Satisfied ______ Not Satisfied ______ No one condition satisfied, but following conditions fulfilled 80% or more .... ______ A ______ B	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

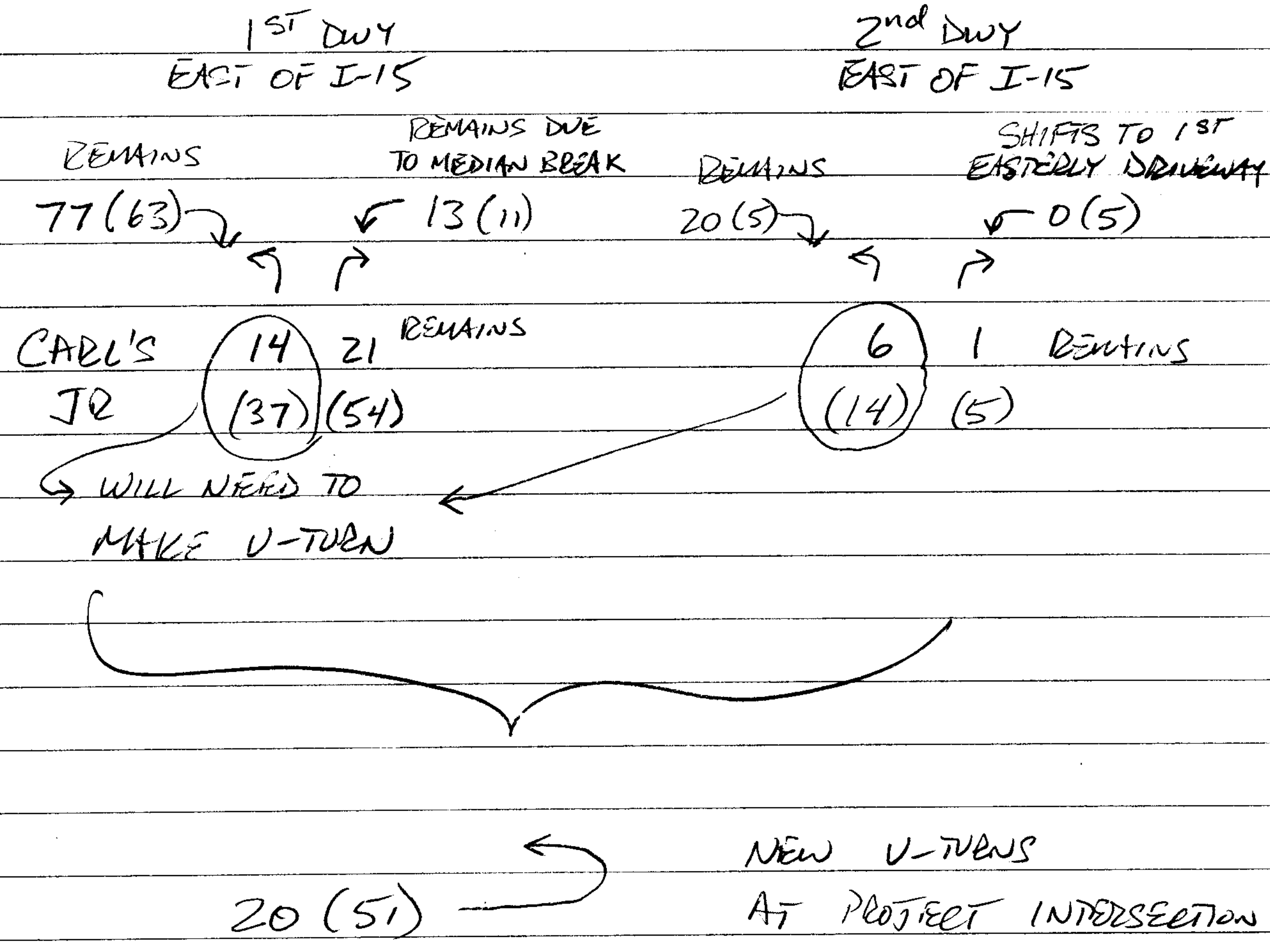
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

* PROJECT ADT = 4,004 (2-WAY) ⇒ 2,002 OUTBOUND × 0.8 (TO ACCOUNT FOR RIGHT-IN RIGHT-OUT DRIVEWAY ∴ MAIN DRIVEWAY OUTBOUND = 1,602 ADT.

Appendix J

Redirected Traffic Due to Installation of Raised Median

TRAFFIC FROM SOUTH SIDE OF CARROLL CANYON RD THAT WILL MAKE A U-TURN AT THE NEW INTERSECTION AFTER CITY OF SAN DIEGO REQUIRES CONSTRUCTION OF RAISED MEDIAN AS PART OF PRIME CLASSIFICATION ON CARROLL CANYON RD



AM (PM)

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TRAFFIC DATA SERVICES

DATE:	LOCATION:	MIRA MESA	PROJECT #:	CA11-1118-02
11/16/11	NORTH & SOUTH:	WEST DWY	LOCATION #:	2
WEDNESDAY	EAST & WEST:	CARROLL CANYON	CONTROL:	1-WAY STOP (NB)

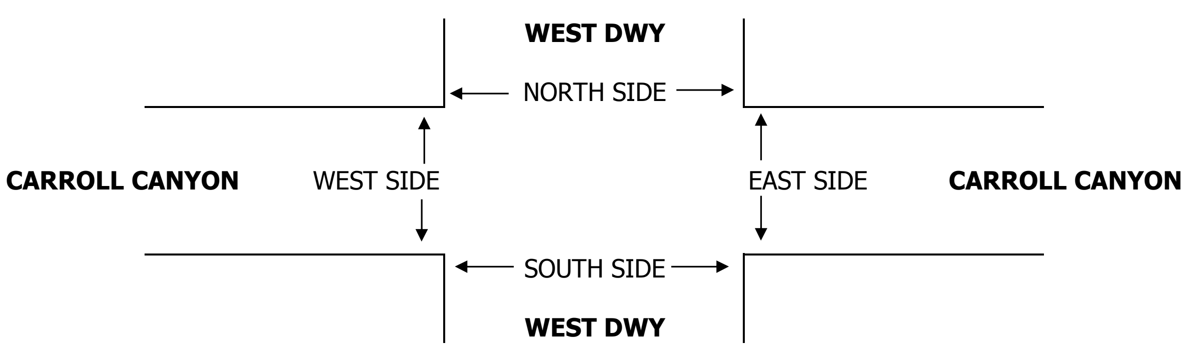
NOTES:

Driveway to Eucalyptus Square (Carl's Jr)

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND WEST DWY			SOUTHBOUND WEST DWY			EASTBOUND CARROLL CANYON			WESTBOUND CARROLL CANYON			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0.5		0.5						0	0			
AM	7:00 AM	1		6						20	1			28
AM	7:15 AM	4		6						12	4			26
AM	7:30 AM	4		9						15	2			30
AM	7:45 AM	5		3						27	1			36
AM	8:00 AM	5		6						15	5			31
AM	8:15 AM	1		6						14	3			24
AM	8:30 AM	4		6						21	4			35
AM	8:45 AM	5		5						15	2			27
AM	VOLUMES	29	0	47	0	0	0	0	0	139	22	0	0	237
AM	APPROACH %	38%	0%	62%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
AM	APP/DEPART	76	/	0	0	/	161	139	/	47	22	/	29	0
AM	BEGIN PEAK HR		7:45 AM											
AM	VOLUMES	15	0	21	0	0	0	0	0	77	13	0	0	126
AM	APPROACH %	42%	0%	58%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
AM	PEAK HR FACTOR		0.818			0.000			0.713			0.650		0.875
AM	APP/DEPART	36	/	0	0	/	90	77	/	21	13	/	15	0
PM	4:00 PM	6		15						12	1			34
PM	4:15 PM	12		11						13	7			43
PM	4:30 PM	6		10						11	7			34
PM	4:45 PM	9		9						19	4			41
PM	5:00 PM	5		14						11	1			31
PM	5:15 PM	12		16						19	2			49
PM	5:30 PM	11		15						14	4			44
PM	5:45 PM	10		11						12	3			36
PM	VOLUMES	71	0	101	0	0	0	0	0	111	29	0	0	312
PM	APPROACH %	41%	0%	59%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
PM	APP/DEPART	172	/	0	0	/	140	111	/	101	29	/	71	0
PM	BEGIN PEAK HR		4:45 PM											
PM	VOLUMES	37	0	54	0	0	0	0	0	63	11	0	0	165
PM	APPROACH %	41%	0%	59%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
PM	PEAK HR FACTOR		0.813			0.000			0.829			0.688		0.842
PM	APP/DEPART	91	/	0	0	/	74	63	/	54	11	/	37	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TRAFFIC DATA SERVICES

DATE:	LOCATION:	MIRA MESA	PROJECT #:	CA11-1118-02
11/16/11	NORTH & SOUTH:	EAST DWY	LOCATION #:	1
WEDNESDAY	EAST & WEST:	CARROLL CANYON	CONTROL:	1-WAY STOP (NB)

NOTES:

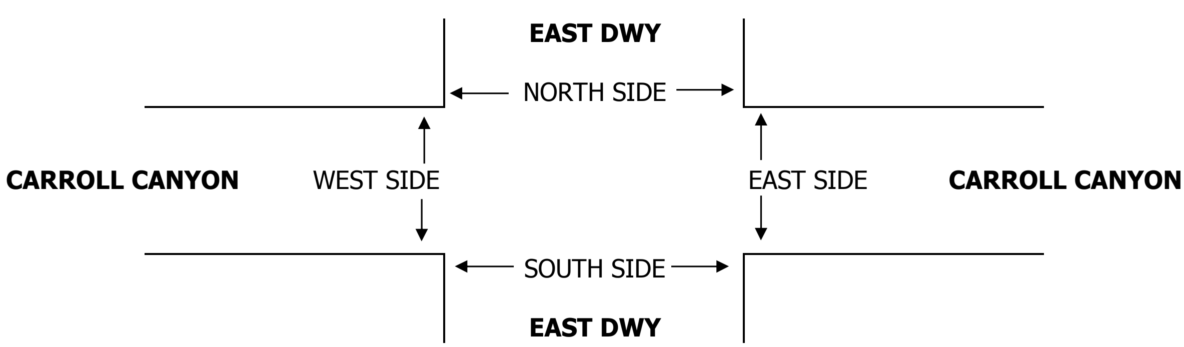
Driveway to Teledyne Impulse

AM / PM / MD / OTHER / OTHER

▲ N / ◄ W / E ► / S ▼

	NORTHBOUND EAST DWY			SOUTHBOUND EAST DWY			EASTBOUND CARROLL CANYON			WESTBOUND CARROLL CANYON			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5		0.5						0	0			
AM													
7:00 AM	0		0						4	1			5
7:15 AM	1		0						5	0			6
7:30 AM	0		0						4	0			4
7:45 AM	0		0						6	0			6
8:00 AM	0		1						7	0			8
8:15 AM	0		0						4	0			4
8:30 AM	4		0						5	0			9
8:45 AM	2		0						4	0			6
VOLUMES	7	0	1	0	0	0	0	0	39	1	0	0	48
APPROACH %	88%	0%	13%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
APP/DEPART	8	/	0	0	/	40	39	/	1	1	/	7	0
BEGIN PEAK HR		8:00 AM											
VOLUMES	6	0	1	0	0	0	0	0	20	0	0	0	27
APPROACH %	86%	0%	14%	0%	0%	0%	0%	0%	100%	0%	0%	0%	
PEAK HR FACTOR		0.438			0.000			0.714			0.000		0.750
APP/DEPART	7	/	0	0	/	20	20	/	1	0	/	6	0

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PM													
4:00 PM	4		0						1	1			6
4:15 PM	3		1						1	3			8
4:30 PM	3		3						1	1			8
4:45 PM	4		1						2	0			7
5:00 PM	2		0						1	0			3
5:15 PM	1		2						1	1			5
5:30 PM	4		1						1	0			6
5:45 PM	3		1						2	1			7
VOLUMES	24	0	9	0	0	0	0	0	10	7	0	0	50
APPROACH %	73%	0%	27%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
APP/DEPART	33	/	0	0	/	17	10	/	9	7	/	24	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	14	0	5	0	0	0	0	0	5	5	0	0	29
APPROACH %	74%	0%	26%	0%	0%	0%	0%	0%	100%	100%	0%	0%	
PEAK HR FACTOR		0.792			0.000			0.625			0.417		0.906
APP/DEPART	19	/	0	0	/	10	5	/	5	5	/	14	0



Appendix K

SANDAG Series 12 Year 2035 Select Zone Assignment

SANDAG
Series 12
2035rc11

Carrol Canyon
Model run(2012)
Follow Up

TAZ 4683 & 4684

Select Zone Plot

Functional Classifications

- Freeway
- Prime
- Major
- Collector
- Light Collector
- Rural Collector
- Local
- Freeway Ramp
- Local Ramp
- Zone Connector

Traffic Analysis Zones

\# Selz Volumes & Percentage

\# Adjusted ADT(x1000)

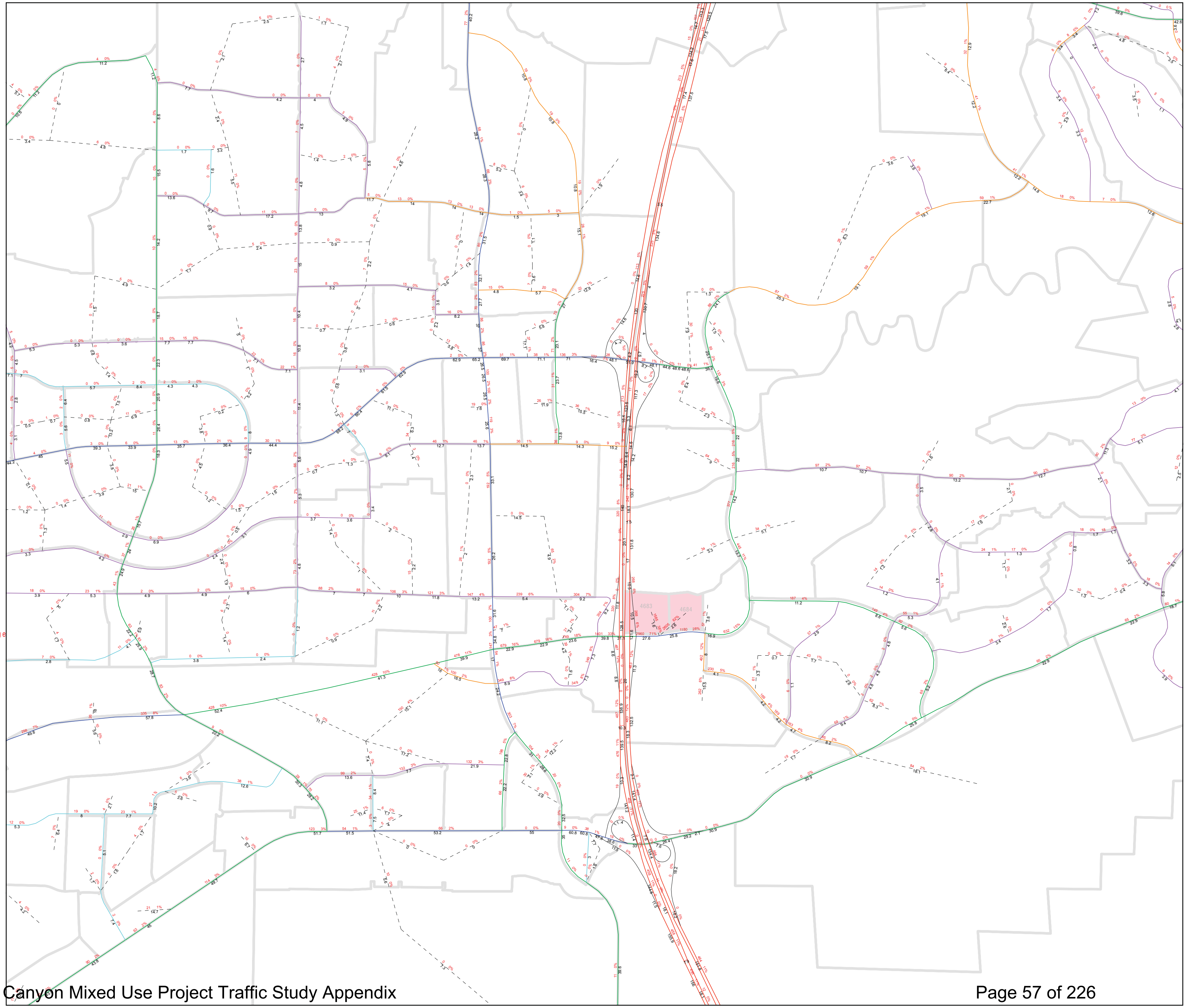
SAN DIEGO ASSOCIATION OF GOVERNMENTS
401 B STREET, SUITE 800
SAN DIEGO, CALIFORNIA 92101 USA
(619) 699-1900
E-mail: sandag@sandag.org
Web site: www.sandag.org

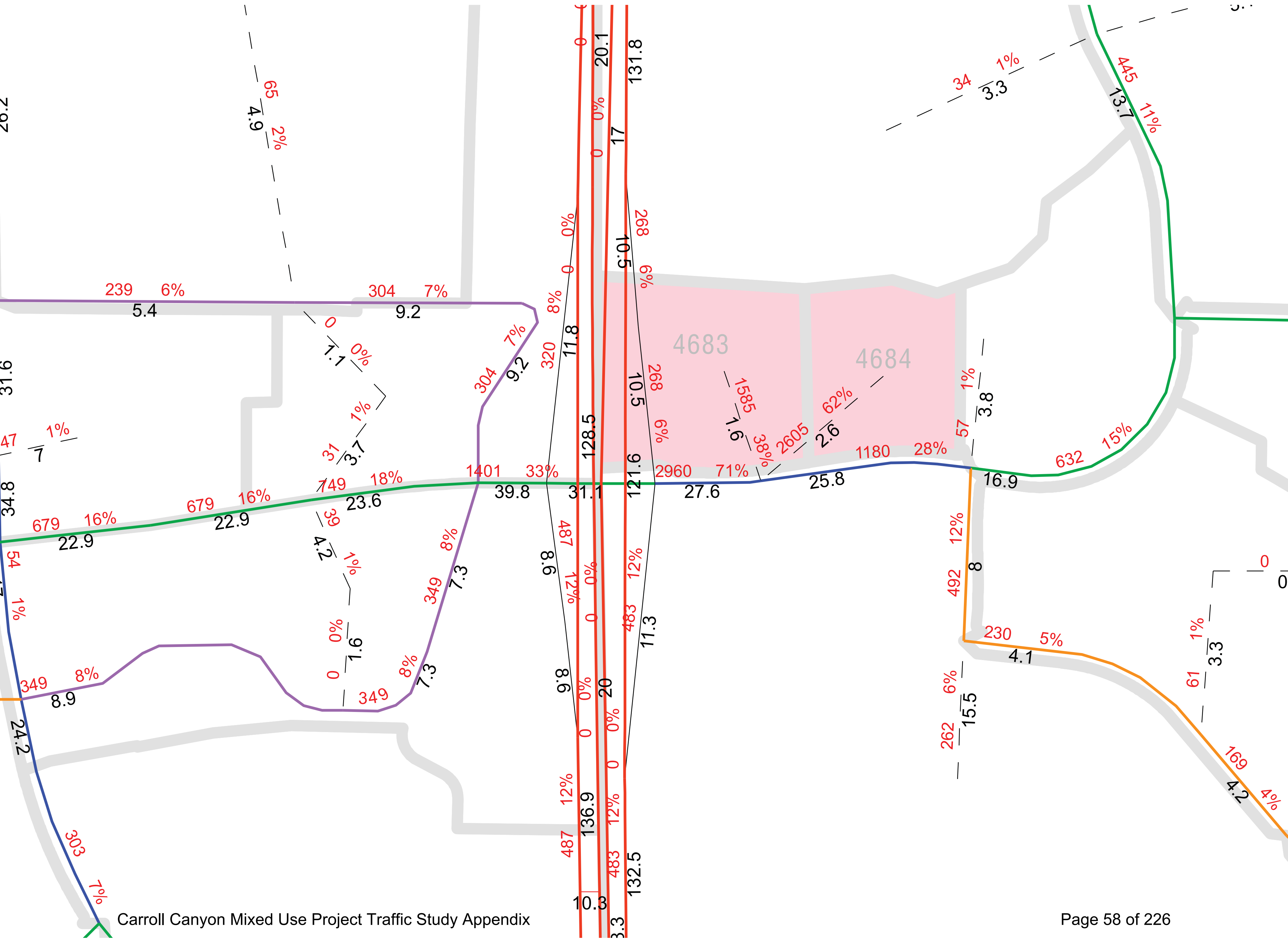
N
0 0.09 0.18 0.27
Miles

SANDAG

servicebureau

Date: December 01, 2014




4683
4684
239 6%
5.4
304 7%
9.2
65
4.9
2%
0
1.1
0%
1%
31
3.7
749 18%
23.6
679 16%
22.9
679 16%
22.9
47
1%
7
34.8
31.6
54
1%
349 8%
8.9
24.2
303
7%
39
4.2
1%
0%
1.6
0
349
8%
7.3
349
7.3
8%
304
9.2
7%
1401 33%
39.8
320
11.8
8%
0
0%
9.8
487
12%
0%
0
9.8
0%
0
12%
487
136.9
10.3
0
20.1
0%
0
17
128.5
31.1
20
0%
0
12%
483
131.8
268
10.5
6%
268
10.5
6%
121.6
12%
483
11.3
132.5
2960 71%
27.6
1585
1.6
38%
2605
62%
2.6
25.8
1180 28%
34
1%
3.3
445
13.7
11%
1%
3.8
57
16.9
632
15%
12%
492
8
230 5%
4.1
6%
15.5
262
0
1%
3.3
61
169
4.2
4%

Appendix L

Existing with Project Level of Service Calculations

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	15	560	150	1791	152	264	34
v/c Ratio	0.17	0.34	0.62	0.82	0.30	0.91	0.07
Control Delay	45.8	16.8	47.8	18.1	10.4	66.6	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	16.8	47.8	18.1	10.4	66.6	17.6
Queue Length 50th (ft)	8	107	81	372	18	140	9
Queue Length 95th (ft)	29	154	139	#674	64	#275	31
Internal Link Dist (ft)		856		812	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	90	1639	295	2191	545	319	518
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.34	0.51	0.82	0.28	0.83	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	482	33	138	1407	241	20	20	99	243	20	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.90		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3505		1770	3462			1672		1770	1764	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.60	1.00	
Satd. Flow (perm)	1770	3505		1770	3462			1624		1115	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	524	36	150	1529	262	22	22	108	264	22	12
RTOR Reduction (vph)	0	6	0	0	13	0	0	79	0	0	9	0
Lane Group Flow (vph)	15	554	0	150	1778	0	0	73	0	264	25	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	43.0		10.6	52.8			24.4		24.4	24.4	
Effective Green, g (s)	0.8	43.0		10.6	52.8			24.4		24.4	24.4	
Actuated g/C Ratio	0.01	0.48		0.12	0.59			0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	15	1674		208	2031			440		302	478	
v/s Ratio Prot	0.01	0.16		c0.08	c0.51						0.01	
v/s Ratio Perm								0.05		c0.24		
v/c Ratio	1.00	0.33		0.72	0.88			0.17		0.87	0.05	
Uniform Delay, d1	44.6	14.6		38.3	15.8			25.0		31.3	24.3	
Progression Factor	1.00	1.00		1.06	1.01			1.00		1.00	1.00	
Incremental Delay, d2	232.4	0.5		6.7	3.3			0.2		23.2	0.0	
Delay (s)	277.0	15.1		47.3	19.3			25.2		54.6	24.3	
Level of Service	F	B		D	B			C		D	C	
Approach Delay (s)		21.9			21.4			25.2			51.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	920	643	1386	337	604
v/c Ratio	0.81	1.29	0.64	0.66	1.22
Control Delay	26.8	175.7	13.2	34.8	143.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	175.7	13.2	34.8	143.5
Queue Length 50th (ft)	177	~473	245	175	~429
Queue Length 95th (ft)	255	#680	313	275	#648
Internal Link Dist (ft)	451		537		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1134	498	2150	510	496
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.81	1.29	0.64	0.66	1.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	408	439	592	1275	0	0	0	0	345	1	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.92		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3264		1770	3539					1681	1517	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3264		1770	3539					1681	1517	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	443	477	643	1386	0	0	0	0	375	1	565
RTOR Reduction (vph)	0	217	0	0	0	0	0	0	0	0	34	0
Lane Group Flow (vph)	0	703	0	643	1386	0	0	0	0	337	570	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		25.0		25.0	54.0					28.0	28.0	
Effective Green, g (s)		25.0		25.0	54.0					28.0	28.0	
Actuated g/C Ratio		0.28		0.28	0.60					0.31	0.31	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		906		491	2123					522	471	
v/s Ratio Prot		c0.22		c0.36	0.39					0.20	c0.38	
v/s Ratio Perm												
v/c Ratio		0.78		1.31	0.65					0.65	1.21	
Uniform Delay, d1		29.9		32.5	11.8					26.7	31.0	
Progression Factor		1.06		1.07	0.96					1.00	1.00	
Incremental Delay, d2		3.9		143.6	0.4					2.7	113.2	
Delay (s)		35.6		178.2	11.8					29.5	144.2	
Level of Service		D		F	B					C	F	
Approach Delay (s)		35.6			64.5			0.0			103.1	
Approach LOS		D			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	67.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	242	561	1321	584	563	528
v/c Ratio	1.03	0.28	0.97	1.01	1.00	0.74
Control Delay	106.2	10.5	45.8	70.9	67.8	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.2	10.5	45.8	70.9	67.8	17.8
Queue Length 50th (ft)	~148	80	375	~351	~326	114
Queue Length 95th (ft)	#294	110	#531	#582	#571	253
Internal Link Dist (ft)		640	474		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	236	2005	1362	579	561	716
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.28	0.97	1.01	1.00	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	223	516	0	0	1051	165	826	1	714	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.98		1.00	0.93	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (prot)	1770	3539			3467		1681	1540	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (perm)	1770	3539			3467		1681	1540	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	561	0	0	1142	179	898	1	776	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	31	206	0	0	0
Lane Group Flow (vph)	242	561	0	0	1307	0	584	532	322	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	11.0	52.0			37.0		30.0	30.0	30.0			
Effective Green, g (s)	11.0	52.0			37.0		30.0	30.0	30.0			
Actuated g/C Ratio	0.12	0.58			0.41		0.33	0.33	0.33			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	216	2044			1425		560	513	501			
v/s Ratio Prot	c0.14	0.16			c0.38		c0.35	0.35				
v/s Ratio Perm									0.21			
v/c Ratio	1.12	0.27			0.92		1.04	1.04	0.64			
Uniform Delay, d1	39.5	9.5			25.1		30.0	30.0	25.5			
Progression Factor	0.68	1.82			1.68		1.00	1.00	1.00			
Incremental Delay, d2	84.9	0.2			8.4		49.7	49.5	6.2			
Delay (s)	111.8	17.6			50.6		79.7	79.5	31.7			
Level of Service	F	B			D		E	E	C			
Approach Delay (s)		46.0			50.6			64.5			0.0	
Approach LOS		D			D			E			A	

Intersection Summary			
HCM 2000 Control Delay	55.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	0	1197	1	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1301	1	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1302				1302	651
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1302				1302	651
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	528				152	411

Direction, Lane #	WB 1	WB 2	SB 1
Volume Total	867	435	28
Volume Left	0	0	0
Volume Right	0	1	28
cSH	1700	1700	411
Volume to Capacity	0.51	0.26	0.07
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	14.4
Lane LOS			B
Approach Delay (s)	0.0		14.4
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	77	1295	1270	40	73
v/c Ratio	0.27	0.64	0.77	0.07	0.12
Control Delay	38.8	18.6	23.3	25.1	7.5
Queue Delay	0.0	0.2	0.0	0.0	0.0
Total Delay	38.8	18.8	23.3	25.1	7.5
Queue Length 50th (ft)	23	242	302	16	0
Queue Length 95th (ft)	m37	m238	335	44	34
Internal Link Dist (ft)		490	592	169	
Turn Bay Length (ft)	300				250
Base Capacity (vph)	419	2398	1820	601	586
Starvation Cap Reductn	0	318	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.62	0.70	0.07	0.12

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	71	1191	1149	19	37	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3530		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3530		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1295	1249	21	40	73
RTOR Reduction (vph)	0	0	2	0	0	49
Lane Group Flow (vph)	77	1295	1268	0	40	24
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	6.3	52.2	41.9		29.8	29.8
Effective Green, g (s)	6.3	52.2	41.9		29.8	29.8
Actuated g/C Ratio	0.07	0.58	0.47		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	240	2052	1643		586	524
v/s Ratio Prot	0.02	c0.37	c0.36		c0.02	
v/s Ratio Perm						0.02
v/c Ratio	0.32	0.63	0.77		0.07	0.05
Uniform Delay, d1	39.8	12.5	20.1		20.6	20.4
Progression Factor	0.96	1.38	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.5	2.3		0.2	0.2
Delay (s)	38.9	17.8	22.4		20.8	20.6
Level of Service	D	B	C		C	C
Approach Delay (s)		19.0	22.4		20.7	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	101	1229	122	998	263	84	7	56
v/c Ratio	0.44	0.89	0.64	0.73	0.68	0.14	0.09	0.15
Control Delay	42.2	30.5	54.4	27.0	47.7	7.1	43.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	30.5	54.4	27.0	47.7	7.1	43.7	16.1
Queue Length 50th (ft)	52	288	67	263	75	1	4	9
Queue Length 95th (ft)	105	383	#137	322	#119	36	18	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	252	1498	206	1449	400	611	82	381
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.82	0.59	0.69	0.66	0.14	0.09	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	703	428	112	884	34	242	4	74	6	18	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3338		1770	3520		3433	1597		1770	1683	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3338		1770	3520		3433	1597		1770	1683	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	764	465	122	961	37	263	4	80	7	20	36
RTOR Reduction (vph)	0	106	0	0	3	0	0	53	0	0	29	0
Lane Group Flow (vph)	101	1123	0	122	995	0	263	31	0	7	27	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.8	34.1		9.3	33.6		12.9	30.2		0.8	18.1	
Effective Green, g (s)	9.8	34.1		9.3	33.6		12.9	30.2		0.8	18.1	
Actuated g/C Ratio	0.11	0.38		0.10	0.37		0.14	0.33		0.01	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	191	1259		182	1308		489	533		15	336	
v/s Ratio Prot	0.06	c0.34		0.07	c0.28		c0.08	0.02		c0.00	c0.02	
v/s Ratio Perm												
v/c Ratio	0.53	0.89		0.67	0.76		0.54	0.06		0.47	0.08	
Uniform Delay, d1	38.1	26.4		39.1	24.9		36.0	20.4		44.6	29.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	8.3		9.3	2.7		1.1	0.2		21.2	0.5	
Delay (s)	40.7	34.7		48.4	27.5		37.1	20.6		65.8	29.9	
Level of Service	D	C		D	C		D	C		E	C	
Approach Delay (s)		35.2			29.8			33.1			33.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	21	870	79	931	426	166	40
v/c Ratio	0.13	0.57	0.39	0.49	0.68	1.00	0.08
Control Delay	27.4	18.2	32.5	11.0	13.7	93.0	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	18.2	32.5	11.0	13.7	93.0	7.9
Queue Length 50th (ft)	7	134	26	79	60	59	5
Queue Length 95th (ft)	26	#242	#77	#235	116	#138	19
Internal Link Dist (ft)		856		725	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	164	1515	201	1914	805	240	724
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.57	0.39	0.49	0.53	0.69	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	774	27	73	605	251	22	45	325	153	17	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96			0.89		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3522		1770	3384			1650		1770	1709	
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.31	1.00	
Satd. Flow (perm)	1770	3522		1770	3384			1630		579	1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	841	29	79	658	273	24	49	353	166	18	22
RTOR Reduction (vph)	0	4	0	0	54	0	0	158	0	0	16	0
Lane Group Flow (vph)	21	866	0	79	877	0	0	268	0	166	24	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	24.7		5.9	29.8			17.4		17.4	17.4	
Effective Green, g (s)	0.8	24.7		5.9	29.8			17.4		17.4	17.4	
Actuated g/C Ratio	0.01	0.41		0.10	0.50			0.29		0.29	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	23	1449		174	1680			472		167	495	
v/s Ratio Prot	0.01	c0.25		c0.04	0.26						0.01	
v/s Ratio Perm								0.16		c0.29		
v/c Ratio	0.91	0.60		0.45	0.52			0.57		0.99	0.05	
Uniform Delay, d1	29.6	13.8		25.5	10.3			18.1		21.2	15.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	147.5	1.8		1.9	1.2			1.6		67.5	0.0	
Delay (s)	177.1	15.6		27.4	11.4			19.7		88.8	15.4	
Level of Service	F	B		C	B			B		F	B	
Approach Delay (s)		19.4			12.7			19.7			74.5	
Approach LOS		B			B			B			E	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1438	586	701	228	343
v/c Ratio	1.06	1.03	0.27	0.81	0.66
Control Delay	66.4	77.9	4.1	59.4	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	77.9	4.1	59.4	12.5
Queue Length 50th (ft)	~444	~371	57	131	13
Queue Length 95th (ft)	#580	#572	77	#248	101
Internal Link Dist (ft)	657		655		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1362	569	2633	298	529
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.06	1.03	0.27	0.77	0.65

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	825	498	539	645	0	0	0	0	233	2	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.94		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3339		1770	3539					1681	1520	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3339		1770	3539					1681	1520	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	897	541	586	701	0	0	0	0	253	2	316
RTOR Reduction (vph)	0	100	0	0	0	0	0	0	0	0	263	0
Lane Group Flow (vph)	0	1338	0	586	701	0	0	0	0	228	80	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		32.2		30.8	67.0					15.0	15.0	
Effective Green, g (s)		32.2		30.8	67.0					15.0	15.0	
Actuated g/C Ratio		0.36		0.34	0.74					0.17	0.17	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1194		605	2634					280	253	
v/s Ratio Prot		c0.40		c0.33	0.20					c0.14	0.05	
v/s Ratio Perm												
v/c Ratio		1.12		0.97	0.27					0.81	0.31	
Uniform Delay, d1		28.9		29.1	3.7					36.2	33.0	
Progression Factor		1.00		0.85	0.49					1.00	1.00	
Incremental Delay, d2		66.0		19.3	0.1					16.4	0.7	
Delay (s)		94.9		44.1	1.9					52.6	33.7	
Level of Service		F		D	A					D	C	
Approach Delay (s)		94.9			21.1			0.0			41.2	
Approach LOS		F			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	56.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	420	736	1150	401	376	374
v/c Ratio	0.94	0.32	0.91	0.93	0.67	0.65
Control Delay	65.0	7.2	38.0	64.5	16.6	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.0	7.2	38.0	64.5	16.6	16.0
Queue Length 50th (ft)	234	85	306	234	62	58
Queue Length 95th (ft)	#411	113	#443	#418	174	164
Internal Link Dist (ft)		731	561		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	452	2320	1262	429	563	572
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.32	0.91	0.93	0.67	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	386	677	0	0	754	304	415	6	638	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	1770	3539			3387		1681	1470	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	1770	3539			3387		1681	1470	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	420	736	0	0	820	330	451	7	693	0	0	0
RTOR Reduction (vph)	0	0	0	0	48	0	0	203	203	0	0	0
Lane Group Flow (vph)	420	736	0	0	1102	0	401	173	171	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	18.0	61.0			39.0		21.0	21.0	21.0			
Effective Green, g (s)	18.0	61.0			39.0		21.0	21.0	21.0			
Actuated g/C Ratio	0.20	0.68			0.43		0.23	0.23	0.23			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	354	2398			1467		392	343	350			
v/s Ratio Prot	c0.24	0.21			c0.33		c0.24	0.12				
v/s Ratio Perm									0.11			
v/c Ratio	1.19	0.31			0.75		1.02	0.50	0.49			
Uniform Delay, d1	36.0	5.9			21.4		34.5	30.0	29.8			
Progression Factor	0.60	2.20			1.81		1.00	1.00	1.00			
Incremental Delay, d2	86.7	0.0			2.9		51.4	5.2	4.8			
Delay (s)	108.3	13.0			41.7		85.9	35.2	34.7			
Level of Service	F	B			D		F	D	C			
Approach Delay (s)		47.7			41.7			52.7			0.0	
Approach LOS		D			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	0	1416	2	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1539	2	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1541				1540	771
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1541				1540	771
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	427				106	343

Direction, Lane #	WB 1	WB 2	SB 1
Volume Total	1026	515	28
Volume Left	0	0	0
Volume Right	0	2	28
cSH	1700	1700	343
Volume to Capacity	0.60	0.30	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	16.4
Lane LOS			C
Approach Delay (s)	0.0		16.4
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	214	1295	1139	39	72
v/c Ratio	0.54	0.62	0.75	0.07	0.13
Control Delay	40.5	21.3	24.6	25.5	7.8
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	40.5	21.4	24.6	25.5	7.8
Queue Length 50th (ft)	64	301	274	16	0
Queue Length 95th (ft)	m100	236	303	44	33
Internal Link Dist (ft)		490	592	169	
Turn Bay Length (ft)	300				250
Base Capacity (vph)	457	2437	1798	568	557
Starvation Cap Reductn	0	307	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.61	0.63	0.07	0.13

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	197	1191	992	56	36	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3511		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3511		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1295	1078	61	39	72
RTOR Reduction (vph)	0	0	5	0	0	49
Lane Group Flow (vph)	214	1295	1134	0	39	23
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.5	53.1	38.6		28.9	28.9
Effective Green, g (s)	10.5	53.1	38.6		28.9	28.9
Actuated g/C Ratio	0.12	0.59	0.43		0.32	0.32
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	400	2088	1505		568	508
v/s Ratio Prot	0.06	c0.37	c0.32		c0.02	
v/s Ratio Perm						0.01
v/c Ratio	0.54	0.62	0.75		0.07	0.05
Uniform Delay, d1	37.5	11.9	21.7		21.2	21.0
Progression Factor	0.96	1.73	1.00		1.00	1.00
Incremental Delay, d2	1.2	0.5	2.2		0.2	0.2
Delay (s)	37.3	21.2	23.9		21.4	21.2
Level of Service	D	C	C		C	C
Approach Delay (s)		23.5	23.9		21.3	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	1248	70	596	404	70	30	90
v/c Ratio	0.14	0.87	0.66	0.43	0.79	0.11	0.28	0.22
Control Delay	34.1	30.3	71.5	22.0	48.7	7.7	47.8	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	30.3	71.5	22.0	48.7	7.7	47.8	9.7
Queue Length 50th (ft)	16	314	40	96	116	2	17	2
Queue Length 95th (ft)	37	407	#110	204	#187	32	45	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	206	1594	106	1736	537	609	106	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.78	0.66	0.34	0.75	0.11	0.28	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

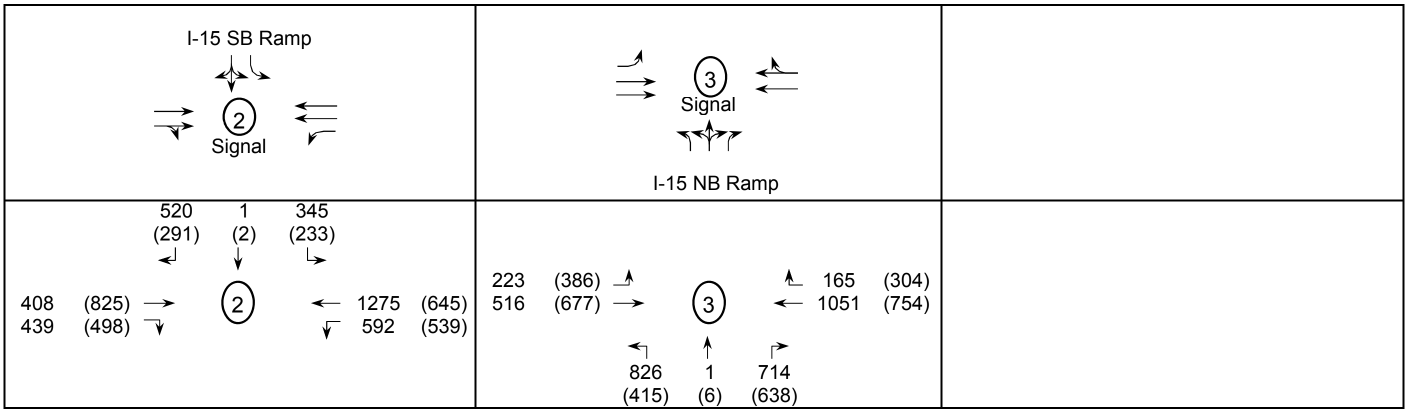
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	887	261	64	545	4	372	4	61	28	5	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3418		1770	3536		3433	1599		1770	1599	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3418		1770	3536		3433	1599		1770	1599	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	964	284	70	592	4	404	4	66	30	5	85
RTOR Reduction (vph)	0	31	0	0	1	0	0	44	0	0	67	0
Lane Group Flow (vph)	28	1217	0	70	595	0	404	26	0	30	23	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	36.0		3.8	33.2		14.4	29.9		2.8	18.3	
Effective Green, g (s)	6.6	36.0		3.8	33.2		14.4	29.9		2.8	18.3	
Actuated g/C Ratio	0.07	0.41		0.04	0.38		0.16	0.34		0.03	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	132	1390		76	1326		558	540		56	330	
v/s Ratio Prot	0.02	c0.36		c0.04	0.17		c0.12	0.02		c0.02	c0.01	
v/s Ratio Perm												
v/c Ratio	0.21	0.88		0.92	0.45		0.72	0.05		0.54	0.07	
Uniform Delay, d1	38.5	24.2		42.2	20.8		35.2	19.7		42.2	28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	6.5		76.4	0.2		4.6	0.2		9.5	0.4	
Delay (s)	39.3	30.6		118.6	21.0		39.8	19.9		51.7	28.6	
Level of Service	D	C		F	C		D	B		D	C	
Approach Delay (s)		30.8			31.3			36.9			34.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Signalized Intersection
CAPACITY ANALYSIS

Location: I-15/Carroll Canyon Rd **Existing + Project**

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)

PHASE 1

		112	(193)
336	(562)	129	(169)
336	(562)	129	(169)
RTOR			

PHASE 2

RTOR			
261	345	112	(193)
(147)	(233)	129	(169)
		129	(169)

PHASE 3

319	(161)		
319	(161)		
296	(270)		
442	442	442	
(289)	(289)	(289)	
		RTOR	

PHASE 4

		RTOR
	583	(529)
	583	(529)
319	(161)	
319	(161)	
296	(270)	

RTOR: Right Turn on Red Observed

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	AM	(PM)	PHASE 2	AM	(PM)	PHASE 3	AM	(PM)	PHASE 4	AM	(PM)
	336	(562)		345	(233)		442	(289)		583	(529)

TOTAL OPERATING LEVEL (ILV/HR)

AM Total	1706
(PM) Total	(1613)

STATUS

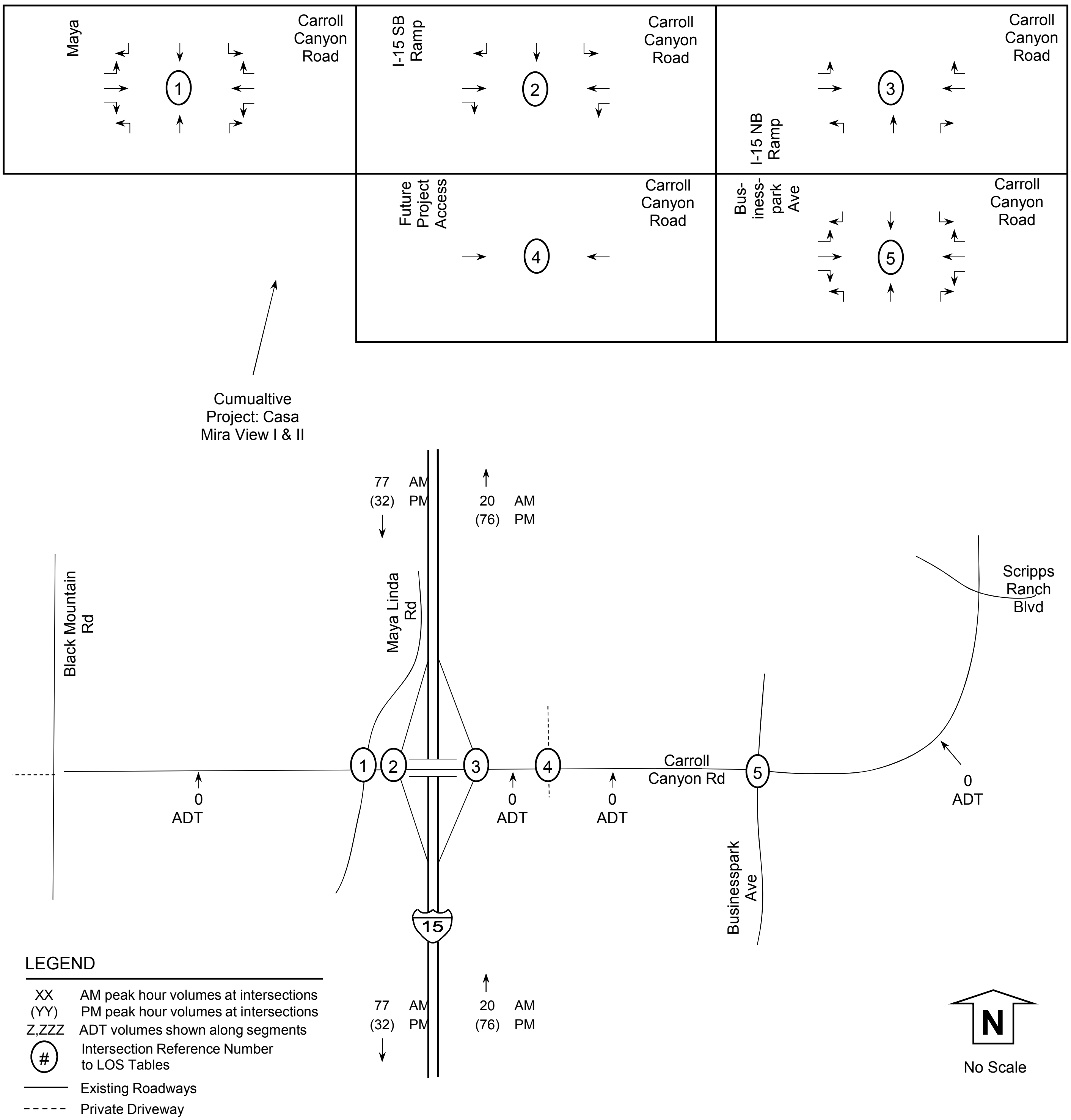
AM **At Capacity**
(PM) **At Capacity**

AM	(PM)	
-	-	< 1,200 ILV/HR.
-	-	> 1,200 but < 1,500 ILV/HR.
X	X	> 1,500 ILV/HR (CAPACITY)

Appendix M

Cumulative Project Individual Assignments

Casa Mira View I and II Cumualtive Project Traffic Assignment



Page 1 of 2

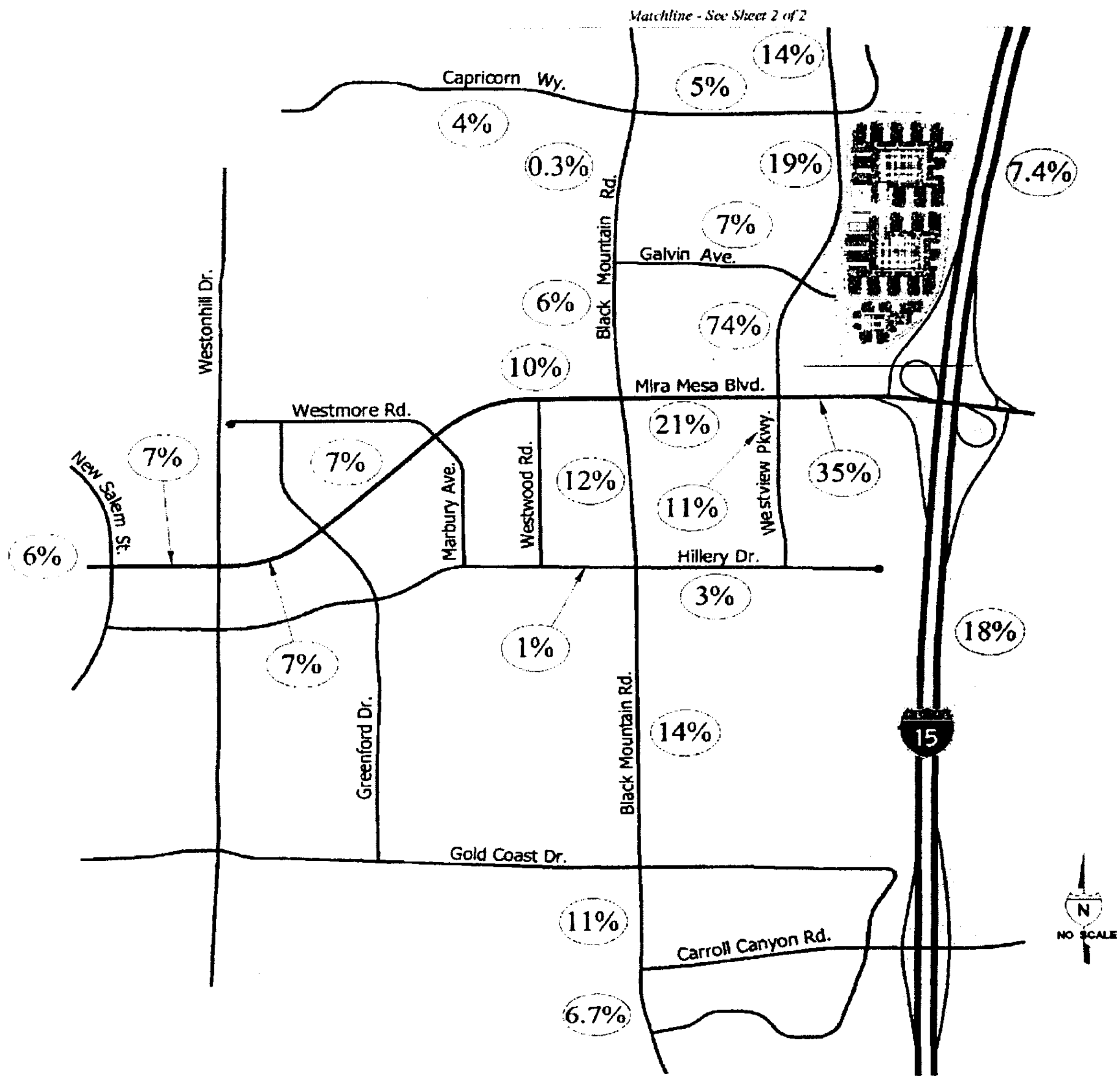


FIGURE 5-1

Project Only Distribution Percentages

TABLE 6-1

Project Only Trip Generation Table

Use	Intensity	Rate	ADT	AM						PM					
				Peak %	Vol.	In %	Out%	In	Out	Peak %	Vol.	In %	Out%	In	Out
Multi-Family Residential	319	6 /DU	**1,914**	8%	**153**	20% :	80%	**31**	**122**	10%	**191**	70% :	30%	**134**	**57**
TOTAL			**1,914**		**153**			**31**	**122**		**191**			**134**	**57**

Source:

Rates taken from the City of San Diego Trip Generation Manual, May 2003

Note:
DU= Dwelling Unit

TRAFFIC IMPACT STUDY

for

MIRAMAR COMMUNITY COLLEGE MASTER PLAN

Prepared for:

Potter & Associates
4975 Milton Street
San Diego, CA 92110

Prepared by:

DARNELL & ASSOCIATES, INC.
1446 Front Street, Suite 300
San Diego, California 92101
619-233-9373

February 5, 2007

031206-MiramarCollege-Rpt 5 (Feb 5 2007)/02-07

The peak hour generation of traffic is unique to this campus, with 9.2% generated during the morning peak hour and 9.1% during the evening peak hour. The peak hour generation differs from the City's suggested rates. The actual rates were applied to this analysis to represent specific site operations.

Table 5 summarizes the trip generation potential for the Miramar Community College Master Plan expansion. As shown on Table 5, the interim condition (3 years and 980 students) generates approximately 1,568 new daily trips, with 144 occurring in the morning peak hour and 143 in the evening peak hour. (Note that traffic counts were taken in 2004 and the three year increase results in year 2007 traffic conditions).

For buildout of the facility, the project is anticipated to generate 4,870 new students per day on campus, resulting in 7,792 daily trips, with 717 occurring in the morning peak hour and 709 in the evening peak hour.

Table 5 - Trip Generation Rates & Calculations

		Rates	In	Out
Miramar College Students (Actual)	ADT	1.60 /trips per student		
	AM	9.2%	0.73	0.27
	PM	9.1%	0.30	0.70

Land Use	Density	ADT	AM Total	AM In	AM Out	PM Total	PM In	PM Out
EXISTING SITE TOTALS (CURRENT OPERATIONS)								
Miramar College	3430	5488	505	369	136	499	150	349
YEAR 2007 SITE TRAFFIC (INTERIM OPERATIONS)								
Miramar College	4410	7056	649	474	175	642	193	449
2007 Net New Traffic	**980**	**1568**	**144**	**105**	**39**	**143**	**43**	**100**
YEAR 2030 SITE TRAFFIC (BUILDOUT OPERATIONS)								
Miramar College	8300	13280	1222	892	330	1208	363	846
2030 Net New Traffic	**4870**	**7792**	**717**	**523**	**194**	**709**	**213**	**497**

Number rounding may occur in spreadsheet background
Rates per actual driveway counts
Density = students per day on campus based on 25,000 maximum enrollment at buildout

PROJECT DISTRIBUTION

Distribution for project traffic was generated by SANDAG traffic modeling. The resulting trip distribution assumptions are depicted on Figure 6.

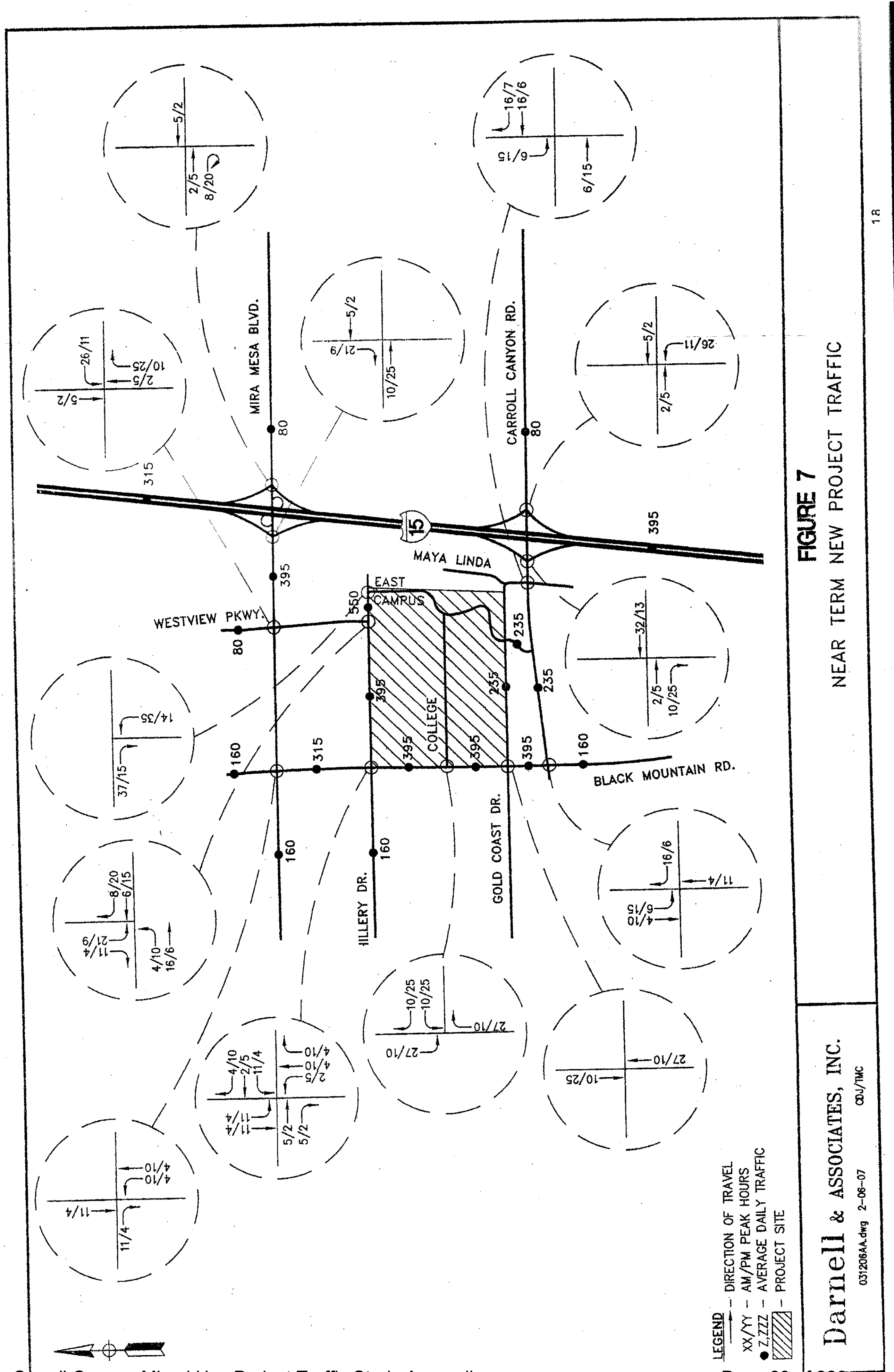


FIGURE 7
NEAR TERM NEW PROJECT TRAFFIC
MIRA MESA BLVD.
CARROLL CANYON RD.
MAYA LINDA
EAST CAMPUS
WESTVIEW PKWY.
COLLEGE
GOLD COAST DR.
BLACK MOUNTAIN RD.
15
LEGEND
→ - DIRECTION OF TRAVEL
XX/YY - AM/PM PEAK HOURS
● Z,ZZZ - AVERAGE DAILY TRAFFIC
- PROJECT SITE
Darnell & ASSOCIATES, INC.
031206AA.dwg 2-06-07
CDJ/TMC
18

1.0 EXECUTIVE SUMMARY

This study was commissioned by Continuing Life Communities Management, LLC to determine potential transportation impacts and appropriate mitigation measures for the proposed The Glen at Scripps Ranch (A Continuing Care Retirement Community). The proposed project is located in Scripps Ranch. The proposed development includes 50 personal care units, and 60 convalescent / nursing beds, and 400 independent wing RCFE (Residential Care Facility for the Elderly) units which would generate 1,880 average daily trips (ADT).

In order to determine a scope of work for the Transportation Impact Study, staff of Urban Systems Associates, Inc. (USAI) completed a preliminary analysis and met with City Transportation staff. Based on the meeting, study area intersections and street segments were identified for the analysis and traffic generation and distribution was determined. The preliminary analysis was based on a Series 11 travel forecast and both machine and manual traffic counts of the existing daily and peak hour traffic flow data for the study intersections and street segments.

The traffic generation for The Glen at Scripps Ranch was based on the City of San Diego's May 2003 Trip Generation Manual. The project traffic was then added to Other Project traffic and both Near Term and Year 2030 scenarios, and an impact analysis was completed in which six scenarios were analyzed: Existing, Existing Plus Project, Near Term Without Project, Near Term With Project, Year 2030 Without Project, and Year 2030 With Project. The term Near Term is meant to discuss a condition occurring within the next several years where traffic from other known development projects in the area are added onto existing traffic levels to reflect the project's anticipated opening day, which is expected to be in Year 2016 / 2017. This reflects the best information available for determining what traffic would be in the next

TABLE 3-1

Project Trip Generation

Use	Amount		*Trip		ADT	AM Peak Hour							PM Peak Hour						
						%*	#	In	:	Out	In	Out	%*	#	In	:	Out	In	Out
Congregate Care	50	DU	2	/DU	100	3%	3	6	:	4	2	1	8%	8	5	:	5	4	4
Convalescent / Nursing	60	beds	3	/bed	180	7%	13	6	:	4	8	5	7%	13	4	:	6	5	8
Retirement / Senior Housing	400	DU	4	/DU	1,600	8%	128	2	:	8	26	102	10%	160	7	:	3	112	48
TOTAL					1,880		144				35	109		181				121	60

Notes:

* = Source: City of San Diego Trip Generation Manual, May 2003

DU = Dwelling Unit

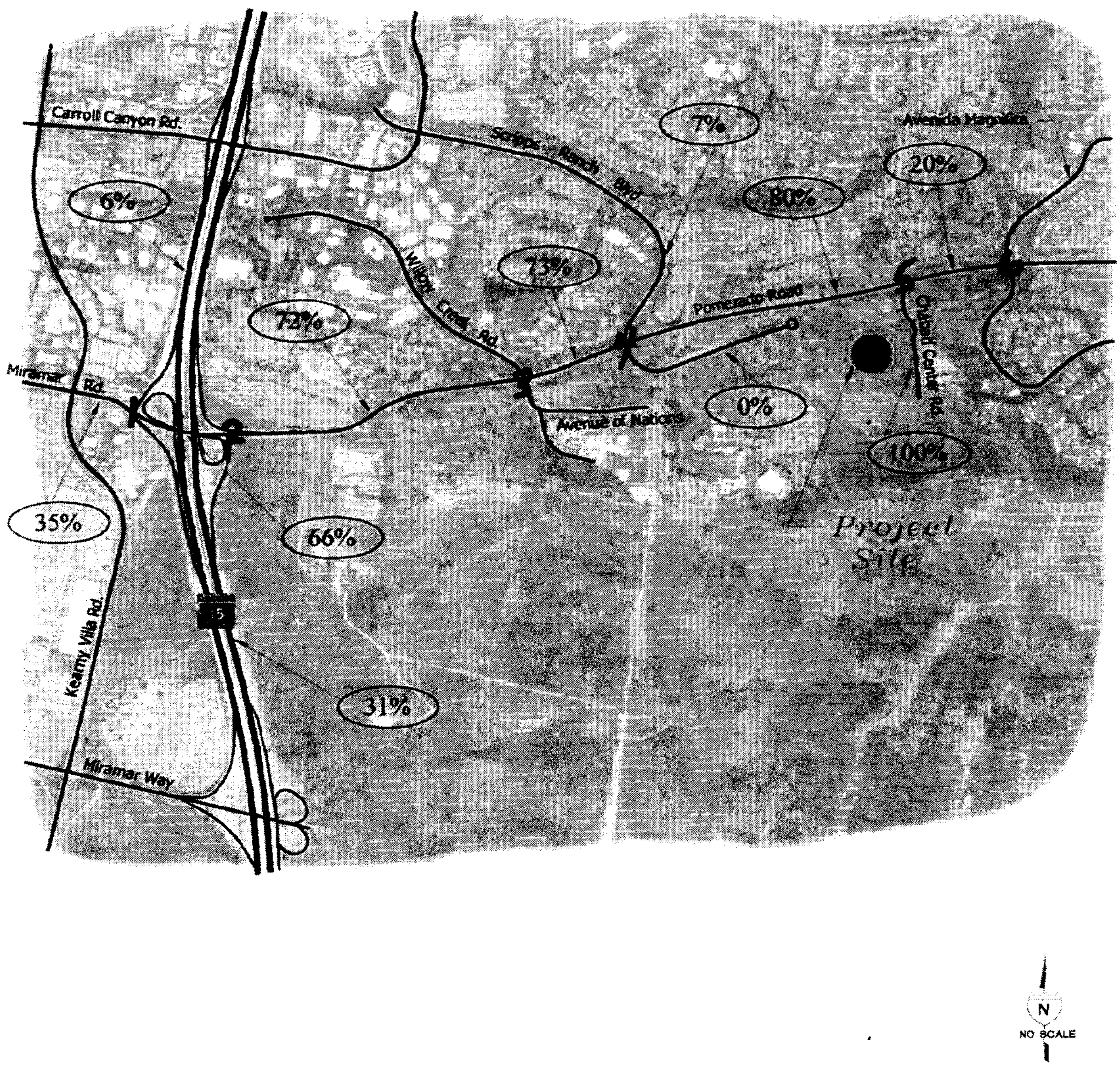
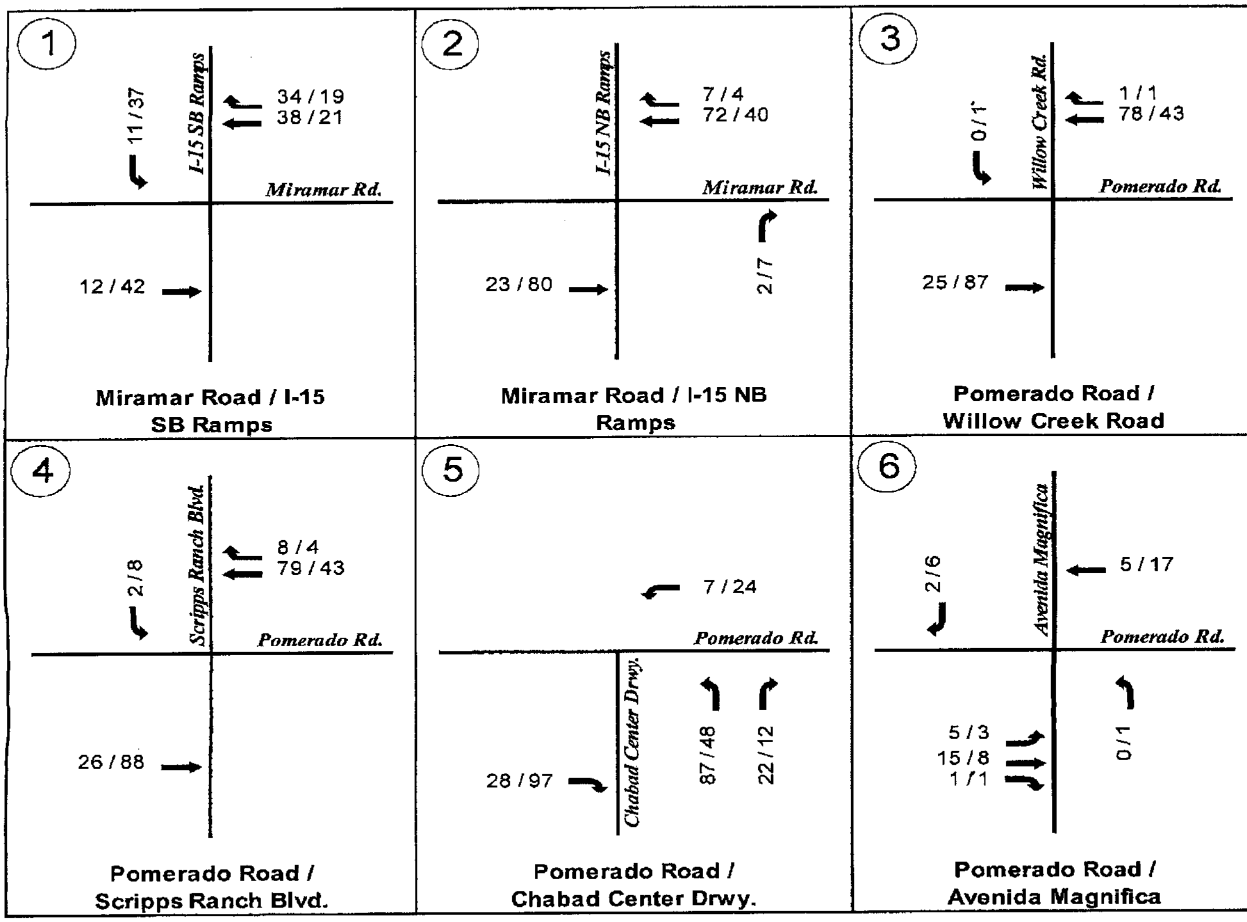


FIGURE 3-1

Project Only Traffic Distribution



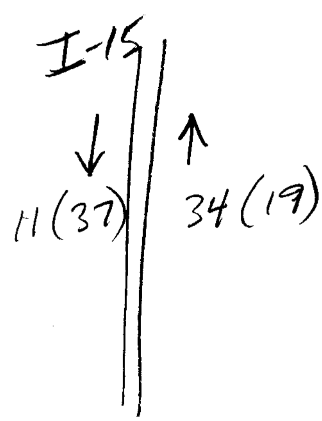


FIGURE 3-3

Project Only AM / PM Peak Hour Traffic

WATERMARK I-15 VOLUMES

TABLE 10-6

Near Term & Near Term with Project

Freeway Level of Service Summary

Segment	Dir.	Capacity	# of Lanes	Peak Hour %	Dir. Split	Near Term				Near Term with Project				Δ	Sig.?
						Vol.	PHV	V/C	LOS	Vol.	PHV	V/C	LOS		
I-15															
SR-163/SR-52	NB	11,750	5-GP	0.075	0.554	177,557	7,379	0.628	C	179,041	7,440	0.633	C	0.005	NO
SR-163/SR-52	SB	11,750	5-GP	0.081	0.527	177,557	7,600	0.647	C	179,041	7,664	0.652	C	0.005	NO
Miramar Road/ SR-163	NB	19,810	7-GP+2-M	0.075	0.554	298,550	12,407	0.626	C	301,147	12,515	0.632	C	0.005	NO
Miramar Road/ SR-163	SB	19,810	7-GP+2-M	0.081	0.527	298,550	12,779	0.645	C	301,147	12,890	0.651	C	0.006	NO
Caroll Canyon Road/Miramar Road	NB	15,110	5-GP+2-M	0.075	0.554	277,646	11,538	0.764	C	280,985	11,677	0.773	C	0.009	NO
Caroll Canyon Road/Miramar Road	SB	15,110	5-GP+2-M	0.081	0.527	277,646	11,884	0.787	C	280,985	12,027	0.796	D	0.009	NO
Carroll Canyon Road/ Mira Mesa Blvd.	NB	15,110	5-GP+2-M	0.075	0.554	259,743	10,794	0.714	C	263,639	10,956	0.725	C	0.011	NO
Carroll Canyon Road/ Mira Mesa Blvd.	SB	15,110	5-GP+2-M	0.083	0.572	259,743	12,308	0.815	D	263,639	12,493	0.827	D	0.012	NO
Mira Mesa Blvd./ Scripps Poway Pkwy.	NB	15,110	5-GP+2-M	0.081	0.526	250,981	10,661	0.706	C	256,361	10,889	0.721	C	0.015	NO
Mira Mesa Blvd./ Scripps Poway Pkwy.	SB	15,110	5-GP+2-M	0.082	0.581	250,981	11,901	0.788	C	256,361	12,156	0.805	D	0.017	NO
Scripps Poway Pkwy./Poway Road	NB	15,110	5-GP+2-M	0.081	0.526	237,372	10,083	0.667	C	240,526	10,217	0.676	C	0.009	NO
Scripps Poway Pkwy./Poway Road	SB	15,110	5-GP+2-M	0.082	0.581	237,372	11,256	0.745	C	240,526	11,405	0.755	C	0.010	NO
Poway Road/ SR-56	NB	15,110	5-GP+2-M	0.077	0.522	209,327	8,446	0.559	B	212,666	8,581	0.568	B	0.009	NO
Poway Road/ SR-56	SB	15,110	5-GP+2-M	0.078	0.571	209,327	9,371	0.620	C	212,666	9,520	0.630	C	0.010	NO
SR-56/ Carmel Mountain Road	NB	18,470	5-GP+4-M	0.077	0.522	225,944	9,117	0.494	B	227,985	9,199	0.498	B	0.004	NO
SR-56/ Carmel Mountain Road	SB	18,470	5-GP+4-M	0.078	0.571	225,944	10,115	0.548	B	227,985	10,206	0.553	B	0.005	NO
Carmel Mountain Road/ Camino Del Norte	NB	18,470	5-GP+4-M	0.077	0.522	213,835	8,628	0.467	B	215,505	8,696	0.471	B	0.004	NO
Carmel Mountain Road/ Camino Del Norte	SB	18,470	5-GP+4-M	0.078	0.571	213,835	9,573	0.518	B	215,505	9,647	0.522	B	0.004	NO
Camino Del Norte/ Rancho Bernardo Road	NB	18,470	5-GP+4-M	0.077	0.522	209,648	8,459	0.458	B	210,947	8,512	0.461	B	0.003	NO
Camino Del Norte/ Rancho Bernardo Road	SB	18,470	5-GP+4-M	0.078	0.571	209,648	9,385	0.508	B	210,947	9,443	0.511	B	0.003	NO

Legend:

Vol.= Volume
Dir.= Direction
V/C= Volume to Capacity Ratio
LOS= Level of Service
Sig.?= Is this significant?

GP= General Purpose Lanes
M= Managed Lanes
PHV= Peak Hour Volume

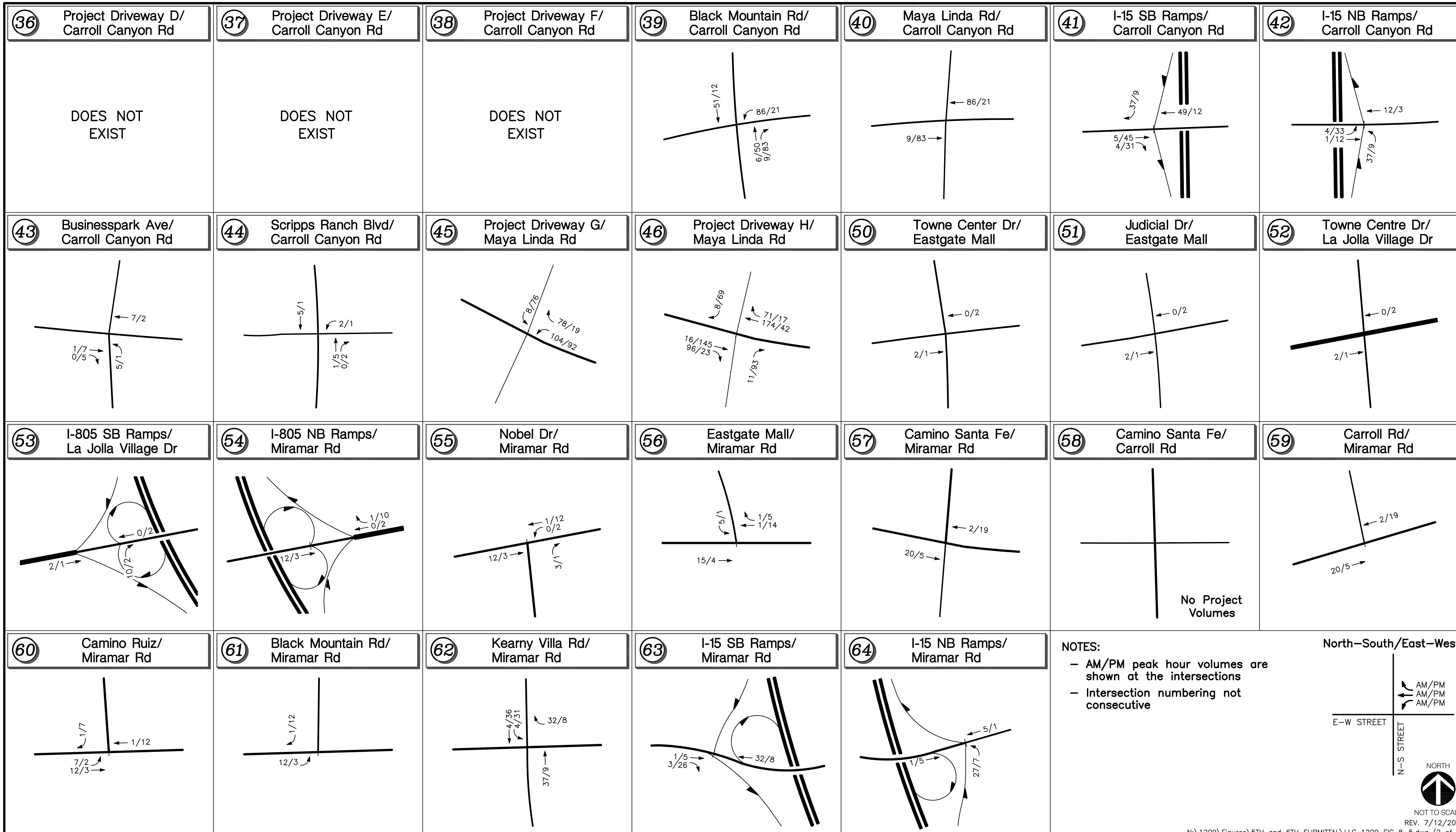


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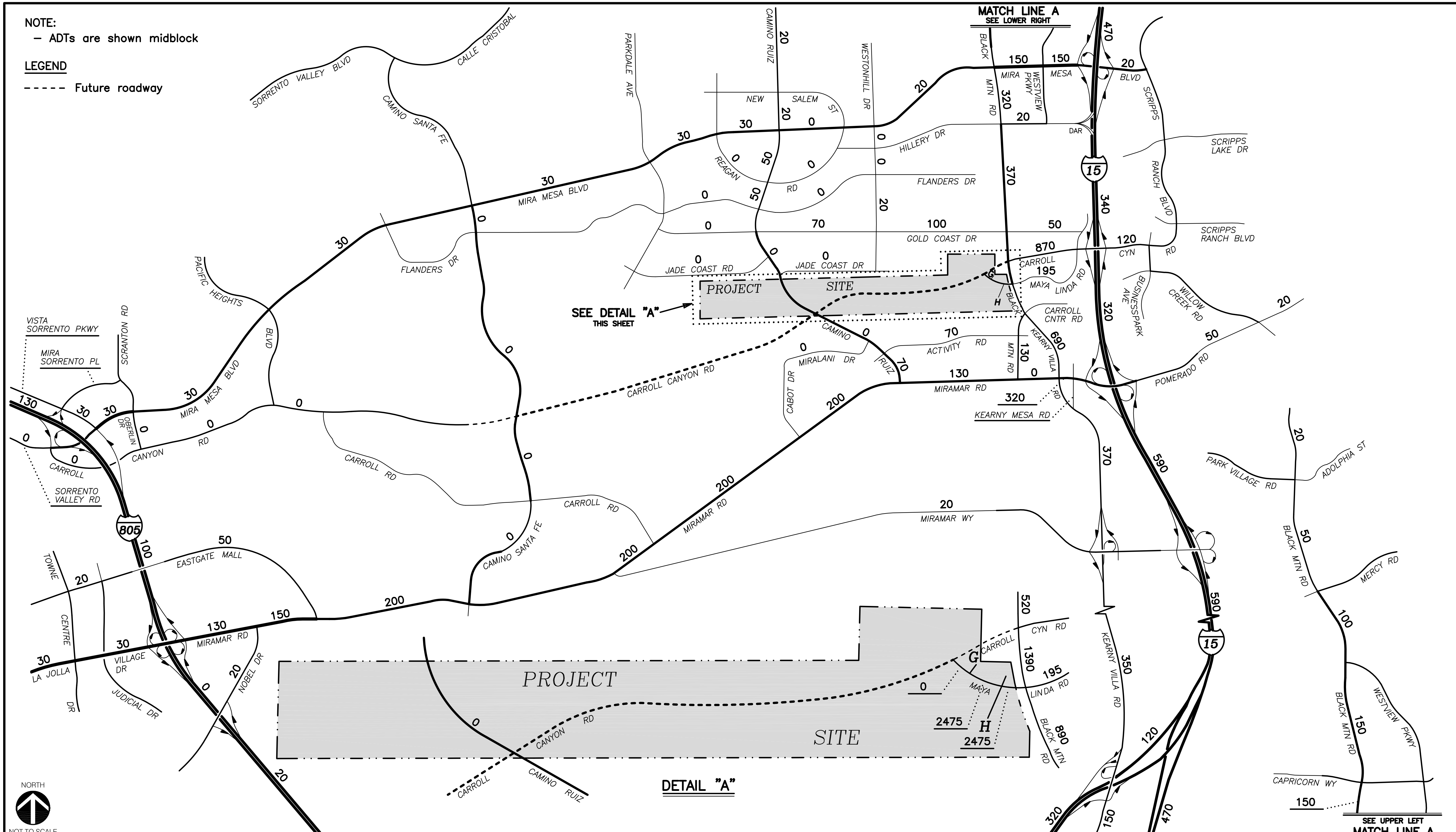
Figure 8-5

"Year 2015" Project Trips (Cumulative) AM/PM Peak Hours

STONE CREEK



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XREF: LLG1209_MSTR "2015 BASE"

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100

Figure 8-6

"Year 2015" Cumulative Project Trips (Daily Volumes)

STONE CREEK

From: **CT Public Information D11@DOT** (CT.Public.Information.D11@dot.ca.gov)
Sent: Wed 11/19/14 8:43 AM
To: Justin Rasas (justin@losengineering.com)

Hello Mr. Rasas,

The Mira Mesa Direct Access Ramp (DAR) connecting Hillery Drive in Mira Mesa to the I-15 Express Lanes opened on Oct. 6. More information about the opening and the project can be found at the below links.

http://www.keepsandiegomoving.com/I-15-Corridor/I-15-transit-projects-miramar_college.aspx

http://www.keepsandiegomoving.com/Libraries/Lossan-doc/CW_T_I15_A3_MMFactSheet_Sept_2014.sflb.ashx

I hope this information is helpful.

Respectfully,

CATHRYNE BRUCE-JOHNSON | Media Relations Officer
Caltrans District 11 | 4050 Taylor Street - MS 121 | San Diego, CA 91910
Office: 619.688.6723 | Cell: 858.688.1431

Follow us on Twitter: @SDCaltrans

Appendix N

Existing + Cumulative Level of Service Calculations

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	15	565	139	1887	147	266	34
v/c Ratio	0.15	0.33	0.69	0.87	0.29	0.87	0.07
Control Delay	44.7	14.8	62.5	21.7	9.8	58.2	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	14.8	62.5	21.7	9.8	58.2	16.3
Queue Length 50th (ft)	8	98	78	414	18	140	9
Queue Length 95th (ft)	29	136	#212	#775	60	#251	29
Internal Link Dist (ft)		856		650	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	99	1697	200	2166	592	364	576
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.33	0.69	0.87	0.25	0.73	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	487	33	128	1487	249	20	20	95	245	20	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3505		1770	3463			1674		1770	1764	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.61	1.00	
Satd. Flow (perm)	1770	3505		1770	3463			1625		1131	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	529	36	139	1616	271	22	22	103	266	22	12
RTOR Reduction (vph)	0	6	0	0	12	0	0	75	0	0	9	0
Lane Group Flow (vph)	15	559	0	139	1875	0	0	72	0	266	25	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	43.4		10.2	52.8			24.4		24.4	24.4	
Effective Green, g (s)	0.8	43.4		10.2	52.8			24.4		24.4	24.4	
Actuated g/C Ratio	0.01	0.48		0.11	0.59			0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	15	1690		200	2031			440		306	478	
v/s Ratio Prot	0.01	0.16		c0.08	c0.54						0.01	
v/s Ratio Perm								0.04		c0.24		
v/c Ratio	1.00	0.33		0.69	0.92			0.16		0.87	0.05	
Uniform Delay, d1	44.6	14.4		38.4	16.8			25.0		31.3	24.3	
Progression Factor	1.00	1.00		1.05	0.99			1.00		1.00	1.00	
Incremental Delay, d2	232.4	0.5		5.1	4.6			0.2		22.1	0.0	
Delay (s)	277.0	14.9		45.3	21.1			25.2		53.4	24.3	
Level of Service	F	B		D	C			C		D	C	
Approach Delay (s)		21.7			22.8			25.2			50.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	924	612	1430	329	643
v/c Ratio	0.75	1.35	0.67	0.64	1.30
Control Delay	22.3	203.3	13.7	33.8	176.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	203.3	13.7	33.8	176.5
Queue Length 50th (ft)	161	~461	258	168	~481
Queue Length 95th (ft)	236	#664	330	266	#703
Internal Link Dist (ft)	990		2126		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1224	452	2143	513	495
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	1.35	0.67	0.64	1.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	397	453	563	1316	0	0	0	0	337	1	557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.92		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3257		1770	3539					1681	1515	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3257		1770	3539					1681	1515	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	432	492	612	1430	0	0	0	0	366	1	605
RTOR Reduction (vph)	0	229	0	0	0	0	0	0	0	0	33	0
Lane Group Flow (vph)	0	695	0	612	1430	0	0	0	0	329	610	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		26.0		25.0	55.0					27.0	27.0	
Effective Green, g (s)		26.0		25.0	55.0					27.0	27.0	
Actuated g/C Ratio		0.29		0.28	0.61					0.30	0.30	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		940		491	2162					504	454	
v/s Ratio Prot		c0.21		c0.35	0.40					0.20	c0.40	
v/s Ratio Perm												
v/c Ratio		0.74		1.25	0.66					0.65	1.34	
Uniform Delay, d1		28.9		32.5	11.4					27.4	31.5	
Progression Factor		1.11		1.06	0.98					1.00	1.00	
Incremental Delay, d2		2.8		116.3	0.5					3.0	168.9	
Delay (s)		34.8		150.6	11.6					30.4	200.4	
Level of Service		C		F	B					C	F	
Approach Delay (s)		34.8			53.3			0.0			142.9	
Approach LOS		C			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	71.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	247	536	1247	599	581	549
v/c Ratio	1.17	0.28	0.92	0.99	0.99	0.74
Control Delay	151.5	11.3	38.7	63.7	65.1	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.5	11.3	38.7	63.7	65.1	17.7
Queue Length 50th (ft)	~170	80	347	353	343	123
Queue Length 95th (ft)	#318	111	#490	#588	#593	267
Internal Link Dist (ft)		600	556		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	212	1946	1353	608	584	740
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.28	0.92	0.99	0.99	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	493	0	0	999	148	889	1	701	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.98		1.00	0.95	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (prot)	1770	3539			3471		1681	1553	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (perm)	1770	3539			3471		1681	1553	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	536	0	0	1086	161	966	1	762	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	23	210	0	0	0
Lane Group Flow (vph)	247	536	0	0	1234	0	599	558	339	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	11.0	51.0			36.0		31.0	31.0	31.0			
Effective Green, g (s)	11.0	51.0			36.0		31.0	31.0	31.0			
Actuated g/C Ratio	0.12	0.57			0.40		0.34	0.34	0.34			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	216	2005			1388		579	534	518			
v/s Ratio Prot	c0.14	0.15			c0.36		0.36	c0.36				
v/s Ratio Perm									0.23			
v/c Ratio	1.14	0.27			0.89		1.03	1.05	0.65			
Uniform Delay, d1	39.5	10.0			25.1		29.5	29.5	25.0			
Progression Factor	0.68	1.68			2.10		1.00	1.00	1.00			
Incremental Delay, d2	93.5	0.2			6.7		46.6	51.2	6.3			
Delay (s)	120.5	17.0			59.5		76.1	80.7	31.3			
Level of Service	F	B			E		E	F	C			
Approach Delay (s)		49.6			59.5			63.4			0.0	
Approach LOS		D			E			E			A	

Intersection Summary			
HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	101	1196	122	1005	258	84	7	56
v/c Ratio	0.45	0.87	0.64	0.73	0.67	0.14	0.08	0.15
Control Delay	42.7	29.3	54.0	27.1	46.8	7.1	43.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	29.3	54.0	27.1	46.8	7.1	43.5	16.2
Queue Length 50th (ft)	52	276	67	265	73	1	4	9
Queue Length 95th (ft)	105	366	#137	325	#114	36	18	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	247	1508	207	1449	403	615	83	384
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.79	0.59	0.69	0.64	0.14	0.08	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	687	413	112	891	34	237	4	74	6	18	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3340		1770	3520		3433	1597		1770	1683	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3340		1770	3520		3433	1597		1770	1683	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	747	449	122	968	37	258	4	80	7	20	36
RTOR Reduction (vph)	0	104	0	0	3	0	0	53	0	0	29	0
Lane Group Flow (vph)	101	1092	0	122	1002	0	258	31	0	7	27	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.4	33.4		9.3	33.3		13.0	30.3		0.8	18.1	
Effective Green, g (s)	9.4	33.4		9.3	33.3		13.0	30.3		0.8	18.1	
Actuated g/C Ratio	0.10	0.37		0.10	0.37		0.14	0.34		0.01	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	185	1242		183	1305		496	538		15	339	
v/s Ratio Prot	0.06	c0.33		0.07	c0.28		c0.08	0.02		c0.00	c0.02	
v/s Ratio Perm												
v/c Ratio	0.55	0.88		0.67	0.77		0.52	0.06		0.47	0.08	
Uniform Delay, d1	38.2	26.3		38.8	24.8		35.5	20.1		44.3	29.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	7.3		8.8	2.8		1.0	0.2		21.2	0.5	
Delay (s)	41.4	33.7		47.6	27.6		36.5	20.3		65.5	29.6	
Level of Service	D	C		D	C		D	C		E	C	
Approach Delay (s)		34.3			29.8			32.5			33.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	21	942	71	940	411	170	40
v/c Ratio	0.13	0.62	0.36	0.49	0.66	0.97	0.08
Control Delay	27.3	19.3	33.4	11.7	13.0	82.3	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	19.3	33.4	11.7	13.0	82.3	7.7
Queue Length 50th (ft)	7	147	24	79	57	60	5
Queue Length 95th (ft)	26	#275	#78	#253	107	#133	18
Internal Link Dist (ft)		856		1041	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	164	1522	198	1909	826	263	752
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.62	0.36	0.49	0.50	0.65	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	840	27	65	614	251	22	45	311	156	17	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.89		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3385			1651		1770	1709	
Flt Permitted	0.95	1.00		0.95	1.00			0.98		0.33	1.00	
Satd. Flow (perm)	1770	3523		1770	3385			1631		607	1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	913	29	71	667	273	24	49	338	170	18	22
RTOR Reduction (vph)	0	3	0	0	53	0	0	155	0	0	16	0
Lane Group Flow (vph)	21	939	0	71	887	0	0	256	0	170	24	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	26.2		4.4	29.8			17.4		17.4	17.4	
Effective Green, g (s)	0.8	26.2		4.4	29.8			17.4		17.4	17.4	
Actuated g/C Ratio	0.01	0.44		0.07	0.50			0.29		0.29	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	23	1538		129	1681			472		176	495	
v/s Ratio Prot	0.01	c0.27		c0.04	c0.26						0.01	
v/s Ratio Perm								0.16		c0.28		
v/c Ratio	0.91	0.61		0.55	0.53			0.54		0.97	0.05	
Uniform Delay, d1	29.6	13.0		26.8	10.3			17.9		21.0	15.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	147.5	1.8		5.0	1.2			1.3		57.3	0.0	
Delay (s)	177.1	14.8		31.8	11.5			19.2		78.3	15.4	
Level of Service	F	B		C	B			B		E	B	
Approach Delay (s)		18.3			12.9			19.2			66.3	
Approach LOS		B			B			B			E	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1490	560	692	204	351
v/c Ratio	0.98	0.98	0.25	0.87	0.71
Control Delay	45.4	70.8	3.4	79.3	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	70.8	3.4	79.3	15.3
Queue Length 50th (ft)	484	393	56	149	16
Queue Length 95th (ft)	#659	#624	73	#282	117
Internal Link Dist (ft)	488		789		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1528	572	2784	244	499
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.98	0.98	0.25	0.84	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	817	554	515	637	0	0	0	0	209	2	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.94		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3325		1770	3539					1681	1518	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3325		1770	3539					1681	1518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	888	602	560	692	0	0	0	0	227	2	326
RTOR Reduction (vph)	0	130	0	0	0	0	0	0	0	0	262	0
Lane Group Flow (vph)	0	1360	0	560	692	0	0	0	0	204	89	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		32.9		30.3	67.2					14.8	14.8	
Effective Green, g (s)		32.9		30.3	67.2					14.8	14.8	
Actuated g/C Ratio		0.37		0.34	0.75					0.16	0.16	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1215		595	2642					276	249	
v/s Ratio Prot		c0.41		c0.32	0.20					c0.12	0.06	
v/s Ratio Perm												
v/c Ratio		1.12		0.94	0.26					0.74	0.36	
Uniform Delay, d1		28.6		29.0	3.6					35.8	33.4	
Progression Factor		1.00		0.84	0.60					1.00	1.00	
Incremental Delay, d2		65.1		15.8	0.1					9.9	0.9	
Delay (s)		93.7		40.2	2.3					45.7	34.2	
Level of Service		F		D	A					D	C	
Approach Delay (s)		93.7			19.3			0.0			38.4	
Approach LOS		F			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	455	665	1078	393	372	363
v/c Ratio	0.94	0.29	0.90	0.92	0.73	0.60
Control Delay	62.6	7.0	38.6	61.2	25.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	7.0	38.6	61.2	25.4	11.5
Queue Length 50th (ft)	251	74	288	228	110	33
Queue Length 95th (ft)	#434	101	#418	#407	#236	124
Internal Link Dist (ft)		611	465		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	491	2320	1193	429	510	601
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.29	0.90	0.92	0.73	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	612	0	0	702	290	435	6	596	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.89	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	1770	3539			3384		1681	1484	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	1770	3539			3384		1681	1484	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	455	665	0	0	763	315	473	7	648	0	0	0
RTOR Reduction (vph)	0	0	0	0	50	0	0	131	234	0	0	0
Lane Group Flow (vph)	455	665	0	0	1028	0	393	241	129	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	18.0	61.0			39.0		21.0	21.0	21.0			
Effective Green, g (s)	18.0	61.0			39.0		21.0	21.0	21.0			
Actuated g/C Ratio	0.20	0.68			0.43		0.23	0.23	0.23			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	354	2398			1466		392	346	350			
v/s Ratio Prot	c0.26	0.19			c0.30		c0.23	0.16				
v/s Ratio Perm									0.09			
v/c Ratio	1.29	0.28			0.70		1.00	0.70	0.37			
Uniform Delay, d1	36.0	5.8			20.8		34.5	31.6	28.9			
Progression Factor	0.61	2.26			1.99		1.00	1.00	1.00			
Incremental Delay, d2	130.4	0.0			2.4		46.1	11.0	3.0			
Delay (s)	152.2	13.0			43.6		80.6	42.6	31.9			
Level of Service	F	B			D		F	D	C			
Approach Delay (s)		69.6			43.6			52.4			0.0	
Approach LOS		E			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	55.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	1236	70	572	379	70	30	90
v/c Ratio	0.13	0.87	0.65	0.42	0.75	0.11	0.28	0.22
Control Delay	33.6	29.9	71.2	22.1	46.0	7.7	47.7	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	29.9	71.2	22.1	46.0	7.7	47.7	9.7
Queue Length 50th (ft)	16	311	40	92	108	2	17	2
Queue Length 95th (ft)	37	403	#110	197	#170	32	45	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	212	1603	107	1743	540	610	107	415
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.77	0.65	0.33	0.70	0.11	0.28	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

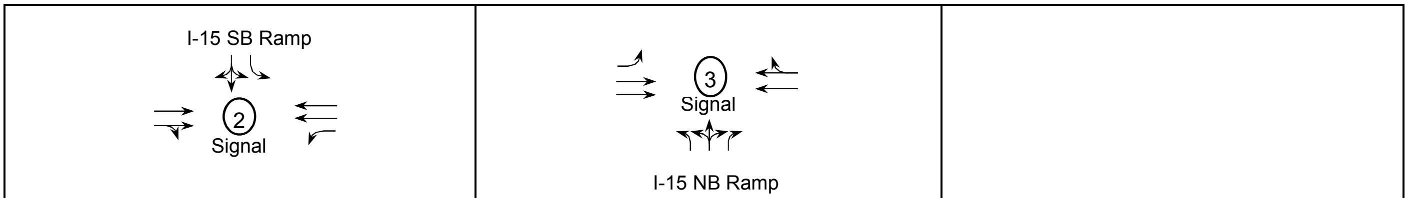
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	887	250	64	523	4	349	4	61	28	5	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3422		1770	3536		3433	1599		1770	1599	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3422		1770	3536		3433	1599		1770	1599	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	964	272	70	568	4	379	4	66	30	5	85
RTOR Reduction (vph)	0	30	0	0	1	0	0	44	0	0	67	0
Lane Group Flow (vph)	28	1206	0	70	571	0	379	26	0	30	23	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.9	35.7		3.8	32.6		14.3	29.8		2.8	18.3	
Effective Green, g (s)	6.9	35.7		3.8	32.6		14.3	29.8		2.8	18.3	
Actuated g/C Ratio	0.08	0.41		0.04	0.37		0.16	0.34		0.03	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	1386		76	1308		557	540		56	332	
v/s Ratio Prot	0.02	c0.35		c0.04	0.16		c0.11	0.02		c0.02	c0.01	
v/s Ratio Perm												
v/c Ratio	0.20	0.87		0.92	0.44		0.68	0.05		0.54	0.07	
Uniform Delay, d1	38.0	24.1		42.0	20.9		34.7	19.6		42.0	28.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	6.2		76.4	0.2		3.4	0.2		9.5	0.4	
Delay (s)	38.8	30.3		118.4	21.1		38.2	19.8		51.5	28.4	
Level of Service	D	C		F	C		D	B		D	C	
Approach Delay (s)		30.5			31.7			35.3			34.2	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Signalized Intersection
CAPACITY ANALYSIS

Location: I-15/Carroll Canyon Rd **Existing+Cumulative**

DIAGRAM AND TRAFFIC FLOWS:



Intersection 2 (I-15 SB Ramp)

Southbound: 557 (300) | 1 (2) | 337 (209)

Eastbound: 397 (817) through; 453 (554) right

Westbound: 1316 (637) through; 563 (515) left

Intersection 3 (I-15 NB Ramp)

Eastbound: 227 (419) left; 493 (612) through

Westbound: 148 (290) U-turn/left; 999 (702) through

Northbound: 889 (435) | 1 (6) | 701 (596)

LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
114 (210) 123 (153) 123 (153) 334 (575) 334 (575) RTOR	RTOR 279 (151) 337 (209) 114 (210) 123 (153) 123 (153)	329 (159) 329 (159) 282 (258) 460 (286) 460 (286) 460 (286) RTOR	RTOR 551 (496) 551 (496) 329 (159) 329 (159) 282 (258)

RTOR: Right Turn on Red Observed

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	AM	(PM)	PHASE 2	AM	(PM)	PHASE 3	AM	(PM)	PHASE 4	AM	(PM)
	334	(575)		337	(210)		460	(286)		551	(496)

TOTAL OPERATING LEVEL (ILV/HR)

AM	Total	1683
(PM)	Total	(1566)

STATUS

AM **At Capacity**
(PM) **At Capacity**

AM	(PM)	
-	-	< 1,200 ILV/HR.
-	-	> 1,200 but < 1,500 ILV/HR.
X	X	> 1,500 ILV/HR (CAPACITY)

Appendix O

Existing + Cumulative + Project Level of Service Calculations

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	15	576	150	1919	152	271	34
v/c Ratio	0.15	0.34	0.75	0.89	0.29	0.88	0.07
Control Delay	44.7	15.1	66.9	23.2	9.6	59.7	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	15.1	66.9	23.2	9.6	59.7	16.3
Queue Length 50th (ft)	8	101	86	441	18	143	9
Queue Length 95th (ft)	29	138	#227	#796	60	#260	29
Internal Link Dist (ft)		856		741	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	99	1680	201	2151	596	360	576
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.34	0.75	0.89	0.26	0.75	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	497	33	138	1509	257	20	20	99	249	20	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.90		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3506		1770	3462			1672		1770	1764	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.60	1.00	
Satd. Flow (perm)	1770	3506		1770	3462			1625		1119	1764	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	540	36	150	1640	279	22	22	108	271	22	12
RTOR Reduction (vph)	0	5	0	0	13	0	0	78	0	0	9	0
Lane Group Flow (vph)	15	571	0	150	1906	0	0	74	0	271	25	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	43.0		10.2	52.4			24.8		24.8	24.8	
Effective Green, g (s)	0.8	43.0		10.2	52.4			24.8		24.8	24.8	
Actuated g/C Ratio	0.01	0.48		0.11	0.58			0.28		0.28	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	15	1675		200	2015			447		308	486	
v/s Ratio Prot	0.01	0.16		c0.08	c0.55						0.01	
v/s Ratio Perm								0.05		c0.24		
v/c Ratio	1.00	0.34		0.75	0.95			0.17		0.88	0.05	
Uniform Delay, d1	44.6	14.7		38.7	17.5			24.7		31.2	24.0	
Progression Factor	1.00	1.00		1.05	1.02			1.00		1.00	1.00	
Incremental Delay, d2	232.4	0.6		7.3	5.9			0.2		23.6	0.0	
Delay (s)	277.0	15.2		48.0	23.7			24.9		54.8	24.0	
Level of Service	F	B		D	C			C		D	C	
Approach Delay (s)		21.9			25.5			24.9			51.3	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	943	643	1474	337	644
v/c Ratio	0.81	1.36	0.69	0.65	1.29
Control Delay	26.3	205.9	14.6	33.5	173.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	205.9	14.6	33.5	173.0
Queue Length 50th (ft)	180	~486	277	172	~482
Queue Length 95th (ft)	258	#693	353	271	#705
Internal Link Dist (ft)	990		1566		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1161	472	2123	522	499
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.81	1.36	0.69	0.65	1.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	415	453	592	1356	0	0	0	0	345	1	557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.92		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3262		1770	3539					1681	1516	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3262		1770	3539					1681	1516	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	451	492	643	1474	0	0	0	0	375	1	605
RTOR Reduction (vph)	0	219	0	0	0	0	0	0	0	0	28	0
Lane Group Flow (vph)	0	724	0	643	1474	0	0	0	0	337	616	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		25.0		25.0	54.0					28.0	28.0	
Effective Green, g (s)		25.0		25.0	54.0					28.0	28.0	
Actuated g/C Ratio		0.28		0.28	0.60					0.31	0.31	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		906		491	2123					522	471	
v/s Ratio Prot		c0.22		c0.36	0.42					0.20	c0.41	
v/s Ratio Perm												
v/c Ratio		0.80		1.31	0.69					0.65	1.31	
Uniform Delay, d1		30.2		32.5	12.3					26.7	31.0	
Progression Factor		1.06		1.08	0.95					1.00	1.00	
Incremental Delay, d2		4.6		140.7	0.2					2.7	153.6	
Delay (s)		36.6		175.9	11.9					29.5	184.6	
Level of Service		D		F	B					C	F	
Approach Delay (s)		36.6			61.7			0.0			131.3	
Approach LOS		D			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	72.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	247	564	1340	609	583	551
v/c Ratio	1.17	0.29	0.99	1.00	1.00	0.76
Control Delay	151.5	11.5	50.9	67.8	65.3	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.5	11.5	50.9	67.8	65.3	19.5
Queue Length 50th (ft)	~170	85	390	~364	342	137
Queue Length 95th (ft)	#318	117	#551	#602	#594	286
Internal Link Dist (ft)		571	617		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	212	1946	1352	608	585	728
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.29	0.99	1.00	1.00	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	519	0	0	1068	165	889	1	714	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.98		1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (prot)	1770	3539			3468		1681	1550	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.97	1.00			
Satd. Flow (perm)	1770	3539			3468		1681	1550	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	564	0	0	1161	179	966	1	776	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	25	205	0	0	0
Lane Group Flow (vph)	247	564	0	0	1326	0	609	558	346	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	12.0	52.0			36.0		30.0	30.0	30.0			
Effective Green, g (s)	12.0	52.0			36.0		30.0	30.0	30.0			
Actuated g/C Ratio	0.13	0.58			0.40		0.33	0.33	0.33			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	236	2044			1387		560	516	501			
v/s Ratio Prot	c0.14	0.16			c0.38		c0.36	0.36				
v/s Ratio Perm									0.23			
v/c Ratio	1.05	0.28			0.96		1.09	1.08	0.69			
Uniform Delay, d1	39.0	9.5			26.2		30.0	30.0	26.0			
Progression Factor	0.68	1.76			1.64		1.00	1.00	1.00			
Incremental Delay, d2	58.1	0.2			12.6		64.0	63.2	7.6			
Delay (s)	84.5	17.0			55.6		94.0	93.2	33.6			
Level of Service	F	B			E		F	F	C			
Approach Delay (s)		37.5			55.6			74.6			0.0	
Approach LOS		D			E			E			A	

Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	0	1197	1	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1301	1	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1302				1302	651
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1302				1302	651
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	528				152	411

Direction, Lane #	WB 1	WB 2	SB 1
Volume Total	867	435	28
Volume Left	0	0	0
Volume Right	0	1	28
cSH	1700	1700	411
Volume to Capacity	0.51	0.26	0.07
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	14.4
Lane LOS			B
Approach Delay (s)	0.0		14.4
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	77	1298	1288	40	73
v/c Ratio	0.27	0.64	0.78	0.07	0.13
Control Delay	39.3	18.4	23.3	25.3	7.6
Queue Delay	0.0	0.2	0.0	0.0	0.0
Total Delay	39.3	18.6	23.3	25.3	7.6
Queue Length 50th (ft)	23	235	303	16	0
Queue Length 95th (ft)	m36	m230	342	44	34
Internal Link Dist (ft)		490	592	169	
Turn Bay Length (ft)	300				250
Base Capacity (vph)	419	2398	1820	596	581
Starvation Cap Reductn	0	338	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.63	0.71	0.07	0.13

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	71	1194	1166	19	37	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3531		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3531		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1298	1267	21	40	73
RTOR Reduction (vph)	0	0	2	0	0	49
Lane Group Flow (vph)	77	1298	1286	0	40	24
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	6.3	52.5	42.2		29.5	29.5
Effective Green, g (s)	6.3	52.5	42.2		29.5	29.5
Actuated g/C Ratio	0.07	0.58	0.47		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	240	2064	1655		580	518
v/s Ratio Prot	0.02	c0.37	c0.36		c0.02	
v/s Ratio Perm						0.02
v/c Ratio	0.32	0.63	0.78		0.07	0.05
Uniform Delay, d1	39.8	12.3	20.0		20.8	20.6
Progression Factor	0.97	1.38	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.5	2.4		0.2	0.2
Delay (s)	39.4	17.5	22.3		21.0	20.8
Level of Service	D	B	C		C	C
Approach Delay (s)		18.8	22.3		20.9	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	101	1232	122	1014	265	84	7	56
v/c Ratio	0.45	0.89	0.64	0.73	0.69	0.14	0.09	0.15
Control Delay	42.6	30.6	54.5	27.1	47.9	7.1	43.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	30.6	54.5	27.1	47.9	7.1	43.7	16.1
Queue Length 50th (ft)	52	289	67	267	76	1	4	9
Queue Length 95th (ft)	105	383	#137	329	#123	36	18	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	248	1498	205	1450	399	611	82	381
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.82	0.60	0.70	0.66	0.14	0.09	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	705	429	112	899	34	244	4	74	6	18	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.99		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3338		1770	3520		3433	1597		1770	1683	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3338		1770	3520		3433	1597		1770	1683	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	766	466	122	977	37	265	4	80	7	20	36
RTOR Reduction (vph)	0	107	0	0	3	0	0	53	0	0	29	0
Lane Group Flow (vph)	101	1125	0	122	1011	0	265	31	0	7	27	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	9.6	34.1		9.3	33.8		13.0	30.3		0.8	18.1	
Effective Green, g (s)	9.6	34.1		9.3	33.8		13.0	30.3		0.8	18.1	
Actuated g/C Ratio	0.11	0.38		0.10	0.37		0.14	0.33		0.01	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	187	1257		181	1314		493	534		15	336	
v/s Ratio Prot	0.06	c0.34		0.07	c0.29		c0.08	0.02		c0.00	c0.02	
v/s Ratio Perm												
v/c Ratio	0.54	0.90		0.67	0.77		0.54	0.06		0.47	0.08	
Uniform Delay, d1	38.4	26.5		39.1	24.9		36.0	20.4		44.6	29.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	8.5		9.5	2.8		1.1	0.2		21.2	0.5	
Delay (s)	41.5	35.1		48.6	27.7		37.1	20.6		65.9	29.9	
Level of Service	D	D		D	C		D	C		E	C	
Approach Delay (s)		35.6			29.9			33.1			33.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	21	977	79	967	426	183	40
v/c Ratio	0.13	0.66	0.40	0.52	0.66	0.98	0.07
Control Delay	27.4	20.9	35.6	12.6	13.1	82.7	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	20.9	35.6	12.6	13.1	82.7	7.4
Queue Length 50th (ft)	7	164	26	88	61	64	4
Queue Length 95th (ft)	26	#291	#89	#265	115	#145	18
Internal Link Dist (ft)		856		859	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	164	1477	196	1862	825	266	752
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.66	0.40	0.52	0.52	0.69	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	872	27	73	632	258	22	45	325	168	17	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.89		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3523		1770	3385			1650		1770	1709	
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.33	1.00	
Satd. Flow (perm)	1770	3523		1770	3385			1631		615	1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	948	29	79	687	280	24	49	353	183	18	22
RTOR Reduction (vph)	0	3	0	0	54	0	0	151	0	0	15	0
Lane Group Flow (vph)	21	974	0	79	913	0	0	275	0	183	25	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	24.0		5.7	28.9			18.3		18.3	18.3	
Effective Green, g (s)	0.8	24.0		5.7	28.9			18.3		18.3	18.3	
Actuated g/C Ratio	0.01	0.40		0.10	0.48			0.31		0.31	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	23	1409		168	1630			497		187	521	
v/s Ratio Prot	0.01	c0.28		c0.04	0.27						0.01	
v/s Ratio Perm								0.17		c0.30		
v/c Ratio	0.91	0.69		0.47	0.56			0.55		0.98	0.05	
Uniform Delay, d1	29.6	14.9		25.7	11.0			17.4		20.7	14.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	147.5	2.8		2.1	1.4			1.3		58.9	0.0	
Delay (s)	177.1	17.7		27.8	12.4			18.8		79.6	14.7	
Level of Service	F	B		C	B			B		E	B	
Approach Delay (s)		21.1			13.6			18.8			67.9	
Approach LOS		C			B			B			E	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1553	586	728	228	353
v/c Ratio	1.02	1.04	0.26	0.93	0.71
Control Delay	58.2	86.5	3.6	90.4	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	86.5	3.6	90.4	15.2
Queue Length 50th (ft)	~580	~448	60	169	17
Queue Length 95th (ft)	#721	#665	77	#326	121
Internal Link Dist (ft)	699		733		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1516	563	2766	244	499
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.02	1.04	0.26	0.93	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	875	554	539	670	0	0	0	0	233	2	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.94		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3333		1770	3539					1681	1519	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3333		1770	3539					1681	1519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	951	602	586	728	0	0	0	0	253	2	326
RTOR Reduction (vph)	0	112	0	0	0	0	0	0	0	0	250	0
Lane Group Flow (vph)	0	1441	0	586	728	0	0	0	0	228	103	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		36.0		27.0	67.0					15.0	15.0	
Effective Green, g (s)		36.0		27.0	67.0					15.0	15.0	
Actuated g/C Ratio		0.40		0.30	0.74					0.17	0.17	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1333		531	2634					280	253	
v/s Ratio Prot		c0.43		c0.33	0.21					c0.14	0.07	
v/s Ratio Perm												
v/c Ratio		1.08		1.10	0.28					0.81	0.41	
Uniform Delay, d1		27.0		31.5	3.7					36.2	33.5	
Progression Factor		1.00		0.95	0.58					1.00	1.00	
Incremental Delay, d2		49.6		60.4	0.1					16.4	1.1	
Delay (s)		76.6		90.5	2.3					52.6	34.6	
Level of Service		E		F	A					D	C	
Approach Delay (s)		76.6			41.6			0.0			41.6	
Approach LOS		E			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	57.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	455	754	1155	407	385	381
v/c Ratio	0.96	0.31	0.90	1.04	0.75	0.70
Control Delay	67.9	6.4	35.8	91.6	23.5	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	6.4	35.8	91.6	23.5	18.2
Queue Length 50th (ft)	255	80	303	~265	91	63
Queue Length 95th (ft)	#446	107	#434	#451	#240	173
Internal Link Dist (ft)		705	627		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	472	2398	1289	392	515	547
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.31	0.90	1.04	0.75	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	694	0	0	759	304	435	6	638	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	1770	3539			3388		1681	1476	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	1770	3539			3388		1681	1476	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	455	754	0	0	825	330	473	7	693	0	0	0
RTOR Reduction (vph)	0	0	0	0	47	0	0	171	212	0	0	0
Lane Group Flow (vph)	455	754	0	0	1108	0	407	214	169	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	18.0	63.0			41.0		19.0	19.0	19.0			
Effective Green, g (s)	18.0	63.0			41.0		19.0	19.0	19.0			
Actuated g/C Ratio	0.20	0.70			0.46		0.21	0.21	0.21			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	354	2477			1543		354	311	317			
v/s Ratio Prot	c0.26	0.21			c0.33		c0.24	0.14				
v/s Ratio Perm									0.11			
v/c Ratio	1.29	0.30			0.72		1.15	0.69	0.53			
Uniform Delay, d1	36.0	5.1			19.8		35.5	32.8	31.6			
Progression Factor	0.64	2.30			1.96		1.00	1.00	1.00			
Incremental Delay, d2	130.4	0.0			2.3		95.0	11.8	6.3			
Delay (s)	153.6	11.9			41.2		130.5	44.5	37.8			
Level of Service	F	B			D		F	D	D			
Approach Delay (s)		65.2			41.2			72.2			0.0	
Approach LOS		E			D			E			A	

Intersection Summary			
HCM 2000 Control Delay	59.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	0	1416	2	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1539	2	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1541				1540	771
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1541				1540	771
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	427				106	343

Direction, Lane #	WB 1	WB 2	SB 1
Volume Total	1026	515	28
Volume Left	0	0	0
Volume Right	0	2	28
cSH	1700	1700	343
Volume to Capacity	0.60	0.30	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	16.4
Lane LOS			C
Approach Delay (s)	0.0		16.4
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	214	1313	1145	39	72
v/c Ratio	0.54	0.63	0.76	0.07	0.13
Control Delay	41.8	19.7	24.6	25.6	7.8
Queue Delay	0.0	0.2	0.0	0.0	0.0
Total Delay	41.8	19.9	24.6	25.6	7.8
Queue Length 50th (ft)	65	283	276	16	0
Queue Length 95th (ft)	m95	222	304	44	33
Internal Link Dist (ft)		490	592	169	
Turn Bay Length (ft)	300				250
Base Capacity (vph)	457	2437	1798	566	556
Starvation Cap Reductn	0	317	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.62	0.64	0.07	0.13

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	197	1208	997	56	36	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3511		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3511		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1313	1084	61	39	72
RTOR Reduction (vph)	0	0	5	0	0	49
Lane Group Flow (vph)	214	1313	1140	0	39	23
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.5	53.2	38.7		28.8	28.8
Effective Green, g (s)	10.5	53.2	38.7		28.8	28.8
Actuated g/C Ratio	0.12	0.59	0.43		0.32	0.32
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	400	2091	1509		566	506
v/s Ratio Prot	0.06	c0.37	c0.32		c0.02	
v/s Ratio Perm						0.01
v/c Ratio	0.54	0.63	0.76		0.07	0.05
Uniform Delay, d1	37.5	12.0	21.7		21.3	21.1
Progression Factor	1.00	1.59	1.00		1.00	1.00
Incremental Delay, d2	1.2	0.5	2.2		0.2	0.2
Delay (s)	38.7	19.6	23.9		21.5	21.3
Level of Service	D	B	C		C	C
Approach Delay (s)		22.3	23.9		21.4	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	1266	70	601	404	70	30	90
v/c Ratio	0.14	0.88	0.66	0.43	0.79	0.12	0.28	0.22
Control Delay	34.2	30.9	72.1	21.9	48.9	7.7	47.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	30.9	72.1	21.9	48.9	7.7	47.9	9.7
Queue Length 50th (ft)	16	322	40	97	116	2	17	2
Queue Length 95th (ft)	37	417	#110	205	#187	32	45	41
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	205	1586	106	1736	535	606	106	411
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.80	0.66	0.35	0.76	0.12	0.28	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

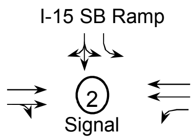
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	902	263	64	549	4	372	4	61	28	5	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3419		1770	3536		3433	1599		1770	1599	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3419		1770	3536		3433	1599		1770	1599	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	980	286	70	597	4	404	4	66	30	5	85
RTOR Reduction (vph)	0	31	0	0	1	0	0	44	0	0	67	0
Lane Group Flow (vph)	28	1235	0	70	600	0	404	26	0	30	23	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	36.3		3.8	33.5		14.3	29.8		2.8	18.3	
Effective Green, g (s)	6.6	36.3		3.8	33.5		14.3	29.8		2.8	18.3	
Actuated g/C Ratio	0.07	0.41		0.04	0.38		0.16	0.34		0.03	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	131	1399		75	1335		553	537		55	329	
v/s Ratio Prot	0.02	c0.36		c0.04	0.17		c0.12	0.02		c0.02	c0.01	
v/s Ratio Perm												
v/c Ratio	0.21	0.88		0.93	0.45		0.73	0.05		0.55	0.07	
Uniform Delay, d1	38.6	24.2		42.3	20.7		35.4	19.9		42.3	28.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	6.9		80.8	0.2		4.9	0.2		10.6	0.4	
Delay (s)	39.4	31.2		123.1	20.9		40.3	20.1		52.9	28.7	
Level of Service	D	C		F	C		D	C		D	C	
Approach Delay (s)		31.3			31.6			37.3			34.8	
Approach LOS		C			C			D			C	

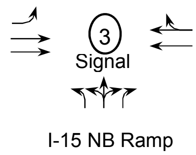
Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Signalized Intersection
CAPACITY ANALYSIS

Location: I-15/Carroll Canyon Rd **Existing+Cumulative+Project**

DIAGRAM AND TRAFFIC FLOWS:





Intersection 2 (I-15 SB Ramp)

Movement	AM	(PM)
SB left	557	(300)
SB through	1	(2)
SB right	345	(233)
EB through	415	(875)
EB right	453	(554)
WB through	1356	(670)
WB left	592	(539)

Intersection 3 (I-15 NB Ramp)

Movement	AM	(PM)
EB left	227	(419)
EB through	519	(694)
WB left	165	(304)
WB through	1068	(759)
NB left	889	(435)
NB through	1	(6)
NB right	714	(638)

LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
343 (604) → 343 (604) → (RTOR) 114 (210) 130 (174) → 130 (174) →	RTOR 279 (151) 345 (233) 114 (210) 130 (174) → 130 (174) →	← 339 (168) ← 339 (168) 296 (270) 463 (296) 463 (296) 463 (296) RTOR	RTOR 592 (532) ← 592 (532) ← 339 (168) ← 339 (168) 296 (270)

RTOR: Right Turn on Red Observed

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1 AM	(PM)	PHASE 2 AM	(PM)	PHASE 3 AM	(PM)	PHASE 4 AM	(PM)
343	(604)	345	(233)	463	(296)	592	(532)

TOTAL OPERATING LEVEL (ILV/HR)

AM Total	1743
(PM) Total	(1664)

STATUS
AM **At Capacity**
(PM) **At Capacity**

AM	(PM)	
-	-	< 1,200 ILV/HR.
-	-	> 1,200 but < 1,500 ILV/HR.
X	**X**	> 1,500 ILV/HR (CAPACITY)

Appendix P

Horizon Year (2035) Level of Service Calculations

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	22	945	152	2478	206	283	55
v/c Ratio	0.28	0.61	0.63	1.21	0.40	0.97	0.11
Control Delay	51.0	21.7	47.9	120.1	18.3	80.6	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	21.7	47.9	120.1	18.3	80.6	16.6
Queue Length 50th (ft)	12	210	82	~876	56	159	14
Queue Length 95th (ft)	37	287	141	#1117	118	#318	41
Internal Link Dist (ft)		856		815	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	78	1552	295	2049	518	291	521
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.61	0.52	1.21	0.40	0.97	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	830	40	140	2010	270	40	40	110	260	30	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.92		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	3476			1699		1770	1751	
Flt Permitted	0.95	1.00		0.95	1.00			0.93		0.54	1.00	
Satd. Flow (perm)	1770	3515		1770	3476			1604		1007	1751	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	902	43	152	2185	293	43	43	120	283	33	22
RTOR Reduction (vph)	0	3	0	0	11	0	0	55	0	0	16	0
Lane Group Flow (vph)	22	942	0	152	2467	0	0	151	0	283	39	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.6	39.7		12.3	50.4			26.0		26.0	26.0	
Effective Green, g (s)	1.6	39.7		12.3	50.4			26.0		26.0	26.0	
Actuated g/C Ratio	0.02	0.44		0.14	0.56			0.29		0.29	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	31	1550		241	1946			463		290	505	
v/s Ratio Prot	0.01	0.27		c0.09	c0.71						0.02	
v/s Ratio Perm								0.09		c0.28		
v/c Ratio	0.71	0.61		0.63	1.27			0.33		0.98	0.08	
Uniform Delay, d1	44.0	19.2		36.7	19.8			25.1		31.7	23.3	
Progression Factor	1.00	1.00		1.01	1.03			1.00		1.00	1.00	
Incremental Delay, d2	54.2	1.8		0.5	120.9			0.4		45.8	0.1	
Delay (s)	98.1	21.0		37.6	141.2			25.5		77.5	23.3	
Level of Service	F	C		D	F			C		E	C	
Approach Delay (s)		22.7			135.2			25.5			68.7	
Approach LOS		C			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	98.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	106.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1304	652	1804	420	884
v/c Ratio	1.06	1.84	0.92	0.70	1.62
Control Delay	68.0	415.1	27.3	32.5	310.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	68.0	415.1	27.3	32.5	310.6
Queue Length 50th (ft)	~364	~568	457	212	~771
Queue Length 95th (ft)	#497	#776	#653	327	#1015
Internal Link Dist (ft)	439		662		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1229	354	1966	597	547
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.06	1.84	0.92	0.70	1.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	580	620	600	1660	0	0	0	0	430	10	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.92		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3265		1770	3539					1681	1518	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3265		1770	3539					1681	1518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	630	674	652	1804	0	0	0	0	467	11	826
RTOR Reduction (vph)	0	214	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	1090	0	652	1804	0	0	0	0	420	876	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		28.0		18.0	50.0					32.0	32.0	
Effective Green, g (s)		28.0		18.0	50.0					32.0	32.0	
Actuated g/C Ratio		0.31		0.20	0.56					0.36	0.36	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1015		354	1966					597	539	
v/s Ratio Prot		c0.33		c0.37	0.51					0.25	c0.58	
v/s Ratio Perm												
v/c Ratio		1.07		1.84	0.92					0.70	1.62	
Uniform Delay, d1		31.0		36.0	18.1					24.9	29.0	
Progression Factor		0.88		1.19	1.02					1.00	1.00	
Incremental Delay, d2		46.7		379.8	0.9					3.8	289.5	
Delay (s)		74.0		422.8	19.4					28.7	318.5	
Level of Service		E		F	B					C	F	
Approach Delay (s)		74.0			126.5			0.0			225.1	
Approach LOS		E			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	138.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	402	696	1445	700	688	634
v/c Ratio	1.36	0.35	1.16	1.21	1.24	0.96
Control Delay	215.9	11.1	110.0	138.6	150.9	46.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	215.9	11.1	110.0	138.6	150.9	46.9
Queue Length 50th (ft)	~304	104	~514	~516	~535	262
Queue Length 95th (ft)	#481	140	#650	#740	#773	#507
Internal Link Dist (ft)		654	490		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	295	2005	1245	579	555	661
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.36	0.35	1.16	1.21	1.24	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	640	0	0	1130	200	1130	10	720	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.98		1.00	0.97	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (prot)	1770	3539			3459		1681	1579	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (perm)	1770	3539			3459		1681	1579	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	696	0	0	1228	217	1228	11	783	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	11	151	0	0	0
Lane Group Flow (vph)	402	696	0	0	1429	0	700	677	483	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	15.0	52.0			33.0		30.0	30.0	30.0			
Effective Green, g (s)	15.0	52.0			33.0		30.0	30.0	30.0			
Actuated g/C Ratio	0.17	0.58			0.37		0.33	0.33	0.33			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	295	2044			1268		560	526	501			
v/s Ratio Prot	c0.23	0.20			c0.41		0.42	c0.43				
v/s Ratio Perm									0.32			
v/c Ratio	1.36	0.34			1.13		1.25	1.29	0.96			
Uniform Delay, d1	37.5	10.0			28.5		30.0	30.0	29.5			
Progression Factor	0.73	1.66			1.00		1.00	1.00	1.00			
Incremental Delay, d2	170.5	0.1			67.8		126.8	142.8	32.3			
Delay (s)	197.9	16.7			96.3		156.8	172.8	61.8			
Level of Service	F	B			F		F	F	E			
Approach Delay (s)		83.1			96.3			132.4			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	109.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	1369	130	1173	272	109	11	65
v/c Ratio	0.59	0.95	0.59	0.73	0.73	0.19	0.10	0.19
Control Delay	54.8	38.4	48.6	23.7	52.2	8.5	43.4	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	38.4	48.6	23.7	52.2	8.5	43.4	17.5
Queue Length 50th (ft)	61	363	72	300	80	4	6	11
Queue Length 95th (ft)	#148	#538	130	358	#137	48	24	47
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	189	1497	276	1732	383	567	118	335
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.91	0.47	0.68	0.71	0.19	0.09	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	830	430	120	1040	40	250	10	90	10	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.87		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3358		1770	3520		3433	1612		1770	1678	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3358		1770	3520		3433	1612		1770	1678	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	902	467	130	1130	43	272	11	98	11	22	43
RTOR Reduction (vph)	0	76	0	0	3	0	0	69	0	0	36	0
Lane Group Flow (vph)	109	1293	0	130	1170	0	272	40	0	11	29	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.8	37.6		11.3	41.1		12.9	27.9		1.1	16.1	
Effective Green, g (s)	7.8	37.6		11.3	41.1		12.9	27.9		1.1	16.1	
Actuated g/C Ratio	0.08	0.40		0.12	0.44		0.14	0.30		0.01	0.17	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	147	1344		213	1540		471	478		20	287	
v/s Ratio Prot	0.06	c0.38		0.07	c0.33		c0.08	0.02		c0.01	c0.02	
v/s Ratio Perm												
v/c Ratio	0.74	0.96		0.61	0.76		0.58	0.08		0.55	0.10	
Uniform Delay, d1	42.1	27.5		39.2	22.2		37.9	23.8		46.2	32.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.1	16.3		5.1	2.2		1.7	0.3		28.9	0.7	
Delay (s)	60.2	43.7		44.3	24.4		39.7	24.1		75.0	33.5	
Level of Service	E	D		D	C		D	C		E	C	
Approach Delay (s)		44.9			26.4			35.2			39.5	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	93.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	22	1587	87	1424	478	196	66
v/c Ratio	0.14	1.13	0.46	0.80	0.72	0.99	0.11
Control Delay	28.1	91.6	38.5	20.6	15.6	83.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	91.6	38.5	20.6	15.6	83.7	7.1
Queue Length 50th (ft)	7	~440	29	194	79	67	8
Queue Length 95th (ft)	27	#566	#98	#483	148	#161	25
Internal Link Dist (ft)		856		679	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	155	1410	189	1782	815	261	765
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	1.13	0.46	0.80	0.59	0.75	0.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1430	30	80	1020	290	40	60	340	180	30	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.90		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3528		1770	3422			1661		1770	1723	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.32	1.00	
Satd. Flow (perm)	1770	3528		1770	3422			1620		603	1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1554	33	87	1109	315	43	65	370	196	33	33
RTOR Reduction (vph)	0	2	0	0	34	0	0	134	0	0	22	0
Lane Group Flow (vph)	22	1585	0	87	1390	0	0	344	0	196	44	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	23.1		5.2	27.5			19.7		19.7	19.7	
Effective Green, g (s)	0.8	23.1		5.2	27.5			19.7		19.7	19.7	
Actuated g/C Ratio	0.01	0.39		0.09	0.46			0.33		0.33	0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	23	1358		153	1568			531		197	565	
v/s Ratio Prot	0.01	c0.45		c0.05	c0.41						0.03	
v/s Ratio Perm								0.21		c0.32		
v/c Ratio	0.96	1.17		0.57	0.89			0.65		0.99	0.08	
Uniform Delay, d1	29.6	18.4		26.3	14.8			17.2		20.1	13.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	166.5	83.4		4.8	7.8			2.7		62.3	0.1	
Delay (s)	196.1	101.9		31.1	22.6			19.9		82.4	13.9	
Level of Service	F	F		C	C			B		F	B	
Approach Delay (s)		103.2			23.1			19.9			65.2	
Approach LOS		F			C			B			E	

Intersection Summary			
HCM 2000 Control Delay	58.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	2120	652	1011	264	540
v/c Ratio	1.26	1.66	0.39	0.89	1.29
Control Delay	144.2	334.7	5.0	67.8	173.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	144.2	334.7	5.0	67.8	173.0
Queue Length 50th (ft)	~765	~544	93	155	~323
Queue Length 95th (ft)	#906	#752	120	#303	#534
Internal Link Dist (ft)	519		540		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1684	393	2595	298	417
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.26	1.66	0.39	0.89	1.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1160	790	600	930	0	0	0	0	270	10	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.94		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3324		1770	3539					1681	1520	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3324		1770	3539					1681	1520	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1261	859	652	1011	0	0	0	0	293	11	500
RTOR Reduction (vph)	0	134	0	0	0	0	0	0	0	0	141	0
Lane Group Flow (vph)	0	1986	0	652	1011	0	0	0	0	264	399	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		41.0		20.0	65.0					17.0	17.0	
Effective Green, g (s)		41.0		20.0	65.0					17.0	17.0	
Actuated g/C Ratio		0.46		0.22	0.72					0.19	0.19	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1514		393	2555					317	287	
v/s Ratio Prot		c0.60		c0.37	0.29					0.16	c0.26	
v/s Ratio Perm												
v/c Ratio		1.31		1.66	0.40					0.83	1.39	
Uniform Delay, d1		24.5		35.0	4.9					35.1	36.5	
Progression Factor		1.00		1.23	0.04					1.00	1.00	
Incremental Delay, d2		145.1		297.6	0.0					16.8	195.5	
Delay (s)		169.6		340.5	0.2					52.0	232.0	
Level of Service		F		F	A					D	F	
Approach Delay (s)		169.6			133.6			0.0			172.9	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	157.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	141.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	685	870	1326	486	472	445
v/c Ratio	1.34	0.37	1.13	1.19	1.12	0.86
Control Delay	195.3	7.2	98.6	138.3	110.7	36.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	195.3	7.2	98.6	138.3	110.7	36.1
Queue Length 50th (ft)	~513	101	~454	~352	~309	146
Queue Length 95th (ft)	#723	133	#588	#551	#519	#330
Internal Link Dist (ft)		675	380		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	511	2359	1173	410	421	517
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.37	1.13	1.19	1.12	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	630	800	0	0	900	320	630	10	650	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.92	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (prot)	1770	3539			3400		1681	1522	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (perm)	1770	3539			3400		1681	1522	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	685	870	0	0	978	348	685	11	707	0	0	0
RTOR Reduction (vph)	0	0	0	0	40	0	0	50	150	0	0	0
Lane Group Flow (vph)	685	870	0	0	1286	0	486	422	295	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	26.0	60.0			30.0		22.0	22.0	22.0			
Effective Green, g (s)	26.0	60.0			30.0		22.0	22.0	22.0			
Actuated g/C Ratio	0.29	0.67			0.33		0.24	0.24	0.24			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	511	2359			1133		410	372	367			
v/s Ratio Prot	c0.39	0.25			c0.38		c0.29	0.28				
v/s Ratio Perm									0.20			
v/c Ratio	1.34	0.37			1.14		1.19	1.13	0.80			
Uniform Delay, d1	32.0	6.6			30.0		34.0	34.0	32.0			
Progression Factor	0.68	1.83			1.66		1.00	1.00	1.00			
Incremental Delay, d2	154.5	0.0			70.1		105.6	88.5	17.0			
Delay (s)	176.1	12.2			120.0		139.6	122.5	48.9			
Level of Service	F	B			F		F	F	D			
Approach Delay (s)		84.4			120.0			105.1			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	102.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	141.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	1543	87	826	424	98	33	98
v/c Ratio	0.21	1.02	0.89	0.50	0.93	0.17	0.34	0.25
Control Delay	40.0	54.5	109.7	19.7	67.5	8.0	50.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	54.5	109.7	19.7	67.5	8.0	50.5	10.5
Queue Length 50th (ft)	18	~465	50	141	124	5	19	5
Queue Length 95th (ft)	46	#624	#140	257	#212	41	48	46
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	161	1511	98	1727	457	572	98	392
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	1.02	0.89	0.48	0.93	0.17	0.34	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

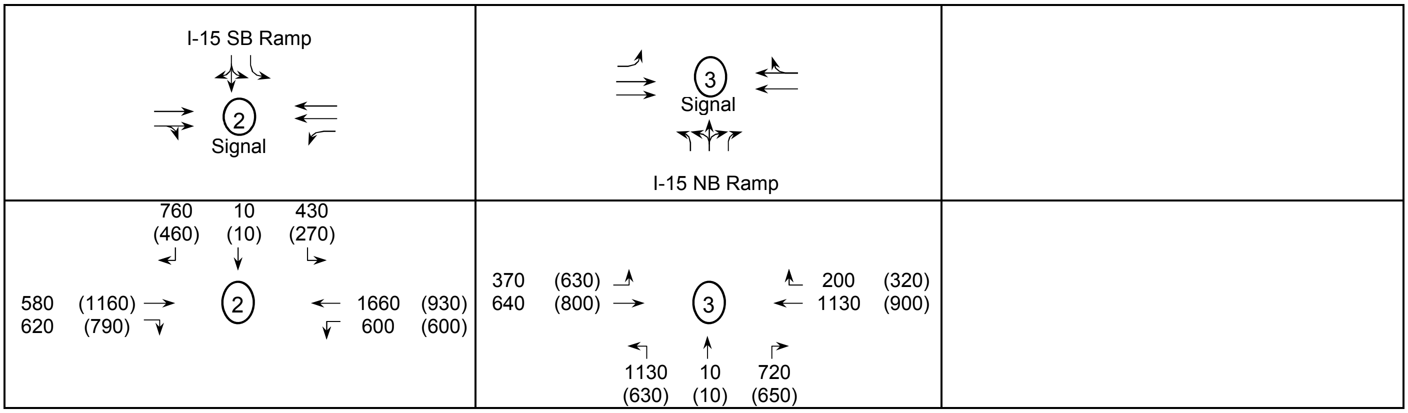
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1120	300	80	750	10	390	10	80	30	10	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3427		1770	3532		3433	1615		1770	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3427		1770	3532		3433	1615		1770	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1217	326	87	815	11	424	11	87	33	11	87
RTOR Reduction (vph)	0	26	0	0	1	0	0	61	0	0	70	0
Lane Group Flow (vph)	33	1517	0	87	825	0	424	37	0	33	28	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.6	41.4		5.0	41.8		13.6	28.6		3.0	18.0	
Effective Green, g (s)	4.6	41.4		5.0	41.8		13.6	28.6		3.0	18.0	
Actuated g/C Ratio	0.05	0.44		0.05	0.44		0.14	0.30		0.03	0.19	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	86	1509		94	1570		496	491		56	309	
v/s Ratio Prot	0.02	c0.44		c0.05	0.23		c0.12	0.02		c0.02	c0.02	
v/s Ratio Perm												
v/c Ratio	0.38	1.01		0.93	0.53		0.85	0.08		0.59	0.09	
Uniform Delay, d1	43.3	26.3		44.3	18.9		39.2	23.3		44.9	31.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	24.4		68.3	0.3		13.5	0.3		14.9	0.6	
Delay (s)	46.2	50.7		112.6	19.2		52.7	23.6		59.7	31.8	
Level of Service	D	D		F	B		D	C		E	C	
Approach Delay (s)		50.6			28.1			47.2			38.9	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Signalized Intersection
CAPACITY ANALYSIS

Location: I-15/Carroll Canyon Rd **Horizon Year**

DIAGRAM AND TRAFFIC FLOWS:



LANE VOLUMES (ILV/HR)

PHASE 1	PHASE 2	PHASE 3	PHASE 4
476 (817); 476 (817) RTOR; 185 (315); 160 (200); 160 (200)	RTOR 385 (235); 430 (270); 185 (315); 160 (200); 160 (200)	415 (233); 415 (233); 300 (300); 548 (365); 548 (365); 548 (365) RTOR	RTOR 635 (610); 635 (610); 415 (233); 415 (233); 300 (300)

RTOR: Right Turn on Red Observed

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	AM	(PM)	PHASE 2	AM	(PM)	PHASE 3	AM	(PM)	PHASE 4	AM	(PM)
	476	(817)		430	(315)		548	(365)		635	(610)

TOTAL OPERATING LEVEL (ILV/HR)

AM	Total	2089
(PM)	Total	(2107)

STATUS		AM	(PM)	
AM	**At Capacity**	-	-	< 1,200 ILV/HR.
(PM)	**At Capacity**	-	-	> 1,200 but < 1,500 ILV/HR.
		X	X	> 1,500 ILV/HR (CAPACITY)

Appendix Q

SANDAG 2035 ADTs and Turn Moves

	Near_Term ADTs												*Horizon Year (2035) ADTs*											
Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	*NBL*	*NBT*	*NBR*	*SBL*	*SBT*	*SBR*	*EBL*	*EBT*	*EBR*	*WBL*	*WBT*	*WBR*
1) Carroll Cyn/Maya Lin		2400			11100			18300			31800			7300			9200			23600			39800	
AM E	20	20	95	239	20	11	14	472	33	128	1,385	233												
AM 2035 wo P	40	40	110	260	30	20	20	830	40	140	2010	270	0.008	0.008	0.040	0.022	0.002	0.001	0.001	0.026	0.002	0.004	0.044	0.007
PM E	22	45	311	141	17	20	19	742	27	65	587	244												
PM 2035 wo P	(40)	(60)	(340)	(180)	(30)	(30)	(20)	(1430)	(30)	(80)	(1020)	(290)	0.009	0.019	0.130	0.013	0.002	0.002	0.001	0.041	0.001	0.002	0.018	0.008
2) Carroll I-15 SB Ramp		10000			9200			31800			23400			8600			11800			39800			31100	
AM E	0	0	0	337	1	520	0	390	439	563	1,235	0												
AM 2035 wo P	0	0	0	430	10	760	0	580	620	600	1660	0	0.000	0.000	0.000	0.037	0.000	0.057	0.000	0.012	0.014	0.024	0.053	0.000
PM E	0	0	0	209	2	291	0	767	498	515	612	0												
PM 2035 wo P	0	0	0	(270)	(10)	(460)	0	(1160)	(790)	(600)	(930)	0	0.000	0.000	0.000	0.023	0.000	0.032	0.000	0.024	0.016	0.022	0.026	0.000
3) Carroll I-15 NB Ramp		12200			7400			23400			20800			11300			10500			31100			27600	
AM E	826	1	701	0	0	0	223	490	0	0	982	148												
AM 2035 wo P	1130	10	720	0	0	0	370	640	0	0	1130	200	0.068	0.000	0.057	0.000	0.000	0.000	0.010	0.021	0.000	0.000	0.047	0.007
PM E 11/5/14	415	6	596	0	0	0	386	595	0	0	697	290												
PM 2035 wo P	(630)	(10)	(650)	0	0	0	(630)	(800)	0	0	(900)	(320)	0.034	0.000	0.049	0.000	0.000	0.000	0.016	0.025	0.000	0.000	0.034	0.014
5) Carroll/Business Parl		6500			3800			20800			13300			8000			3800			25800			16900	
AM E	235	4	74	6	18	33	93	685	412	112	876	34												
AM 2035 wo P	250	10	90	10	20	40	100	830	430	120	1040	40	0.036	0.001	0.011	0.002	0.005	0.009	0.004	0.033	0.020	0.008	0.066	0.003
PM E	349	4	61	28	5	78	26	872	248	64	519	4												
PM 2035 wo P	(390)	(10)	(80)	(30)	(10)	(80)	(30)	(1120)	(300)	(80)	(750)	(10)	0.054	0.001	0.009	0.007	0.001	0.021	0.001	0.042	0.012	0.005	0.039	0.000

Balancing between intersections override forecasting by percentage

Appendix R

Horizon Year (2035) + Project Intersection Level of Service Calculations

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	22	956	163	2511	210	287	55
v/c Ratio	0.28	0.62	0.65	1.23	0.40	1.00	0.11
Control Delay	51.0	22.1	49.0	127.2	18.2	86.9	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	22.1	49.0	127.2	18.2	86.9	16.6
Queue Length 50th (ft)	12	216	88	~897	57	162	14
Queue Length 95th (ft)	37	292	150	#1138	119	#326	41
Internal Link Dist (ft)		856		719	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	78	1539	295	2049	520	288	521
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.62	0.55	1.23	0.40	1.00	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	840	40	150	2032	278	40	40	114	264	30	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.92		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	3475			1697		1770	1751	
Flt Permitted	0.95	1.00		0.95	1.00			0.94		0.54	1.00	
Satd. Flow (perm)	1770	3515		1770	3475			1604		997	1751	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	913	43	163	2209	302	43	43	124	287	33	22
RTOR Reduction (vph)	0	3	0	0	11	0	0	58	0	0	16	0
Lane Group Flow (vph)	22	953	0	163	2500	0	0	152	0	287	39	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.6	39.0		13.0	50.4			26.0		26.0	26.0	
Effective Green, g (s)	1.6	39.0		13.0	50.4			26.0		26.0	26.0	
Actuated g/C Ratio	0.02	0.43		0.14	0.56			0.29		0.29	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	31	1523		255	1946			463		288	505	
v/s Ratio Prot	0.01	0.27		c0.09	c0.72						0.02	
v/s Ratio Perm								0.09		c0.29		
v/c Ratio	0.71	0.63		0.64	1.28			0.33		1.00	0.08	
Uniform Delay, d1	44.0	19.8		36.3	19.8			25.1		32.0	23.3	
Progression Factor	1.00	1.00		1.01	1.05			1.00		1.00	1.00	
Incremental Delay, d2	54.2	2.0		0.5	128.5			0.4		51.7	0.1	
Delay (s)	98.1	21.8		37.0	149.2			25.6		83.7	23.3	
Level of Service	F	C		D	F			C		F	C	
Approach Delay (s)		23.5			142.4			25.6			74.0	
Approach LOS		C			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	103.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1324	684	1848	428	885
v/c Ratio	1.08	1.93	0.94	0.72	1.62
Control Delay	75.6	454.4	29.9	33.1	312.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	75.6	454.4	29.9	33.1	312.7
Queue Length 50th (ft)	~381	~606	481	218	~774
Queue Length 95th (ft)	#515	#816	#681	335	#1021
Internal Link Dist (ft)	407		835		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1224	354	1966	597	546
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.08	1.93	0.94	0.72	1.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	598	620	629	1700	0	0	0	0	438	10	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.92		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3269		1770	3539					1681	1518	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3269		1770	3539					1681	1518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	650	674	684	1848	0	0	0	0	476	11	826
RTOR Reduction (vph)	0	207	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	1117	0	684	1848	0	0	0	0	428	878	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		28.0		18.0	50.0					32.0	32.0	
Effective Green, g (s)		28.0		18.0	50.0					32.0	32.0	
Actuated g/C Ratio		0.31		0.20	0.56					0.36	0.36	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1017		354	1966					597	539	
v/s Ratio Prot		c0.34		c0.39	0.52					0.25	c0.58	
v/s Ratio Perm												
v/c Ratio		1.10		1.93	0.94					0.72	1.63	
Uniform Delay, d1		31.0		36.0	18.6					25.1	29.0	
Progression Factor		0.86		1.18	1.07					1.00	1.00	
Incremental Delay, d2		55.4		420.4	1.2					4.1	291.4	
Delay (s)		82.2		463.1	21.2					29.2	320.4	
Level of Service		F		F	C					C	F	
Approach Delay (s)		82.2			140.6			0.0			225.4	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	147.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	151.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	402	724	1539	700	698	638
v/c Ratio	1.36	0.35	1.20	1.25	1.30	0.99
Control Delay	215.9	10.7	125.0	155.8	175.1	56.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	215.9	10.7	125.0	155.8	175.1	56.0
Queue Length 50th (ft)	~304	106	~562	~528	~559	275
Queue Length 95th (ft)	#481	142	#699	#752	#798	#528
Internal Link Dist (ft)		538	514		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	295	2044	1284	560	538	642
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.36	0.35	1.20	1.25	1.30	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	666	0	0	1199	217	1130	10	733	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.98		1.00	0.97	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (prot)	1770	3539			3458		1681	1578	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (perm)	1770	3539			3458		1681	1578	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	724	0	0	1303	236	1228	11	797	0	0	0
RTOR Reduction (vph)	0	0	0	0	17	0	0	12	148	0	0	0
Lane Group Flow (vph)	402	724	0	0	1523	0	700	686	490	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	14.0	53.0			35.0		29.0	29.0	29.0			
Effective Green, g (s)	14.0	53.0			35.0		29.0	29.0	29.0			
Actuated g/C Ratio	0.16	0.59			0.39		0.32	0.32	0.32			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	275	2084			1344		541	508	484			
v/s Ratio Prot	c0.23	0.20			c0.44		0.42	c0.44				
v/s Ratio Perm									0.33			
v/c Ratio	1.46	0.35			1.13		1.29	1.35	1.01			
Uniform Delay, d1	38.0	9.6			27.5		30.5	30.5	30.5			
Progression Factor	0.74	1.66			1.52		1.00	1.00	1.00			
Incremental Delay, d2	213.7	0.1			66.3		145.6	170.7	43.8			
Delay (s)	241.8	16.0			108.0		176.1	201.2	74.3			
Level of Service	F	B			F		F	F	E			
Approach Delay (s)		96.6			108.0			152.8			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	124.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	151.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	0	1397	1	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1518	1	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1520				1519	760
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1520				1519	760
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	435				110	349

Direction, Lane #	WB 1	WB 2	SB 1
Volume Total	1012	507	28
Volume Left	0	0	0
Volume Right	0	1	28
cSH	1700	1700	349
Volume to Capacity	0.60	0.30	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	16.2
Lane LOS			C
Approach Delay (s)	0.0		16.2
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	77	1478	1468	40	73
v/c Ratio	0.27	0.69	0.82	0.07	0.14
Control Delay	40.6	16.4	23.4	26.9	7.9
Queue Delay	0.0	0.5	0.0	0.0	0.0
Total Delay	40.6	16.9	23.4	26.9	7.9
Queue Length 50th (ft)	24	246	344	17	0
Queue Length 95th (ft)	m34	m222	423	44	34
Internal Link Dist (ft)		490	592	169	
Turn Bay Length (ft)	300				250
Base Capacity (vph)	419	2398	1846	534	529
Starvation Cap Reductn	0	456	6	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.76	0.80	0.07	0.14

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	71	1360	1331	19	37	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3532		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3532		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1478	1447	21	40	73
RTOR Reduction (vph)	0	0	1	0	0	52
Lane Group Flow (vph)	77	1478	1467	0	40	21
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	6.3	55.6	45.3		26.4	26.4
Effective Green, g (s)	6.3	55.6	45.3		26.4	26.4
Actuated g/C Ratio	0.07	0.62	0.50		0.29	0.29
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	240	2186	1777		519	464
v/s Ratio Prot	0.02	c0.42	c0.42		c0.02	
v/s Ratio Perm						0.01
v/c Ratio	0.32	0.68	0.83		0.08	0.05
Uniform Delay, d1	39.8	11.3	19.0		23.0	22.8
Progression Factor	1.02	1.32	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.6	3.3		0.3	0.2
Delay (s)	41.0	15.5	22.3		23.3	23.0
Level of Service	D	B	C		C	C
Approach Delay (s)		16.8	22.3		23.1	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	1407	130	1182	279	109	11	65
v/c Ratio	0.53	0.93	0.82	0.84	0.74	0.18	0.14	0.18
Control Delay	49.9	34.5	77.6	29.8	51.2	7.5	45.4	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	34.5	77.6	29.8	51.2	7.5	45.4	16.1
Queue Length 50th (ft)	60	355	74	303	80	4	6	10
Queue Length 95th (ft)	#140	#512	#174	374	#134	44	23	45
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	205	1550	159	1552	387	597	79	356
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.91	0.82	0.76	0.72	0.18	0.14	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	848	446	120	1048	40	257	10	90	10	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.87		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3356		1770	3520		3433	1612		1770	1678	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3356		1770	3520		3433	1612		1770	1678	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	922	485	130	1139	43	279	11	98	11	22	43
RTOR Reduction (vph)	0	79	0	0	3	0	0	67	0	0	35	0
Lane Group Flow (vph)	109	1328	0	130	1179	0	279	42	0	11	30	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.3	37.9		8.0	35.6		13.1	29.3		0.8	17.0	
Effective Green, g (s)	10.3	37.9		8.0	35.6		13.1	29.3		0.8	17.0	
Actuated g/C Ratio	0.11	0.41		0.09	0.39		0.14	0.32		0.01	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	1382		153	1362		488	513		15	310	
v/s Ratio Prot	0.06	c0.40		0.07	c0.33		c0.08	0.03		c0.01	c0.02	
v/s Ratio Perm												
v/c Ratio	0.55	0.96		0.85	0.87		0.57	0.08		0.73	0.10	
Uniform Delay, d1	38.7	26.3		41.4	26.0		36.8	21.9		45.5	31.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	15.8		33.2	6.0		1.6	0.3		103.2	0.6	
Delay (s)	41.9	42.1		74.6	32.0		38.5	22.3		148.7	31.7	
Level of Service	D	D		E	C		D	C		F	C	
Approach Delay (s)		42.1			36.2			33.9			48.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	22	1622	96	1451	493	209	66
v/c Ratio	0.15	1.19	0.54	0.85	0.71	0.98	0.11
Control Delay	28.6	117.0	43.9	23.3	15.1	77.1	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	117.0	43.9	23.3	15.1	77.1	6.8
Queue Length 50th (ft)	7	~454	33	215	80	69	7
Queue Length 95th (ft)	27	#582	#109	#494	156	#172	25
Internal Link Dist (ft)		856		672	733		419
Turn Bay Length (ft)	165		75			75	
Base Capacity (vph)	148	1367	179	1717	814	267	765
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	1.19	0.54	0.85	0.61	0.78	0.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1462	30	88	1038	297	40	60	354	192	30	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.89		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3528		1770	3421			1659		1770	1723	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.33	1.00	
Satd. Flow (perm)	1770	3528		1770	3421			1620		616	1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1589	33	96	1128	323	43	65	385	209	33	33
RTOR Reduction (vph)	0	2	0	0	35	0	0	130	0	0	22	0
Lane Group Flow (vph)	22	1620	0	96	1416	0	0	363	0	209	44	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.8	22.5		4.7	26.4			20.8		20.8	20.8	
Effective Green, g (s)	0.8	22.5		4.7	26.4			20.8		20.8	20.8	
Actuated g/C Ratio	0.01	0.38		0.08	0.44			0.35		0.35	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	23	1323		138	1505			561		213	597	
v/s Ratio Prot	0.01	c0.46		c0.05	c0.41						0.03	
v/s Ratio Perm								0.22		c0.34		
v/c Ratio	0.96	1.22		0.70	0.94			0.65		0.98	0.07	
Uniform Delay, d1	29.6	18.8		27.0	16.1			16.5		19.4	13.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	166.5	108.0		14.2	12.8			2.6		56.0	0.1	
Delay (s)	196.1	126.8		41.1	28.9			19.1		75.4	13.2	
Level of Service	F	F		D	C			B		E	B	
Approach Delay (s)		127.7			29.6			19.1			60.5	
Approach LOS		F			C			B			E	

Intersection Summary			
HCM 2000 Control Delay	71.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	2194	678	1047	288	543
v/c Ratio	1.34	1.73	0.41	0.91	1.30
Control Delay	182.4	363.3	5.5	69.6	175.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	182.4	363.3	5.5	69.6	175.4
Queue Length 50th (ft)	~836	~575	103	170	~336
Queue Length 95th (ft)	#977	#786	133	#327	#548
Internal Link Dist (ft)	530		674		687
Turn Bay Length (ft)		160		300	
Base Capacity (vph)	1632	393	2555	317	418
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.34	1.73	0.41	0.91	1.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1228	790	624	963	0	0	0	0	294	10	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					0.95	0.95	
Frt		0.94		1.00	1.00					1.00	0.86	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3331		1770	3539					1681	1521	
Flt Permitted		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3331		1770	3539					1681	1521	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1335	859	678	1047	0	0	0	0	320	11	500
RTOR Reduction (vph)	0	116	0	0	0	0	0	0	0	0	131	0
Lane Group Flow (vph)	0	2078	0	678	1047	0	0	0	0	288	412	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)		41.0		20.0	65.0					17.0	17.0	
Effective Green, g (s)		41.0		20.0	65.0					17.0	17.0	
Actuated g/C Ratio		0.46		0.22	0.72					0.19	0.19	
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1517		393	2555					317	287	
v/s Ratio Prot		c0.62		c0.38	0.30					0.17	c0.27	
v/s Ratio Perm												
v/c Ratio		1.37		1.73	0.41					0.91	1.43	
Uniform Delay, d1		24.5		35.0	4.9					35.7	36.5	
Progression Factor		1.00		1.22	0.04					1.00	1.00	
Incremental Delay, d2		170.7		327.3	0.0					28.1	214.3	
Delay (s)		195.2		370.1	0.2					63.9	250.8	
Level of Service		F		F	A					E	F	
Approach Delay (s)		195.2			145.6			0.0			186.0	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	175.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	147.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	685	959	1403	507	482	459
v/c Ratio	1.40	0.41	1.20	1.18	1.08	0.91
Control Delay	218.8	8.0	125.5	135.8	93.2	46.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	218.8	8.0	125.5	135.8	93.2	46.6
Queue Length 50th (ft)	~525	120	~504	~367	~296	183
Queue Length 95th (ft)	#735	156	#640	#568	#507	#382
Internal Link Dist (ft)		588	393		847	
Turn Bay Length (ft)	160			280		280
Base Capacity (vph)	491	2320	1172	429	448	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.40	0.41	1.20	1.18	1.08	0.91

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	630	882	0	0	957	334	630	10	692	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.91	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (prot)	1770	3539			3402		1681	1513	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (perm)	1770	3539			3402		1681	1513	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	685	959	0	0	1040	363	685	11	752	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	62	118	0	0	0
Lane Group Flow (vph)	685	959	0	0	1364	0	507	420	341	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	25.0	59.0			30.0		23.0	23.0	23.0			
Effective Green, g (s)	25.0	59.0			30.0		23.0	23.0	23.0			
Actuated g/C Ratio	0.28	0.66			0.33		0.26	0.26	0.26			
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	491	2320			1134		429	386	384			
v/s Ratio Prot	c0.39	0.27			c0.40		c0.30	0.28				
v/s Ratio Perm									0.23			
v/c Ratio	1.40	0.41			1.20		1.18	1.09	0.89			
Uniform Delay, d1	32.5	7.3			30.0		33.5	33.5	32.2			
Progression Factor	0.68	1.88			1.23		1.00	1.00	1.00			
Incremental Delay, d2	179.0	0.0			97.2		103.4	71.7	24.8			
Delay (s)	201.2	13.8			134.0		136.9	105.2	57.0			
Level of Service	F	B			F		F	F	E			
Approach Delay (s)		91.9			134.0			101.0			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	108.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	147.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	0	1286	2	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1398	2	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1400				1399	700
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1400				1399	700
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	484				132	382

Direction, Lane #	WB 1	WB 2	SB 1
Volume Total	932	468	28
Volume Left	0	0	0
Volume Right	0	2	28
cSH	1700	1700	382
Volume to Capacity	0.55	0.28	0.07
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	15.2
Lane LOS			C
Approach Delay (s)	0.0		15.2
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	214	1576	1389	39	72
v/c Ratio	0.54	0.69	0.82	0.08	0.15
Control Delay	45.5	13.1	24.2	27.9	8.3
Queue Delay	0.0	0.4	0.0	0.0	0.0
Total Delay	45.5	13.5	24.2	27.9	8.3
Queue Length 50th (ft)	67	172	324	17	0
Queue Length 95th (ft)	m89	m200	405	44	34
Internal Link Dist (ft)		490	592	169	
Turn Bay Length (ft)	300				250
Base Capacity (vph)	457	2437	1799	473	476
Starvation Cap Reductn	0	337	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.75	0.77	0.08	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	197	1450	1222	56	36	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3516		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3516		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1576	1328	61	39	72
RTOR Reduction (vph)	0	0	4	0	0	53
Lane Group Flow (vph)	214	1576	1385	0	39	19
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	10.5	57.9	43.4		24.1	24.1
Effective Green, g (s)	10.5	57.9	43.4		24.1	24.1
Actuated g/C Ratio	0.12	0.64	0.48		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	400	2276	1695		473	423
v/s Ratio Prot	0.06	c0.45	c0.39		c0.02	
v/s Ratio Perm						0.01
v/c Ratio	0.54	0.69	0.82		0.08	0.05
Uniform Delay, d1	37.5	10.3	19.9		24.7	24.4
Progression Factor	1.11	1.16	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.7	3.2		0.3	0.2
Delay (s)	42.8	12.7	23.1		25.0	24.6
Level of Service	D	B	C		C	C
Approach Delay (s)		16.3	23.1		24.8	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	1574	87	854	449	98	33	98
v/c Ratio	0.21	1.04	0.89	0.52	0.98	0.17	0.34	0.25
Control Delay	40.7	60.4	109.7	19.6	78.6	8.0	50.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	60.4	109.7	19.6	78.6	8.0	50.5	10.5
Queue Length 50th (ft)	18	~506	50	147	132	5	19	5
Queue Length 95th (ft)	46	#643	#140	263	#229	41	48	46
Internal Link Dist (ft)		592		1845		576		239
Turn Bay Length (ft)	200		200		350		150	
Base Capacity (vph)	156	1512	98	1727	457	572	98	392
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	1.04	0.89	0.49	0.98	0.17	0.34	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

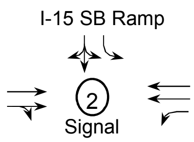
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1135	313	80	776	10	413	10	80	30	10	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3425		1770	3532		3433	1615		1770	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3425		1770	3532		3433	1615		1770	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1234	340	87	843	11	449	11	87	33	11	87
RTOR Reduction (vph)	0	27	0	0	1	0	0	61	0	0	70	0
Lane Group Flow (vph)	33	1547	0	87	853	0	449	37	0	33	28	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.3	41.4		5.0	42.1		13.6	28.6		3.0	18.0	
Effective Green, g (s)	4.3	41.4		5.0	42.1		13.6	28.6		3.0	18.0	
Actuated g/C Ratio	0.05	0.44		0.05	0.45		0.14	0.30		0.03	0.19	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	80	1508		94	1581		496	491		56	309	
v/s Ratio Prot	0.02	c0.45		c0.05	0.24		c0.13	0.02		c0.02	c0.02	
v/s Ratio Perm												
v/c Ratio	0.41	1.03		0.93	0.54		0.91	0.08		0.59	0.09	
Uniform Delay, d1	43.6	26.3		44.3	18.9		39.6	23.3		44.9	31.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	29.9		68.3	0.4		19.9	0.3		14.9	0.6	
Delay (s)	47.1	56.2		112.6	19.2		59.4	23.6		59.7	31.8	
Level of Service	D	E		F	B		E	C		E	C	
Approach Delay (s)		56.0			27.9			53.0			38.9	
Approach LOS		E			C			D			D	

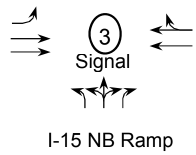
Intersection Summary			
HCM 2000 Control Delay	46.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Signalized Intersection
CAPACITY ANALYSIS

Location: I-15/Carroll Canyon Rd **Horizon Year + Project**

DIAGRAM AND TRAFFIC FLOWS:





Intersection 2

Southbound	760 (460)	10 (10)	438 (294)
Eastbound	598 (1228)	620 (790)	
Westbound	1700 (963)	629 (624)	

Intersection 3

Eastbound	370 (630)	666 (882)	
Westbound	217 (334)	1199 (957)	
Northbound	1130 (630)	10 (10)	733 (692)

LANE VOLUMES (ILV/HR)

PHASE 1

		185	(315)
485	(851)	167	(221)
485	(851)	167	(221)
RTOR			

RTOR: Right Turn on Red Observed

PHASE 2

RTOR			
385	438		
(235)	(294)	185	(315)
		167	(221)
		167	(221)

PHASE 3

425	(241)		
425	(241)		
315	(312)		
551 (375)	551 (375)	551 (375) RTOR	

PHASE 4

			RTOR
		675	(646)
		675	(646)
425	(241)		
425	(241)		
315	(312)		

CRITICAL LANE VOLUMES (ILV/HR)

PHASE 1	AM	(PM)	PHASE 2	AM	(PM)	PHASE 3	AM	(PM)	PHASE 4	AM	(PM)
	485	(851)		438	(315)		551	(375)		675	(646)

TOTAL OPERATING LEVEL (ILV/HR)

AM	Total	2149
(PM)	Total	(2186)

STATUS

AM **At Capacity**
(PM) **At Capacity**

AM	(PM)	
-	-	< 1,200 ILV/HR.
-	-	> 1,200 but < 1,500 ILV/HR.
X	X	> 1,500 ILV/HR (CAPACITY)

Appendix S

Plus Project Intersection LOS Calculations with Mitigation

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	519	0	0	1068	165	889	1	714	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	1770	3539			3539	1583	1681	1550	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	1770	3539			3539	1583	1681	1550	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	564	0	0	1161	179	966	1	776	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	106	0	25	205	0	0	0
Lane Group Flow (vph)	247	564	0	0	1161	73	609	558	346	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	12.0	52.0			36.0	36.0	30.0	30.0	30.0			
Effective Green, g (s)	12.0	52.0			36.0	36.0	30.0	30.0	30.0			
Actuated g/C Ratio	0.13	0.58			0.40	0.40	0.33	0.33	0.33			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	236	2044			1415	633	560	516	501			
v/s Ratio Prot	c0.14	0.16			c0.33		c0.36	0.36				
v/s Ratio Perm						0.05			0.23			
v/c Ratio	1.05	0.28			0.82	0.12	1.09	1.08	0.69			
Uniform Delay, d1	39.0	9.5			24.1	17.0	30.0	30.0	26.0			
Progression Factor	0.68	1.76			1.64	4.91	1.00	1.00	1.00			
Incremental Delay, d2	58.1	0.2			4.0	0.3	64.0	63.2	7.6			
Delay (s)	84.5	17.0			43.6	83.7	94.0	93.2	33.6			
Level of Service	F	B			D	F	F	F	C			
Approach Delay (s)		37.5			48.9			74.6			0.0	
Approach LOS		D			D			E			A	

Intersection Summary			
HCM 2000 Control Delay	58.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	694	0	0	759	304	435	6	638	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	1770	3539			3539	1583	1681	1476	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	1770	3539			3539	1583	1681	1476	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	455	754	0	0	825	330	473	7	693	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	205	0	159	159	0	0	0
Lane Group Flow (vph)	455	754	0	0	825	125	407	226	222	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	18.0	56.0			34.0	34.0	26.0	26.0	26.0			
Effective Green, g (s)	18.0	56.0			34.0	34.0	26.0	26.0	26.0			
Actuated g/C Ratio	0.20	0.62			0.38	0.38	0.29	0.29	0.29			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	354	2202			1336	598	485	426	434			
v/s Ratio Prot	c0.26	0.21			c0.23		c0.24	0.15				
v/s Ratio Perm						0.08			0.15			
v/c Ratio	1.29	0.34			0.62	0.21	0.84	0.53	0.51			
Uniform Delay, d1	36.0	8.2			22.7	18.9	30.0	26.9	26.7			
Progression Factor	0.64	1.83			1.48	7.02	1.00	1.00	1.00			
Incremental Delay, d2	130.4	0.0			1.7	0.6	15.9	4.7	4.2			
Delay (s)	153.6	15.0			35.3	133.4	45.9	31.5	30.9			
Level of Service	F	B			D	F	D	C	C			
Approach Delay (s)		67.1			63.3			36.3			0.0	
Approach LOS		E			E			D			A	

Intersection Summary			
HCM 2000 Control Delay	55.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	840	40	150	2032	278	40	40	114	264	30	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.92		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3515		1770	3475			1697		1770	1751	
Flt Permitted	0.95	1.00		0.95	1.00			0.94		0.53	1.00	
Satd. Flow (perm)	1770	3515		1770	3475			1603		983	1751	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	913	43	163	2209	302	43	43	124	287	33	22
RTOR Reduction (vph)	0	3	0	0	11	0	0	58	0	0	16	0
Lane Group Flow (vph)	22	953	0	163	2500	0	0	152	0	287	39	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	1.6	40.0		13.0	51.4			25.0		25.0	25.0	
Effective Green, g (s)	1.6	40.0		13.0	51.4			25.0		25.0	25.0	
Actuated g/C Ratio	0.02	0.44		0.14	0.57			0.28		0.28	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	31	1562		255	1984			445		273	486	
v/s Ratio Prot	0.01	0.27		c0.09	c0.72						0.02	
v/s Ratio Perm								0.09		c0.29		
v/c Ratio	0.71	0.61		0.64	1.26			0.34		1.05	0.08	
Uniform Delay, d1	44.0	19.1		36.3	19.3			25.9		32.5	24.0	
Progression Factor	1.00	1.00		1.16	0.75			1.00		1.00	1.00	
Incremental Delay, d2	54.2	1.8		0.5	117.4			0.5		68.6	0.1	
Delay (s)	98.1	20.8		42.7	131.9			26.4		101.1	24.1	
Level of Service	F	C		D	F			C		F	C	
Approach Delay (s)		22.6			126.5			26.4			88.7	
Approach LOS		C			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	94.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	598	620	629	1700	0	0	0	0	438	10	760
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	
Frt		1.00	0.85	1.00	1.00					1.00	0.86	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1681	1518	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1681	1518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	650	674	684	1848	0	0	0	0	476	11	826
RTOR Reduction (vph)	0	0	464	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	650	210	684	1848	0	0	0	0	428	878	0
Turn Type		NA	Perm	Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases			2									
Actuated Green, G (s)		27.0	27.0	19.0	50.0					32.0	32.0	
Effective Green, g (s)		27.0	27.0	19.0	50.0					32.0	32.0	
Actuated g/C Ratio		0.30	0.30	0.21	0.56					0.36	0.36	
Clearance Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1061	474	373	1966					597	539	
v/s Ratio Prot		0.18		c0.39	c0.52					0.25	c0.58	
v/s Ratio Perm			0.13									
v/c Ratio		0.61	0.44	1.83	0.94					0.72	1.63	
Uniform Delay, d1		27.0	25.4	35.5	18.6					25.1	29.0	
Progression Factor		0.75	1.74	0.98	1.24					1.00	1.00	
Incremental Delay, d2		0.8	0.5	376.2	1.2					4.1	291.4	
Delay (s)		21.1	44.8	410.9	24.3					29.2	320.4	
Level of Service		C	D	F	C					C	F	
Approach Delay (s)		33.2			128.7			0.0			225.4	
Approach LOS		C			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	128.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	146.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	666	0	0	1199	217	1130	10	733	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.97	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)	1770	3539			3539	1583	1681	1578	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)	1770	3539			3539	1583	1681	1578	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	724	0	0	1303	236	1228	11	797	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	152	0	12	156	0	0	0
Lane Group Flow (vph)	402	724	0	0	1303	84	700	686	482	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	18.0	54.0			32.0	32.0	28.0	28.0	28.0			
Effective Green, g (s)	18.0	54.0			32.0	32.0	28.0	28.0	28.0			
Actuated g/C Ratio	0.20	0.60			0.36	0.36	0.31	0.31	0.31			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	354	2123			1258	562	522	490	467			
v/s Ratio Prot	c0.23	0.20			c0.37		0.42	c0.44				
v/s Ratio Perm						0.05			0.32			
v/c Ratio	1.14	0.34			1.04	0.15	1.34	1.40	1.03			
Uniform Delay, d1	36.0	9.1			29.0	19.7	31.0	31.0	31.0			
Progression Factor	1.32	1.04			1.35	4.44	1.00	1.00	1.00			
Incremental Delay, d2	83.1	0.3			30.8	0.4	166.0	192.3	50.3			
Delay (s)	130.7	9.7			69.9	88.1	197.0	223.3	81.3			
Level of Service	F	A			E	F	F	F	F			
Approach Delay (s)		52.9			72.7			169.8			0.0	
Approach LOS		D			E			F			A	

Intersection Summary			
HCM 2000 Control Delay	110.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	146.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1462	30	88	1038	297	40	60	354	192	30	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.89		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	3528		1770	3421			1659		1770	1723	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.32	1.00	
Satd. Flow (perm)	1770	3528		1770	3421			1619		589	1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1589	33	96	1128	323	43	65	385	209	33	33
RTOR Reduction (vph)	0	2	0	0	27	0	0	138	0	0	21	0
Lane Group Flow (vph)	22	1620	0	96	1424	0	0	355	0	209	45	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	2.4	37.1		8.5	43.2			32.4		32.4	32.4	
Effective Green, g (s)	2.4	37.1		8.5	43.2			32.4		32.4	32.4	
Actuated g/C Ratio	0.03	0.41		0.09	0.48			0.36		0.36	0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	47	1454		167	1642			582		212	620	
v/s Ratio Prot	0.01	c0.46		c0.05	c0.42						0.03	
v/s Ratio Perm								0.22		c0.35		
v/c Ratio	0.47	1.11		0.57	0.87			0.61		0.99	0.07	
Uniform Delay, d1	43.2	26.4		39.0	20.8			23.6		28.6	18.9	
Progression Factor	1.00	1.00		0.97	1.48			1.00		1.00	1.00	
Incremental Delay, d2	7.2	61.5		3.4	4.7			1.9		57.3	0.0	
Delay (s)	50.4	88.0		41.4	35.5			25.5		85.9	19.0	
Level of Service	D	F		D	D			C		F	B	
Approach Delay (s)		87.5			35.9			25.5			69.8	
Approach LOS		F			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1228	790	624	963	0	0	0	0	294	10	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	
Frt		1.00	0.85	1.00	1.00					1.00	0.86	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1681	1521	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1681	1521	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1335	859	678	1047	0	0	0	0	320	11	500
RTOR Reduction (vph)	0	0	268	0	0	0	0	0	0	0	131	0
Lane Group Flow (vph)	0	1335	591	678	1047	0	0	0	0	288	412	0
Turn Type		NA	Perm	Prot	NA					Split	NA	
Protected Phases		2		1	6					4	4	
Permitted Phases			2									
Actuated Green, G (s)		32.0	32.0	29.0	65.0					17.0	17.0	
Effective Green, g (s)		32.0	32.0	29.0	65.0					17.0	17.0	
Actuated g/C Ratio		0.36	0.36	0.32	0.72					0.19	0.19	
Clearance Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1258	562	570	2555					317	287	
v/s Ratio Prot		c0.38		c0.38	0.30					0.17	c0.27	
v/s Ratio Perm			0.37									
v/c Ratio		1.06	1.05	1.19	0.41					0.91	1.43	
Uniform Delay, d1		29.0	29.0	30.5	4.9					35.7	36.5	
Progression Factor		0.81	1.16	1.60	1.31					1.00	1.00	
Incremental Delay, d2		32.3	33.3	87.0	0.0					28.1	214.3	
Delay (s)		55.8	67.1	135.8	6.5					63.9	250.8	
Level of Service		E	E	F	A					E	F	
Approach Delay (s)		60.2			57.3			0.0			186.0	
Approach LOS		E			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	81.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	126.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

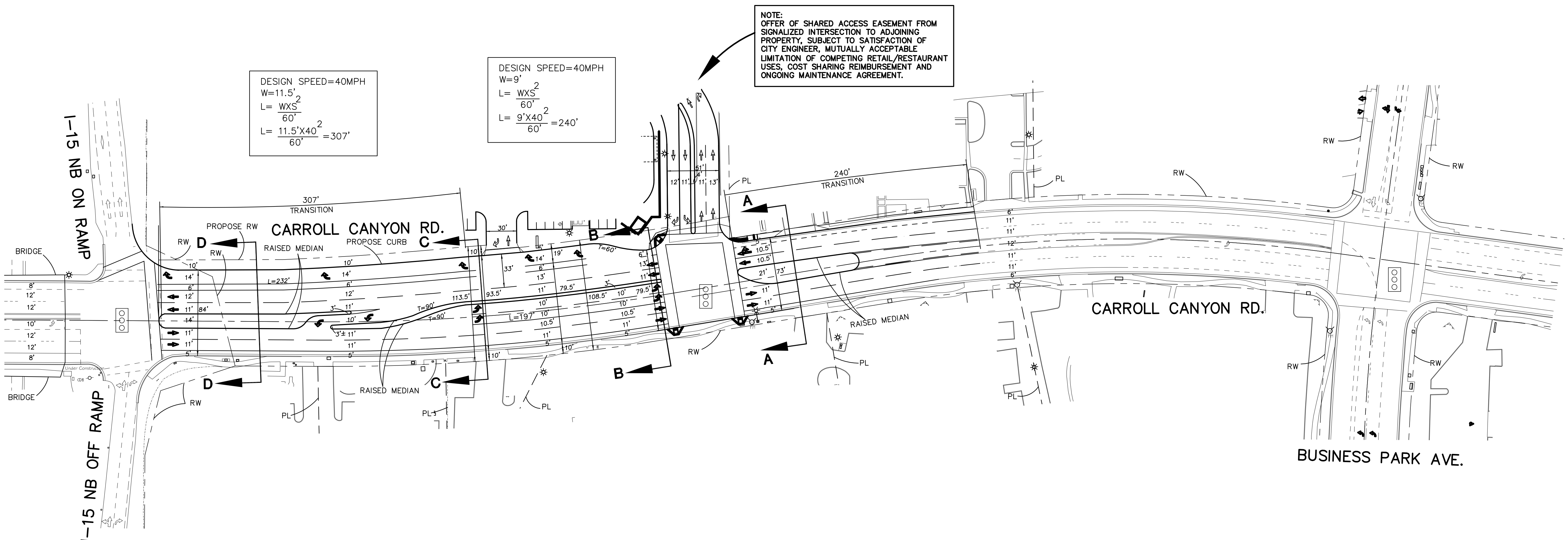
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	630	882	0	0	957	334	630	10	692	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.91	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)	1770	3539			3539	1583	1681	1513	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)	1770	3539			3539	1583	1681	1513	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	685	959	0	0	1040	363	685	11	752	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	262	0	62	118	0	0	0
Lane Group Flow (vph)	685	959	0	0	1040	101	507	420	341	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	30.0	59.0			25.0	25.0	23.0	23.0	23.0			
Effective Green, g (s)	30.0	59.0			25.0	25.0	23.0	23.0	23.0			
Actuated g/C Ratio	0.33	0.66			0.28	0.28	0.26	0.26	0.26			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	590	2320			983	439	429	386	384			
v/s Ratio Prot	c0.39	0.27			c0.29		c0.30	0.28				
v/s Ratio Perm						0.06			0.23			
v/c Ratio	1.16	0.41			1.06	0.23	1.18	1.09	0.89			
Uniform Delay, d1	30.0	7.3			32.5	25.1	33.5	33.5	32.2			
Progression Factor	1.15	2.43			1.08	4.82	1.00	1.00	1.00			
Incremental Delay, d2	74.4	0.0			41.3	0.9	103.4	71.7	24.8			
Delay (s)	108.9	17.9			76.6	121.8	136.9	105.2	57.0			
Level of Service	F	B			E	F	F	F	E			
Approach Delay (s)		55.8			88.3			101.0			0.0	
Approach LOS		E			F			F			A	

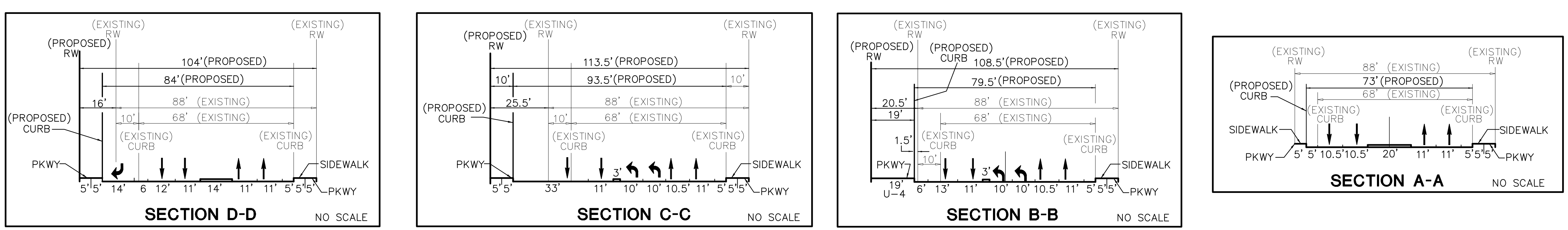
Intersection Summary			
HCM 2000 Control Delay	80.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	126.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Appendix T

Proposed Ultimate Lane Configurations on Carroll Canyon Road along Project Frontage

PROPOSED ULTIMATE STRIPING (PRIME ARTERIAL)





SCALE: 1"=50'

CONCEPTUAL STRIPING LAYOUT FOR DISCUSSION PURPOSES ONLY.

PLAN DOES NOT REPRESENT COMPLETED DESIGN

CONCEPTUAL STRIPING LAYOUT FOR:

CARROLL CANYON ROAD

FILE NAME: 2712-PD-01(F2)_H U.S.A.I. 002712 12-19-12 RT, MV

Appendix U

Proposed EB to SB Right Turn Lane at Carroll Cyn Rd/I-15 SB Ramp

Carroll Canyon Rd/I-15 Southbound Ramp Eastbound to Southbound Right Turn Lane Description

The project applicant proposes to widen Carroll Canyon Road to allow a dedicated right turn lane for access to southbound Interstate 15 to mitigate the project's cumulative impact at the intersection of I-15 SB Ramp/Carroll Canyon Road. The proposed road dedication area contains about 370 square feet, consisting mostly of landscaping along the street frontage. The acquisition will require the bollarding of the access driveway (to continue to allow emergency vehicle only access) near the northeast corner of the property. Parking will need to be modified slightly to allow turn-around inside the apartment complex drive lane.

Eastbound to Southbound Right Turn Lane at Carroll Canyon/I-15 SB Ramp

Urban Systems Associates, Inc.

Appendix V

Horizon Year Fair Share Mitigation Calculations

FAIR SHARE CALCULATIONS

Intersection of Carroll Canyon Road at I-15 SB Off-Ramp (Int #2)

A=	3485	Existing number of vehicles entering the intersection (AM)
B=	4660	Horizon Year without Project number of vehicles entering the intersection (AM)
C=	4755	Horizon Year with Project number of vehicles entering the intersection (AM)
	95	Project Peak Hour Volume
AM Percent of Fair-Share (C-B)/(C-A) =	**7.5%**	
A=	(2894)	Existing number of vehicles entering the intersection (PM)
B=	(4230)	Horizon Year without Project number of vehicles entering the intersection (PM)
C=	(4369)	Horizon Year with Project number of vehicles entering the intersection (PM)
	(139)	Project Peak Hour Volume
PM Percent of Fair-Share (C-B)/(C-A) =	**9.4%**	**<= Project Responsibility**

Segment of Carroll Canyon from Project Signal to Businesspark Ave

A=	19,889	Existing number of vehicles on segment
B=	24,888	Horizon Year without Project number of vehicles on segment
C=	25,800	Horizon Year with Project number of vehicles on segment
Percent of Fair-Share (C-B)/(C-A) =	**15.4%**	**<= Project Responsibility**

Appendix W

On-Site Parking Summary

UNIT SCHEDULE PER BUILDING

Building Number	Unit Name	Unit Type	Unit Count
BUILDING 1	Unit A	1BR	14
BUILDING 1	Unit B	1BR	19
BUILDING 1	Unit CA.1	1BR	6
BUILDING 1	Unit C	2BR	4
BUILDING 1	Unit D	2BR	8
BUILDING 1	Unit G	2BR+DEN	6
			57
BUILDING 1A	Unit CA	1BR	2
			2
BUILDING 2	Unit A	1BR	20
BUILDING 2	Unit B	1BR	16
BUILDING 2	Unit C	2BR	4
BUILDING 2	Unit D	2BR	8
BUILDING 2	Unit G	2BR+DEN	6
			54
BUILDING 2A	Unit CA	1BR	2
			2
BUILDING 3	Unit A	1BR	14
BUILDING 3	Unit B	1BR	3
BUILDING 3	Unit C	2BR	17
BUILDING 3	Unit D	2BR	3
BUILDING 3	Unit F	2BR	6
BUILDING 3	Unit E	2BR	16
BUILDING 3	Unit G	2BR+DEN	6
BUILDING 3	Unit I	3BR	4
			69
BUILDING 3A	Unit CA	1BR	2
			2
BUILDING 3B	Unit CA	1BR	2
			2
BUILDING 4	Unit A	1BR	20
BUILDING 4	Unit B	1BR	10
BUILDING 4	Unit E	1BR	1
BUILDING 4	Unit C	2BR	3
BUILDING 4	Unit D	2BR	2
BUILDING 4	Unit E	2BR	7
BUILDING 4	Unit G	2BR+DEN	6
BUILDING 4	Unit I	3BR	7
			56
BUILDING 4A	Unit CA	1BR	2
			2
BUILDING 5	Unit B	1BR	2
BUILDING 5	Unit C	2BR	12
			14
Grand total			260

BUILDING 1 & 1A: 57+2 = 59 UNITS; 53+6 = 59 STORAGES
BUILDING 2 & 2A: 54+2 = 56 UNITS; 50+6 = 56 STORAGES
BUILDING 3, 3A & 3B: 69+2+2 = 73 UNITS; 61+6+6 = 73 STORAGES
BUILDING 4 & 4A: 56+2 = 58 UNITS; 52+6 = 58 STORAGES
BUILDING 5: 14 UNITS; 14 STOR.

PERSONAL STORAGE SCHEDULE PER BUILDING

Building Number	Comments	Count	Storage Volume
BUILDING 1	CORRIDOR	19	4,848.75 CF
BUILDING 1	GARAGE	34	9,379.25 CF
		53	14,228 CF
BUILDING 1A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 2	CORRIDOR	23	5,856.75 CF
BUILDING 2	GARAGE	27	7,695 CF
		50	13,551.75 CF
BUILDING 2A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 3	CORRIDOR	32	8,505.57 CF
BUILDING 3	GARAGE	29	8,419.41 CF
		61	16,924.97 CF
BUILDING 3A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 3B	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 4	CORRIDOR	39	10,477.69 CF
BUILDING 4	GARAGE	13	3,515.25 CF
		52	13,992.94 CF
BUILDING 4A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 5	CORRIDOR	14	4,530.75 CF
		14	4,530.75 CF
		260	70,473.41 CF
		AVERAGE	271 CF/UNIT

SITE PLAN LEGEND

Symbol	Description
	CARPORT PARKING / PARK LIFT
8' - 0"; 18' - 0"	TYP. RESIDENTIAL PARKING
8' - 6"; 18' - 0"	TYP. RETAIL PARKING
9' - 0"; 18' - 0"	5'-0" @ TYP HC STALLS 8'-0" @ VAN STALLS ACCESSIBLE PARKING
3' - 0"; 8' - 0"	MOTOCYCLE PARKING
	TRANSFORMER
4' - 0"; 3' - 0"; 7' - 0"; 10' - 0"	TYP. PERSONAL STORAGE (240cf min.)
	BICYCLE RACK (8 BIKES / RACK)
T/R	TRASH / RECYCLE

Carroll Canyon Residential-Mixed Use
Sand Diego, CA
9/30/2015 2014-10199

OVERALL SITE AREA:	404,177 SF =	9.28 Acres
RESIDENTIAL SITE AREA:	347,646 SF =	7.98 Acres
RETAIL SITE AREA:	56,532 SF =	1.30 Acres
TOTAL BUILDING AREA:	388,000	
F.A.R.	0.96	
TOTAL RESIDENTIAL UNITS:	260 DU	
DENSITY (du/ac):	28.02 du/ac	(Overall Site)
	32.58 du/ac	(Net Residential Site)

NET RENTABLE (SF):	235,991 SF
AVG. UNIT SIZE (SF):	908 SF
LEASING OFFICE AREA (GROSS):	3,200 SF
AMENITIES AREA (GROSS):	4,300 SF

RETAIL & LEASING:		Vehicle Parking Req'd (Code)	
RESTAURANT:	8600 SF	15/1000	129 Stalls
RETAIL:	3600 SF	5/1000	18 Stalls
LEASING:	1500 SF	2.5/1000	4 Stalls
Total:	13700 SF	Total:	151 Stalls
		Motorcyle Req'd (Code)	3 Stalls
		Bicyle Req'd (Code)	16 Stalls

RESIDENTIAL (Code)		Vehicle Parking			Motorcycle		Bicycle (Req'd for units w/o garage)				
		Stalls/du	Parking Required		Stall/du	Req'd		%	DU	Stall/du	Req'd
1BR	125	1.5	188	Stalls	0.1	13	Units w/o Garage 260du-143garage = 117du	48.1%	56	0.4	22
2BR	124	2	248	Stalls	0.1	12		47.7%	56	0.5	28
3BD	11	2.25	25	Stalls	0.1	1		4.2%	5	0.6	3
Total Required			461	Stalls		26			117		53
		Ratio	1.77	Stalls/du							

Total Parking Req'd by Code (Retail + Residential):	612	Stalls
Total Motorcycle Parking Req'd by Code (Retail + Residential):	29	Stalls
Total Bicycle Parking Req'd by Code (Retail + Residential):	69	Stalls

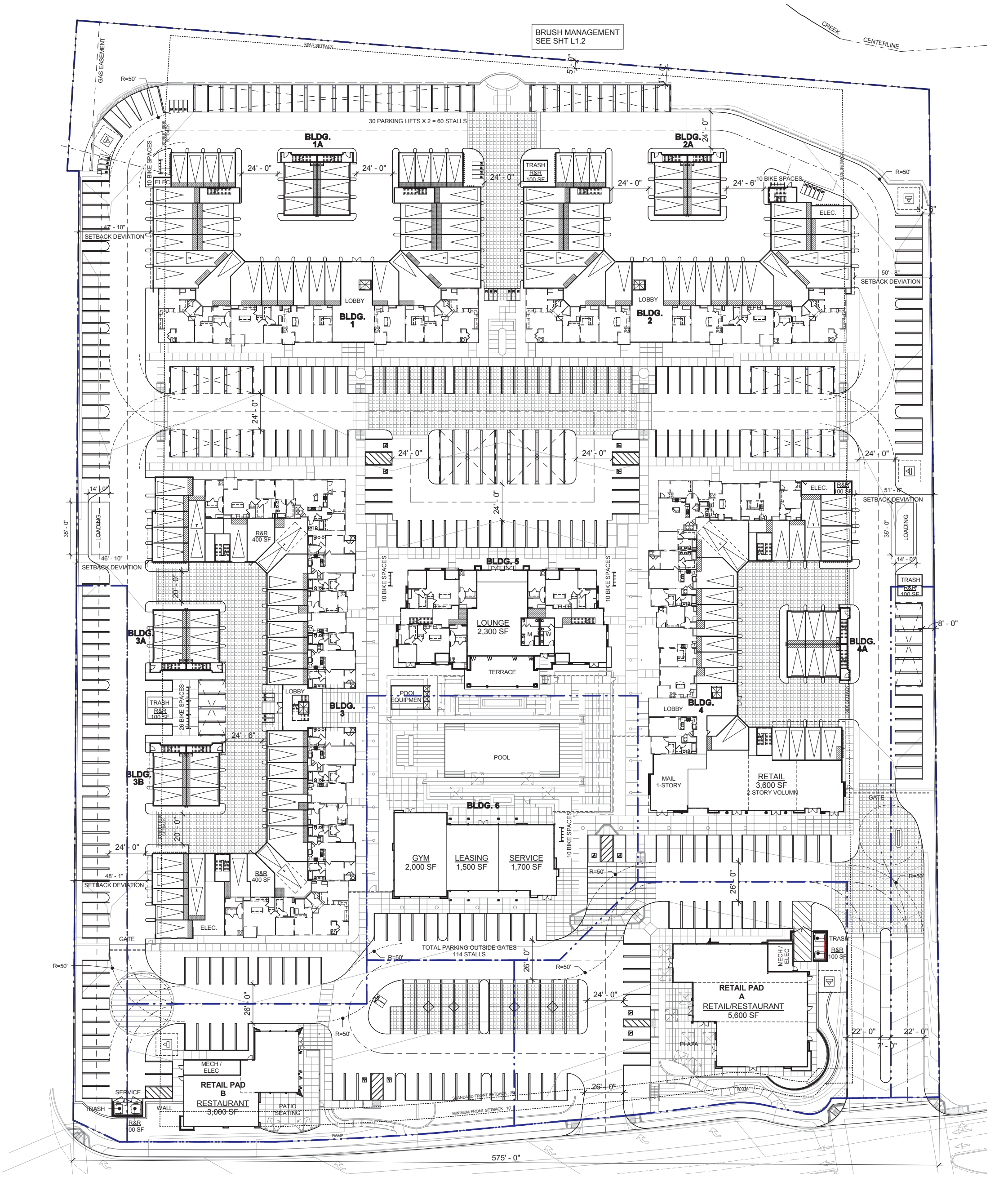
UNIT TYPE		BLDG 1	BLDG 2	BLDG 3	BLDG 4	BLDG 5	BLDG 6	TOTAL			TARGET	RENTABLE S.F.		PRIVATE OPEN SPACE (DECK) S.F.	
1BR	UNIT A	14	20	14	20			68	26.2%	48.1%	46.0%	621	42,228	60	4,080
	UNIT B	19	16	3	11	2		51	19.6%			745	37,995	60	3,060
	UNIT CA.1	6						6	2.3%			871	5,226	60	360
2BR	UNIT D	8	8	3	2			21	8.1%	47.7%	46.0%	1,077	22,617	65	1,365
	UNIT E			16	7			23	8.8%			1,055	24,265	60	1,380
	UNIT C	4	4	17	3	12		40	15.4%			1,100	44,000	60	2,400
	UNIT F			6				6	2.3%			1,081	6,486	60	360
	UNIT G	6	6	6	6			24	9.2%			1,117	26,808	84	2,016
	UNIT CA	2	2	4	2			10	3.8%			1,211	12,110	150	1,500
3BR	UNIT I			4	7			11	4.2%	4.2%	8.0%	1,296	14,256	80	880
TOTAL		59	56	73	58	14		260	100.0%				235,991		17,401

GATED PARKING

Covered	Garage	153	263	Stalls
	Carport	50		
	Car Lifts	60		
Open	Gated	156	156	Stalls
Grand Total:			419	Stalls

OPEN PARKING (NOT GATED)	114	Stalls

Total Parking Provided (Retail + Residential):	533	Stalls
Total Motorcycle Parking Provided (Retail + Residential):	29	Stalls
Total Bicycle Parking Provided (besides private garages):	76	Stalls



SITE PLAN - GROUND LEVEL
1" = 30'-0"
0' 15' 30' 60'

MVE + PARTNERS
1900 Main Street, Suite 800
Irvine, California 92614
T 949.809.3388 F 949.809.3399
www.mve-architects.com

Sudberry Properties
Sudberry Development Inc.
5465 Morehouse Drive, Suite 260
San Diego, CA 92121-4714
T 858.546.3000
F 858.546.3009

ENTITLEMENT SUBMITTAL
Carroll Canyon Mixed-Use
9850 CARROLL CANYON ROAD, SAN DIEGO, CA 92131
2014.10199
A 0.1
SEPT 30, 2015
9/30/2015 9:04:00 AM

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Sand Diego, CA
9/30/2015 2014-10199

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		Stalls/du	Parking Required		Stall/du	Req'd		%	DU	Stall/du	Req'd
1BR	125	1.5	188	Stalls	0.1	13	Units w/o Garage **260du-143garage = 117du**	48.1%	56	0.4	22
2BR	124	2	248	Stalls	0.1	12		47.7%	56	0.5	28
3BD	11	2.25	25	Stalls	0.1	1		4.2%	5	0.6	3
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	UNIT B	19	16	3	11	2		**51**	19.6%			745	37,995	60	3,060
	UNIT CA.1	6						**6**	2.3%			871	5,226	60	360
2BR	UNIT D	8	8	3	2			**21**	8.1%	47.7%	46.0%	1,077	22,617	65	1,365
	UNIT E			16	7			**23**	8.8%			1,055	24,265	60	1,380
	UNIT C	4	4	17	3	12		**40**	15.4%			1,100	44,000	60	2,400
	UNIT F			6				**6**	2.3%			1,081	6,486	60	360
	UNIT G	6	6	6	6			**24**	9.2%			1,117	26,808	84	2,016
	UNIT CA	2	2	4	2			**10**	3.8%			1,211	12,110	150	1,500
3BR	UNIT I			4	7			**11**	4.2%	4.2%	8.0%	1,296	14,256	80	880
TOTAL		**59**	**56**	**73**	**58**	**14**		**260**		**100.0%**			**235,991**		**17,401**

GATED PARKING

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	Carport	50		
	Car Lifts	60		
Open	Gated	156	156	Stalls
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Total Bicycle Parking Provided (besides private garages):	**76**	Stalls

WEEKDAY

San Diego Municipal Code Article 2 Division 5 Parking Requirements

Land Use	Retail	Eating & Drinking Establishments	Fast Food	Leasing Clients[a]	*Non-Gated Parking Subtotal*	Residential (1 bedroom)	Residential (2 bedroom)	Residential (3 bedroom)	Leasing Employees[a]	*Gated Parking Subtotal*	**Parking Demand Totals**
Gross Floor Area (Square Feet)	3,600	6,200	2,400	750		125	124	11	750		
Parking Rate	5 space/1,000 sf	15 space/1,000 sf	15 space/1,000 sf	2.5 space/1,000 sf		1.5 space/unit	2 space/unit	2.25 space/unit	2.5 space/1,000 sf		
Required Parking	18	93	36	2	*149*	188	248	25	2	*463*	*612*

City of San Diego Shared Parking

Time Period	Retail Weekday Usage	Retail Parking Demand	Eating & Drinking Weekday Usage	Eating & Drinking Parking Demand	Fast Food Weekday Usage	Fast Food Parking Demand	Leasing Clients Weekday Usage	Leasing Clients Parking Demand	*Non-Gated Parking Demand*	Residential (1 bedroom) Weekday Usage	Residential (1 bedroom) Parking Demand	Residential (2 bedroom) Weekday Usage	Residential (2 bedroom) Parking Demand	Residential (3 bedroom) Weekday Usage	Residential (3 bedroom) Parking Demand	Leasing Employees Weekday Usage	Leasing Employees Parking Demand	*Gated Parking Demand*	Total Demand
6:00 AM	0%	0	15%	14	5%	2	0%	0	*16*	100%	188	100%	248	100%	25	0%	0	*461*	477
7:00 AM	10%	2	55%	51	10%	4	10%	0	*57*	80%	150	80%	198	80%	20	10%	0	*368*	425
8:00 AM	30%	5	80%	74	20%	7	30%	1	*87*	60%	113	60%	149	60%	15	30%	1	*278*	365
9:00 AM	50%	9	65%	60	30%	11	50%	1	*81*	50%	94	50%	124	50%	13	50%	1	*232*	313
10:00 AM	70%	13	25%	23	55%	20	70%	1	*57*	40%	75	40%	99	40%	10	70%	1	*185*	242
11:00 AM	80%	14	65%	60	85%	31	80%	2	*107*	40%	75	40%	99	40%	10	80%	2	*186*	293
12:00 PM	100%	18	100%	93	100%	36	100%	2	*149*	40%	75	40%	99	40%	10	100%	2	*186*	335
1:00 PM	95%	17	80%	74	100%	36	95%	2	*129*	35%	66	35%	87	35%	9	95%	2	*164*	293
2:00 PM	85%	15	55%	51	90%	32	85%	2	*100*	40%	75	40%	99	40%	10	85%	2	*186*	286
3:00 PM	80%	14	35%	33	60%	22	80%	2	*71*	45%	85	45%	112	45%	11	80%	2	*210*	281
4:00 PM	75%	14	30%	28	55%	20	75%	2	*64*	45%	85	45%	112	45%	11	75%	2	*210*	274
5:00 PM	80%	14	45%	42	60%	22	80%	2	*80*	50%	94	50%	124	50%	13	80%	2	*233*	313
6:00 PM	80%	14	65%	60	85%	31	80%	2	*107*	65%	122	65%	161	65%	16	80%	2	*301*	408
7:00 PM	75%	14	55%	51	80%	29	75%	2	*96*	70%	132	70%	174	70%	18	75%	2	*326*	422
8:00 PM	60%	11	55%	51	50%	18	60%	1	*81*	75%	141	75%	186	75%	19	60%	1	*347*	428
9:00 PM	45%	8	45%	42	30%	11	45%	1	*62*	85%	160	85%	211	85%	21	45%	1	*393*	455
10:00 PM	30%	5	35%	33	20%	7	30%	1	*46*	90%	169	90%	223	90%	23	30%	1	*416*	462
11:00 PM	15%	3	15%	14	10%	4	15%	0	*21*	95%	179	95%	236	95%	24	15%	0	*439*	460
12:00 AM	0%	0	5%	5	5%	2	0%	0	*7*	100%	188	100%	248	100%	25	0%	0	*461*	468
Source:	City of San Diego		City of San Diego		ULI (b)		City of San Diego			City of San Diego		City of San Diego		City of San Diego		City of San Diego			

Overnight Parking Requirements (total parking supply of 533 spaces available [non-gated 114 + gated 419]):

Highest 24 hour demand (12am to 6am) for total parking:	477
Parking Supply (gated and non-gated):	533
Parking Surplus between 12am and 6am:	**56**

Daytime Parking Requirements:

Maximum hourly space requirement based on retail shared parking:	*149*
From 12pm to 2pm, non-gated max demand 149 exceeds 114 supply:	35

Daytime gated supply (533 total minus 114 non-gated):	419
Assigned gated supply (garage & lifts):	213
Unassigned gated supply (419-213):	206
Daytime peak residential demand (12-2pm):	186
Ten percent of residents anticipated to occupy unassigned gated supply (c):	19
Estimated available gated unassigned spaces during peak periods as noted by shaded cells above (206-19):	187
Daytime retail employees (d) required use of gated unassigned spaces (35 from above left):	35
Surplus after retail occupancy of gated unassigned spaces (187-35):	152
Non-Gated daytime peak supply:	114
Gated unassigned daytime supply during time when retail demand exceeds 114 spaces:	187
Total daytime supply when retail demand exceeds 114 spaces (gated and non-gated):	301
Total daytime peak demand when retail deamdn exceeds 114 spaces (gated and non-gated):	149
Total weekday peak use daytime surplus when retail demand exceeds 114 spaces (gated and non-gated):	**152**

Notes: (a) Leasing SF evenly split between gated (for employees) and non-gated (for clients) and the leasing parking demand is based on retail time of day percentages. (b) ULI: Urban Land Institute fast food hourly percentage used as this has long lunch time coverage and higher dinner time usage over City of San Diego percentages. (c) According to applicant, the residential lease agreement will require residents to park in their assigned space (i.e. garages or lift), will be monitored, and will be subject to fines if not in compliance; however, to account for preiods of move-in/out with boxes occupying garages 10% of the residential peak in the shaded cells above (186*.1=19) are assumed to not be in their assigned space and will occupy the unassigned gated supply. (d) According to the applicant, retail lease agreements will require retail employees to have access and use gated unassigned parking areas for periods that exceed the 114 space demand as noted by shaded cells.

SATURDAY

San Diego Municipal Code Article 2 Division 5 Parking Requirements																			
Land Use	Retail		Eating & Drinking Establishments		Fast Food		Leasing Clients[a]		*Non-Gated Parking Subtotal*	Residential (1 bedroom)		Residential (2 bedroom)		Residential (3 bedroom)		Leasing Employees[a]		*Gated Parking Subtotal*	**Parking Demand Totals**
Gross Floor Area (Square Feet)	3,600		6,200		2,400		750			125		124		11		750			
Parking Rate	5 space/1,000 sf		15 space/1,000 sf		15 space/1,000 sf		2.5 space/1,000 sf			1.5 space/unit		2 space/unit		2.25 space/unit		2.5 space/1,000 sf			
Required Parking	18		93		36		2		*149*	188		248		25		2		*463*	*612*
City of San Diego Shared Parking																			
Time Period	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	*Parking Demand*	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	*Parking Demand*	Total Demand
6:00 AM	0%	0	20%	19	5%	2	0%	0	*21*	100%	188	100%	248	100%	25	0%	0	*461*	482
7:00 AM	5%	1	35%	33	10%	4	5%	0	*38*	100%	188	100%	248	100%	25	5%	0	*461*	499
8:00 AM	30%	5	55%	51	20%	7	30%	1	*64*	95%	179	95%	236	95%	24	30%	1	*440*	504
9:00 AM	50%	9	70%	65	30%	11	50%	1	*86*	85%	160	85%	211	85%	21	50%	1	*393*	479
10:00 AM	75%	14	30%	28	55%	20	75%	2	*64*	80%	150	80%	198	80%	20	75%	2	*370*	434
11:00 AM	90%	16	40%	37	85%	31	90%	2	*86*	75%	141	75%	186	75%	19	90%	2	*348*	434
12:00 PM	95%	17	60%	56	100%	36	95%	2	*111*	70%	132	70%	174	70%	18	95%	2	*326*	437
1:00 PM	100%	18	65%	60	100%	36	100%	2	*116*	65%	122	65%	161	65%	16	100%	2	*301*	417
2:00 PM	100%	18	60%	56	90%	32	100%	2	*108*	65%	122	65%	161	65%	16	100%	2	*301*	409
3:00 PM	90%	16	60%	56	60%	22	90%	2	*96*	65%	122	65%	161	65%	16	90%	2	*301*	397
4:00 PM	85%	15	50%	47	55%	20	85%	2	*84*	65%	122	65%	161	65%	16	85%	2	*301*	385
5:00 PM	75%	14	65%	60	60%	22	75%	2	*98*	65%	122	65%	161	65%	16	75%	2	*301*	399
6:00 PM	65%	12	85%	79	85%	31	65%	1	*123*	70%	132	70%	174	70%	18	65%	1	*325*	448
7:00 PM	60%	11	100%	93	80%	29	60%	1	*134*	75%	141	75%	186	75%	19	60%	1	*347*	481
8:00 PM	55%	10	100%	93	50%	18	55%	1	*122*	80%	150	80%	198	80%	20	55%	1	*369*	491
9:00 PM	45%	8	85%	79	30%	11	45%	1	*99*	80%	150	80%	198	80%	20	45%	1	*369*	468
10:00 PM	35%	6	75%	70	20%	7	35%	1	*84*	85%	160	85%	211	85%	21	35%	1	*393*	477
11:00 PM	15%	3	30%	28	10%	4	15%	0	*35*	90%	169	90%	223	90%	23	15%	0	*415*	450
12:00 AM	0%	0	25%	23	5%	2	0%	0	*25*	95%	179	95%	236	95%	24	0%	0	*439*	464
Source:	City of San Diego		City of San Diego		ULI (b)		City of San Diego			City of San Diego		City of San Diego		City of San Diego		City of San Diego			

Overnight Parking Requirements (total parking supply of 533 spaces available [non-gated 114 + gated 419]):

Highest 24 hour demand (12am to 6am) for total parking:	504
Parking Supply (gated and non-gated):	533
Parking Surplus between 12am and 6am:	**29**

Daytime Parking Requirements:

Maximum hourly space requirement based on retail shared parking:	*134*
From 1pm-2pm and 6pm-9pm, non-gated max demand of 134 exceeds 114 supply by:	20

Daytime gated supply (533 total minus 114 non-gated):	419
Assigned gated supply (garage & lifts):	213
Unassigned gated supply (419-213):	206
Daytime peak residential demand (1-2pm, 6-9pm):	369
Ten percent of residents anticipated to occupy unassigned gated supply (c):	37
Estimated available gated unassigned spaces during peak periods as noted by shaded cells above (206-37):	169
Daytime retail employees (d) required use of gated unassigned spaces (20 from above left):	20
Surplus after retail occupancy of gated unassigned spaces (95-20):	149
Non-Gated daytime peak supply:	114
Gated unassigned daytime supply during time when retail demand exceeds 114 spaces:	169
Total daytime supply when retail demand exceeds 114 spaces (gated and non-gated):	283
Total daytime peak demand when retail deamdn exceeds 114 spaces (gated and non-gated):	134
Total Saturday peak use daytime surplus when retail demand exceeds 114 spaces (gated and non-gated):	**149**

Notes: (a) Leasing SF evenly split between gated (for employees) and non-gated (for clients) and the leasing parking demand is based on retail time of day percentages. (b) ULI: Urban Land Institute fast food hourly percentage used as this has long lunch time coverage and higher dinner time usage over City of San Diego percentages. (c) According to applicant, the residential lease agreement will require residents to park in their assigned space (i.e. garages or lift), will be monitored, and will be subject to fines if not in compliance; however, to account for preiods of move-in/out with boxes occupying garages 10% of the residential peak in the shaded cells above (369*.1=37) are assumed to not be in their assigned space and will occupy the unassigned gated supply. (d) According to the applicant, retail lease agreements will require retail employees to have access and use gated unassigned parking areas for periods that exceed the 114 space demand as noted by shaded cells.

(c) Single Use Parking Ratios. *Shared parking* is subject to the parking ratios in Table 142-05I.

Table 142-05I
Parking Ratios for Shared Parking

Use	**Peak Parking Demand** (Ratio of spaces per 1,000 square feet of floor area unless otherwise noted. Floor area includes gross floor area plus below grade *floor* area and excludes floor area devoted to parking)	**Transit Area**[1]
Office (except medical office)		
Weekday	3.3	2.8
Saturday	0.5	0.5
Medical office		
Weekday	4.0	3.4
Saturday	0.5	0.5
Retail sales	5.0	4.3
Eating & drinking establishment	15.0	12.8
Cinema 1-3 screens	1 space per 3 seats	.85 spaces per 3 seats
4 or more screens	1 space per 3.3 seats	.85 spaces per 3.3 seats
Visitor accommodations through *Multiple Dwelling Units*	1 space per *guest room*	1 space per *guest room*
Conference room	10.0	10.0
Multiple dwelling units	(see Section 142.0525)	

Footnote for Table 142-05I

1 *Transit Area*. The *transit area* peak parking demand applies in the *Transit Area* Overlay Zone (see Chapter 13, Article 2, Division 10).

(d) Hourly Accumulation Rates. Table 142-05J contains, for each hour of the day shown in the left column, the percentage of peak demand for each of the uses, separated in some cases into weekdays and Saturdays.

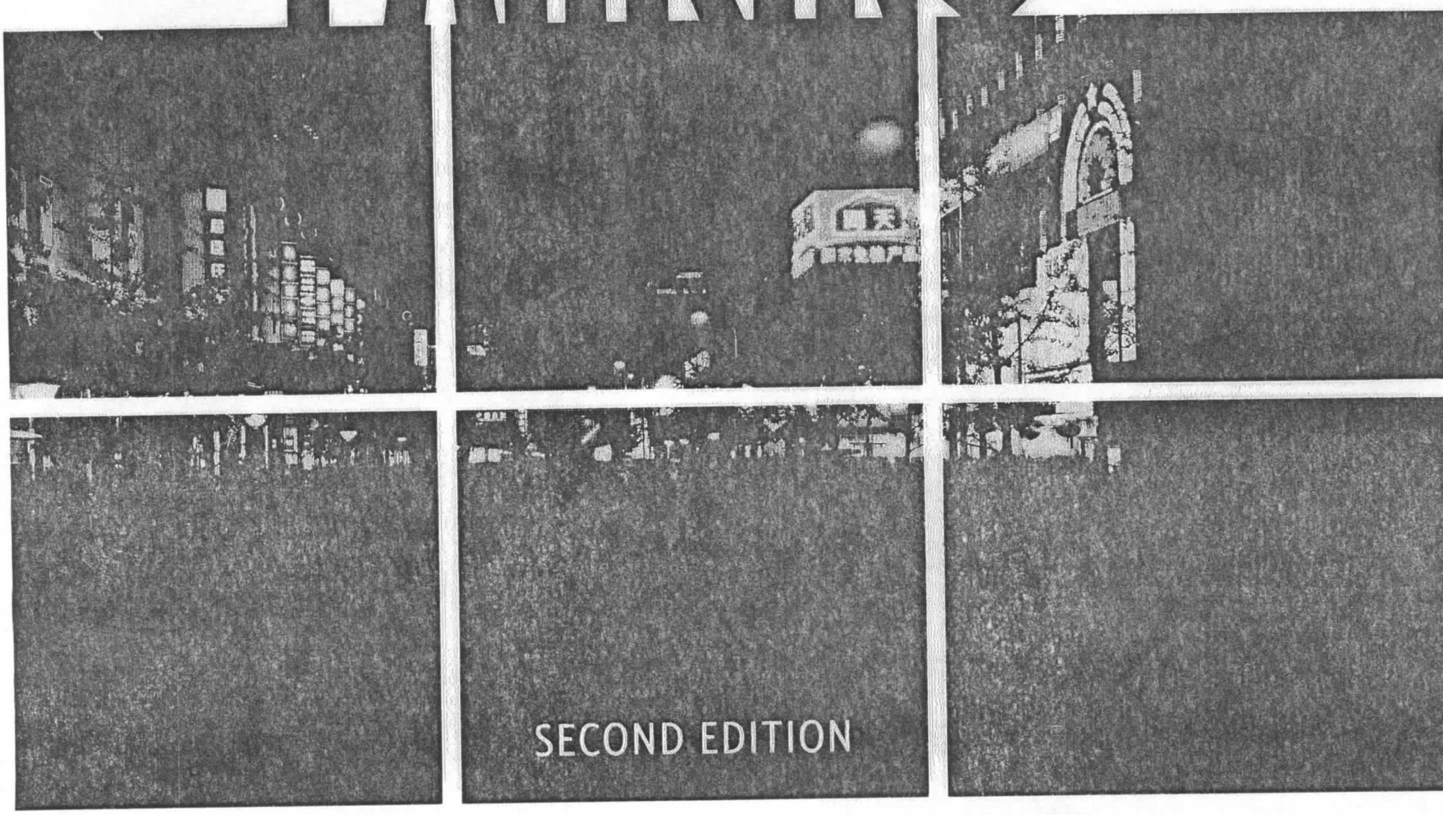
Table 142-05J
Representative Hourly Accumulation by Percentage of Peak Hour

Hour of Day	**Office** (Except Medical Office)		**Medical Office**		**Retail Sales**		**Eating & Drinking establishment.**		**Cinema**	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
6 a.m.	5%	-	5%	-	-	-	15%	20%	-	-
7 a.m.	15	30%	20	20%	10%	5%	55%	35%	-	-
8 a.m.	55	50	65	40	30	30	80	55	-	-
9 a.m	90	80	90	80	50	50	65	70	-	-
10 a.m.	100	90	100	95	70	75	25	30	5%	-
11 a.m.	100	100	100	100	80	90	65	40	5	-
Noon	90	100	80	100	100	95	100	60	30	30%
1 p.m.	85	85	65	95	95	100	80	65	70	70
2 p.m.	90	75	80	85	85	100	55	60	70	70
3 p.m.	90	70	80	95	80	90	35	60	70	70
4 p.m.	85	65	80	50	75	85	30	50	70	70
5 p.m.	55	40	50	45	80	75	45	65	70	70
6 p.m.	25	35	15	45	80	65	65	85	80	80
7 p.m.	15	25	10	40	75	60	55	100	100	90
8 p.m.	5	20	5	5	60	55	55	100	100	100
9 p.m.	5	-	5	-	45	45	45	85	100	100
10 p.m.	5	-	5	-	30	35	35	75	100	100
11p.m.	-	-	-	-	15	15	15	30	80	80
Midnight	-	-	-	-	-	-	5	25	70	70

Hour of Day	**Residential**	
	Weekday	Saturday
6 a.m.	100%	100%
7 a.m.	80	100
8 a.m.	60	95
9 a.m	50	85
10 a.m.	40	80
11 a.m.	40	75
Noon	40	70
1 p.m.	35	65
2 p.m.	40	65
3 p.m.	45	65
4 p.m.	45	65
5 p.m.	50	65
6 p.m.	65	70
7 p.m.	70	75
8 p.m.	75	80
9 p.m.	85	80
10 p.m.	90	85
11 p.m.	95	90
Midnight	100	95

(Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000.)
(Amended 3-1-2006 by O-19467 N.S.; effective 8-10-2006.)
(Amended 11-16-2012 by O-20216 N.S.; effective 12-16-2012.)
(Amended 6-18-2013 by O-20261 N.S.; effective 7-19-2013.)

SHARED PARKING



SECOND EDITION

Mary S. Smith

Urban Land Institute

International Council of Shopping Centers

ULI

Table 2-5 Recommended Time-of-Day Factors for Weekdays

Land Use	User	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.
Shopping Center—Typical	Customer	1%	5%	15%	35%	65%	85%	95%	100%	95%
Peak December	Customer	1%	5%	15%	30%	55%	75%	90%	100%	100%
Late December	Customer	1%	5%	10%	20%	40%	65%	90%	100%	100%
	Employee	10%	15%	40%	75%	85%	95%	100%	100%	100%
Fine/Casual Dining	Customer	—	—	—	—	15%	40%	75%	75%	65%
	Employee	—	20%	50%	75%	90%	90%	90%	90%	90%
Family Restaurant	Customer	25%	50%	60%	75%	85%	90%	100%	90%	50%
	Employee	50%	75%	90%	90%	100%	100%	100%	100%	100%
Fast Food	Customer	5%	10%	20%	30%	55%	85%	100%	100%	90%
	Employee	15%	20%	30%	40%	75%	100%	100%	100%	95%
Nightclub	Customer	—	—	—	—	—	—	—	—	—
	Employee	—	—	—	5%	5%	5%	5%	10%	10%
Cineplex—Typical	Customer	—	—	—	—	—	—	20%	45%	55%
Late December	Customer	—	—	—	—	—	—	35%	60%	75%
	Employee	—	—	—	—	—	—	50%	60%	60%
Performing Arts Theater	Customer	—	—	—	1%	1%	1%	1%	1%	1%
No matinee	Employee	—	10%	10%	20%	20%	20%	30%	30%	30%
Arena	Customer	—	—	—	1%	1%	1%	1%	1%	1%
No matinee	Employee	—	10%	10%	20%	20%	20%	30%	30%	30%
Stadium	Customer	—	—	—	1%	1%	1%	5%	5%	5%
8 p.m. start	Employee	—	10%	10%	20%	20%	20%	30%	30%	30%
Health Club	Customer	70%	40%	40%	70%	70%	80%	60%	70%	70%
	Employee	75%	75%	75%	75%	75%	75%	75%	75%	75%
Convention Center	Visitor	—	—	50%	100%	100%	100%	100%	100%	100%
	Employee	5%	30%	33%	33%	100%	100%	100%	100%	100%
Hotel—Business	Guest	95%	90%	80%	70%	60%	60%	55%	55%	60%
Hotel—Leisure	Guest	95%	95%	90%	80%	70%	70%	65%	65%	70%
Restaurant/Lounge	Customer	—	10%	30%	10%	10%	5%	100%	100%	33%
Conference/Banquet	Customer	—	—	30%	60%	60%	60%	65%	65%	65%
Convention	Customer	—	—	50%	100%	100%	100%	100%	100%	100%
	Employee	5%	30%	90%	90%	100%	100%	100%	100%	100%
Residential	Guest	—	10%	20%	20%	20%	20%	20%	20%	20%
Residential	Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%
Residential	Resident	100%	90%	85%	80%	75%	70%	65%	70%	70%
Office	Visitor	—	1%	20%	60%	100%	45%	15%	45%	100%
Office	Employee	3%	30%	75%	95%	100%	100%	90%	90%	100%
Medical/Dental Office	Visitor	—	—	90%	90%	100%	100%	30%	90%	100%
	Employee	—	—	60%	100%	100%	100%	100%	100%	100%
Bank	Customer	—	—	50%	90%	100%	50%	50%	50%	70%
	Employee	—	—	60%	100%	100%	100%	100%	100%	100%

ULI WEEKDAY

2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight	Source
95%	90%	90%	95%	95%	95%	80%	50%	30%	10%	—	1
100%	100%	95%	85%	80%	75%	65%	50%	30%	10%	—	1
100%	100%	95%	85%	70%	55%	40%	25%	15%	5%	—	1
100%	100%	100%	95%	95%	95%	90%	75%	40%	15%	—	2
65%	40%	50%	75%	95%	100%	100%	100%	95%	75%	25%	2
90%	75%	75%	100%	100%	100%	100%	100%	100%	85%	35%	2
50%	45%	45%	75%	80%	80%	80%	60%	55%	50%	25%	2
00%	75%	75%	95%	95%	95%	95%	80%	65%	65%	35%	2
90%	60%	55%	60%	85%	80%	50%	30%	20%	10%	5%	3
95%	70%	60%	70%	90%	90%	60%	40%	30%	20%	20%	2
—	—	—	—	25%	50%	75%	100%	100%	100%	100%	2
10%	10%	20%	45%	70%	100%	100%	100%	100%	100%	100%	2
55%	55%	55%	60%	60%	80%	100%	100%	80%	65%	40%	2, 6
75%	80%	80%	80%	70%	80%	100%	100%	85%	70%	55%	2, 6
0%	75%	75%	100%	100%	100%	100%	100%	100%	70%	50%	2
1%	1%	1%	1%	1%	25%	100%	100%	—	—	—	2
0%	30%	30%	30%	100%	100%	100%	100%	30%	10%	5%	2
1%	1%	1%	1%	10%	25%	100%	100%	85%	—	—	2
0%	30%	30%	30%	100%	100%	100%	100%	30%	10%	5%	2
5%	5%	5%	5%	10%	50%	100%	100%	85%	25%	—	2
%	30%	30%	30%	100%	100%	100%	100%	100%	25%	10%	2
0%	70%	80%	90%	100%	90%	80%	70%	35%	10%	—	2, 4
5%	75%	75%	100%	100%	75%	50%	20%	20%	20%	—	2, 4
%	100%	100%	100%	50%	30%	30%	10%	—	—	—	2
%	100%	90%	70%	40%	25%	20%	20%	5%	—	—	2
%	60%	65%	70%	75%	75%	80%	85%	95%	100%	100%	5
%	70%	75%	80%	85%	85%	90%	95%	95%	100%	100%	2
%	10%	10%	30%	55%	60%	70%	67%	60%	40%	30%	5, 3
%	65%	65%	100%	100%	100%	100%	100%	50%	—	—	2
%	100%	100%	100%	50%	30%	30%	10%	—	—	—	2
%	100%	90%	70%	40%	20%	20%	20%	20%	10%	5%	2
%	20%	20%	40%	60%	100%	100%	100%	100%	80%	50%	2
%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	2
%	70%	75%	85%	90%	97%	98%	99%	100%	100%	100%	2
	45%	15%	10%	5%	2%	1%	—	—	—	—	2
	100%	90%	50%	25%	10%	7%	3%	1%	—	—	3
	100%	90%	80%	67%	30%	15%	—	—	—	—	2
	100%	100%	100%	67%	30%	15%	—	—	—	—	2
	50%	80%	100%	—	—	—	—	—	—	—	3
	100%	100%	100%	—	—	—	—	—	—	—	2

Sources:

1. Confidential data provided by shopping center managers.
2. Developed by team members.
3. *Parking Generation*, 3rd ed. (Washington, D.C.: Institute of Transportation Engineers, 2004).
4. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
5. Gerald Salzman, "Hotel Parking: How Much is Enough?" *Urban Land*, January 1988.
6. Parking study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.

U21

Table 2-6 Recommended Time-of-Day Factors for Weekends

Land Use	User	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.	3 p.m.
Shopping Center—Typical	Customer	1%	5%	10%	30%	50%	65%	80%	90%	100%	100%
Peak December	Customer	1%	5%	10%	35%	60%	70%	85%	95%	100%	100%
Late December	Customer	1%	5%	10%	20%	40%	60%	80%	95%	100%	100%
	Employee	10%	15%	40%	75%	85%	95%	100%	100%	100%	100%
Fine/Casual Dining	Customer	—	—	—	—	—	15%	50%	55%	45%	45%
	Employee	—	20%	30%	60%	75%	75%	75%	75%	75%	75%
Family Restaurant	Customer	10%	25%	45%	70%	90%	90%	100%	85%	65%	40%
	Employee	50%	75%	90%	90%	100%	100%	100%	100%	100%	75%
Fast Food	Customer	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%
	Employee	15%	20%	30%	40%	75%	100%	100%	100%	95%	70%
Nightclub	Customer	—	—	—	—	—	—	—	—	—	—
	Employee	—	—	—	5%	5%	5%	5%	10%	10%	10%
Cineplex—Typical	Customer	—	—	—	—	—	—	20%	45%	55%	55%
Late December	Customer	—	—	—	—	—	—	35%	60%	75%	80%
	Employee	—	—	—	—	—	—	50%	60%	60%	75%
Performing Arts Theater	Customer	—	—	—	1%	1%	1%	1%	17%	67%	67%
With matinee	Employee	—	10%	10%	20%	20%	20%	30%	100%	100%	100%
Arena (two shows)	Customer	—	—	—	1%	1%	1%	1%	25%	95%	95%
	Employee	—	10%	10%	20%	20%	20%	30%	100%	100%	100%
Stadium (1 p.m. start; see weekday for evening game)	Customer	—	—	1%	1%	5%	5%	50%	100%	100%	85%
	Employee	—	5%	10%	20%	30%	30%	100%	100%	100%	100%
Health Club	Customer	80%	45%	35%	50%	35%	50%	50%	30%	25%	30%
	Employee	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Convention Center	Visitor	—	—	50%	100%	100%	100%	100%	100%	100%	100%
	Employee	5%	30%	33%	33%	100%	100%	100%	100%	100%	100%
Hotel—Business	Guest	95%	90%	80%	70%	60%	60%	55%	55%	60%	60%
Hotel—Leisure	Guest	95%	95%	90%	80%	70%	70%	65%	65%	70%	70%
Restaurant/Lounge	Customer	—	10%	30%	10%	10%	5%	100%	100%	33%	10%
Conference/Banquet	Customer	—	—	30%	60%	60%	60%	65%	65%	65%	65%
Convention	Customer	—	—	50%	100%	100%	100%	100%	100%	100%	100%
	Employee	5%	30%	90%	90%	100%	100%	100%	100%	100%	100%
Residential	Guest	—	20%	20%	20%	20%	20%	20%	20%	20%	20%
Residential	Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Residential	Resident	100%	90%	85%	80%	75%	70%	65%	70%	70%	70%
Office	Visitor	—	20%	60%	80%	90%	100%	90%	80%	60%	40%
Office	Employee	—	20%	60%	80%	90%	100%	90%	80%	60%	40%
Medical/Dental Office	Visitor	—	—	90%	90%	100%	100%	30%	—	—	—
	Employee	—	—	60%	100%	100%	100%	100%	—	—	
Bank	Customer	—	—	25%	40%	75%	100%	90%	—	—	—
	Employee	—	—	90%	100%	100%	100%	100%	—	—	—

ULI WEEKEND

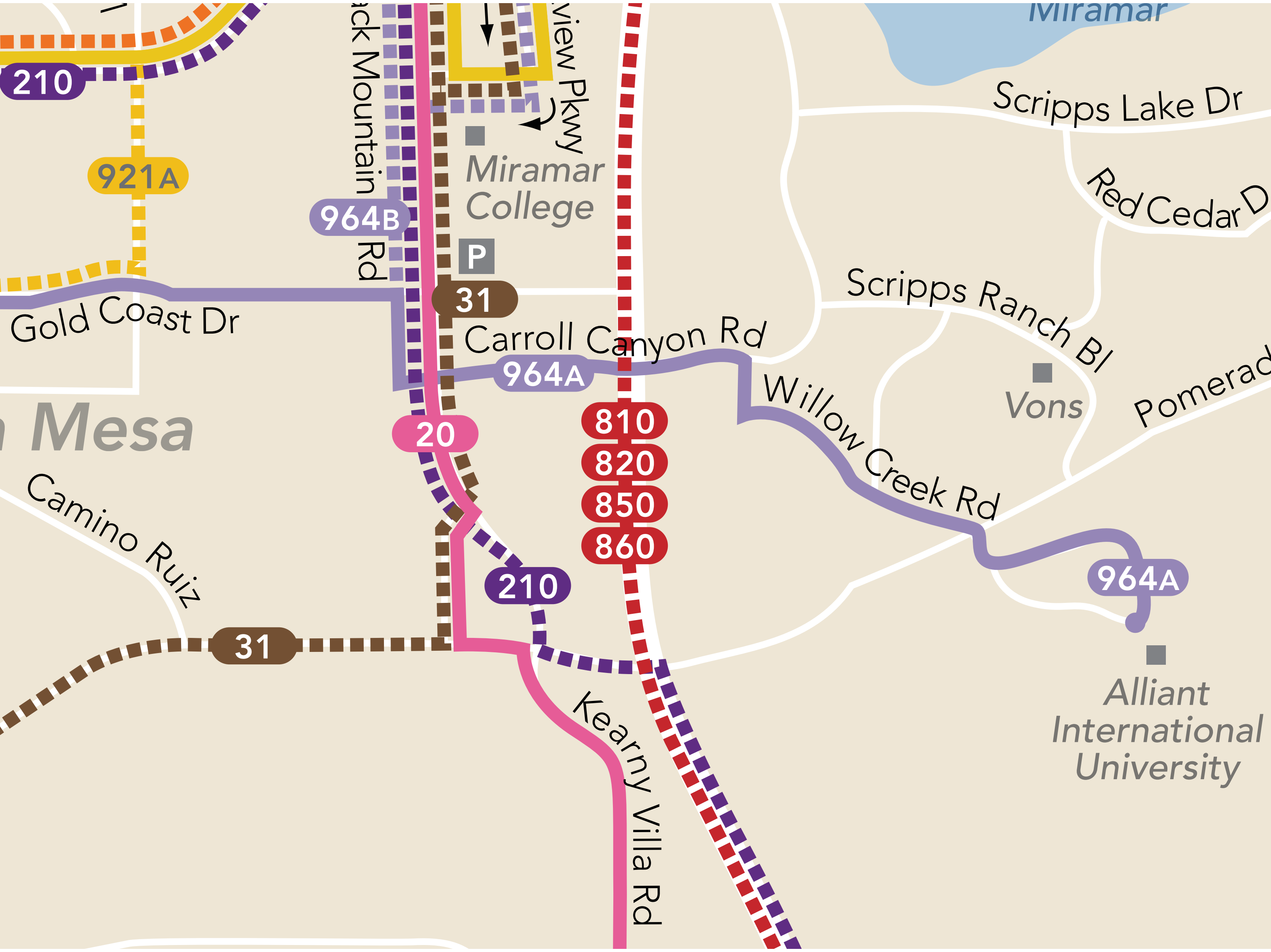
›.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight	Source
)%	100%	95%	90%	80%	75%	65%	50%	35%	15%	—	1
)%	100%	95%	90%	80%	75%	65%	50%	35%	15%	—	1
)%	100%	95%	85%	70%	60%	50%	30%	20%	10%	—	1
)%	100%	100%	95%	85%	80%	75%	65%	45%	15%	—	2
5%	45%	45%	60%	90%	95%	100%	90%	90%	90%	50%	2
5%	75%	75%	100%	100%	100%	100%	100%	100%	85%	50%	2
5%	40%	45%	60%	70%	70%	65%	30%	25%	15%	10%	2
)%	75%	75%	95%	95%	95%	95%	80%	65%	65%	35%	2
)%	60%	55%	60%	85%	80%	50%	30%	20%	10%	5%	3
5%	70%	60%	70%	90%	90%	60%	40%	30%	20%	20%	2
—	—	—	—	25%	50%	75%	100%	100%	100%	100%	2
)%	10%	20%	45%	70%	100%	100%	100%	100%	100%	100%	2
5%	55%	55%	60%	60%	80%	100%	100%	100%	80%	50%	2, 6
5%	80%	80%	80%	70%	80%	100%	100%	100%	85%	70%	2, 6
0%	75%	75%	100%	100%	100%	100%	100%	100%	70%	50%	2
7%	67%	1%	1%	1%	25%	100%	100%	—	—	—	2
0%	100%	30%	30%	100%	100%	100%	100%	30%	10%	5%	2
0%	95%	81%	1%	1%	25%	100%	100%	—	—	—	2
0%	100%	100%	30%	100%	100%	100%	100%	30%	10%	5%	2
%	85%	25%	—	—	—	—	—	—	—	—	2
%	100%	25%	10%	5%	5%	—	—	—	—	—	2
%	30%	55%	100%	95%	60%	30%	10%	1%	1%	—	2, 4
%	50%	75%	100%	100%	75%	50%	20%	20%	20%	—	2, 4
%	100%	100%	100%	50%	30%	30%	10%	—	—	—	2
%	100%	90%	70%	40%	25%	20%	20%	5%	—	—	2
%	60%	65%	70%	75%	75%	80%	85%	95%	100%	100%	5
%	70%	75%	80%	85%	85%	90%	95%	95%	100%	100%	2
%	10%	10%	30%	55%	60%	70%	67%	60%	40%	30%	5
%	65%	65%	100%	100%	100%	100%	100%	50%	—	—	5
%	100%	100%	100%	50%	30%	30%	10%	—	—	—	2
%	100%	90%	75%	60%	55%	55%	55%	45%	45%	30%	5
%	20%	20%	40%	60%	100%	100%	100%	100%	80%	50%	2
%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	2
%	70%	75%	85%	90%	97%	98%	99%	100%	100%	100%	2
%	40%	20%	10%	5%	—	—	—	—	—	—	2
%	40%	20%	10%	5%	—	—	—	—	—	—	3
—	—	—	—	—	—	—	—	—	—	—	2
—	—	—	—	—	—	—	—	—	—	—	2
—	—	—	—	—	—	—	—	—	—	—	3
—	—	—	—	—	—	—	—	—	—	—	2

Sources:

1. Confidential data provided by shopping center managers
2. Developed by team members
3. *Parking Generation*, 3rd ed. (Washington, D.C.: Institute of Transportation Engineers, 2004).
4. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
5. Gerald Salzman, "Hotel Parking: How Much Is Enough?" *Urban Land*, January 1988.
6. Parking study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.

Appendix X

Transit Map and Schedules



Miramar
210
921A
964B
Mountain Rd
Pkwy
Miramar College
P
31
Gold Coast Dr
Carroll Canyon Rd
964A
Scripps Lake Dr
Red Cedar D
Scripps Ranch Bl
Vons
Pomerad
Willow Creek Rd
Mesa
20
810
820
850
860
Camino Ruiz
210
31
964A
Alliant International University
Kearny Villa Rd

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	511 or/ó (619) 233-3004
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	(619) 685-4900
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	(619) 557-4555
SafeWatch	(619) 557-4500
Lost & Found *Objetos extravidos*	(877) 841-3278
The Transit Store	(619) 234-1060 1st & Broadway, Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	www.sdmts.com

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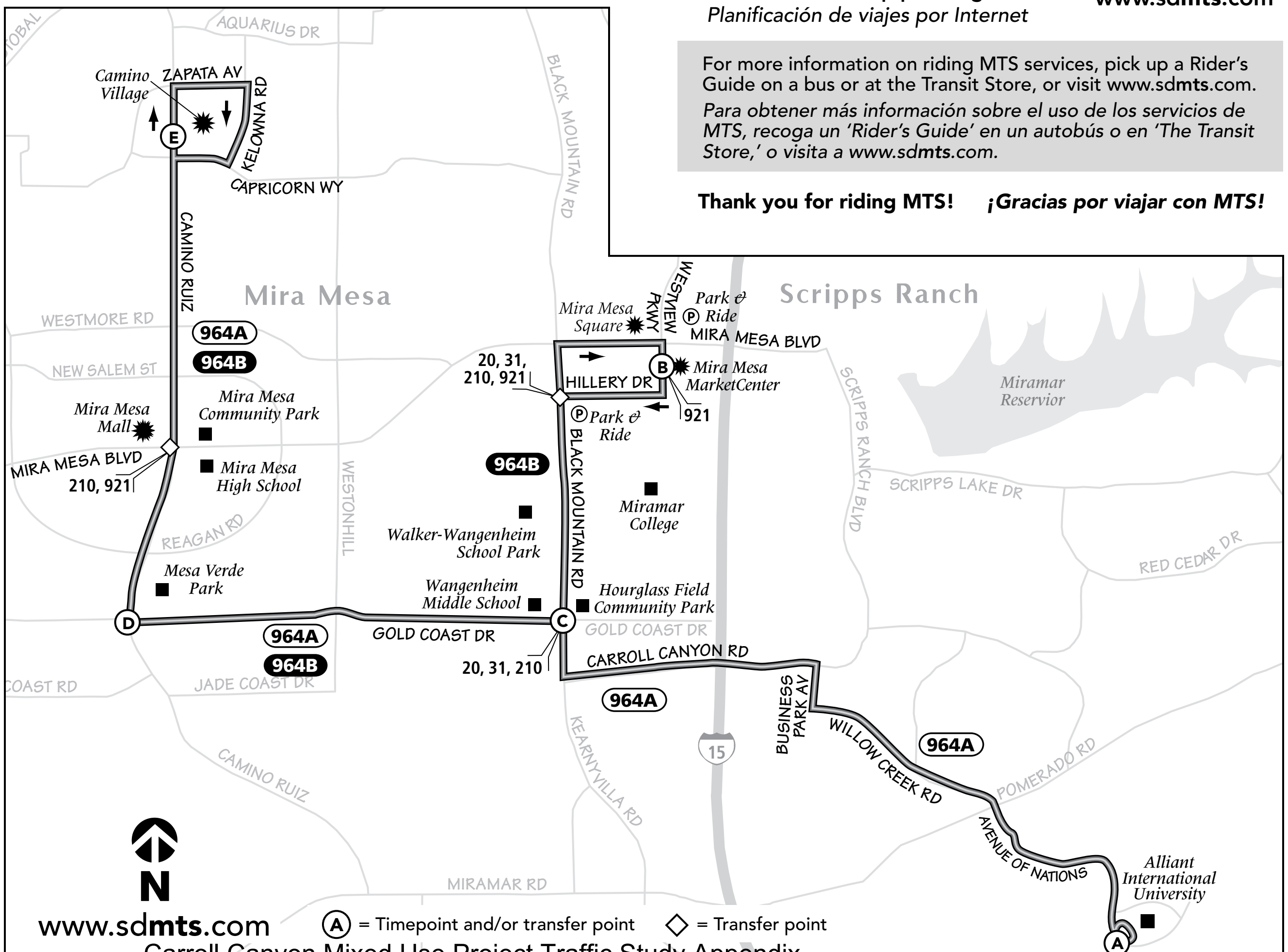
Effective SEPTEMBER 8, 2009

964

Camino Ruiz & Capricorn Way –
Alliant Int'l Univ. via Gold Coast / Carroll Canyon **964A**
MarketCenter via Gold Coast / Black Mountain **964B**

DESTINATIONS
- Alliant Int'l University (964A)
- Camino Village
- Hourglass Community Park
- Miramar College (964B)
- Mira Mesa High School
- Mira Mesa Mall
- Mira Mesa MarketCenter (964B)

MTS Metropolitan Transit System



CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.25
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.10*
Children 5 & under / *Niños de 5 años o menores*	FREE / *GRATIS**

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menores)*	$36.00*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

Valid for unlimited travel for one person on Trolley, most MTS buses, NCTD Breeze and SPRINTER. Valid for a discount on COASTER fares; not valid on Premium Express, Rural, or special service buses, or ADA paratransit.

Válidos para viajes ilimitados de una sola persona para: el Trolley, la mayoría de los autobuses de MTS, y los servicios del NCTD de BREEZE y SPRINTER. Válidos para acceder a descuentos en el COASTER, pero no para las rutas Premium Express ni rurales, los servicios especiales ni los servicios para discapacitadas de ADA.

* I.D. required for discount fare or pass.
* *Se requiere identificación para tarifas o pases de descuento.*

Alternative formats are available upon request. Please call:
Formato alternativo disponible al preguntar. Favor de llamar: **(619) 231-1466**

Route 964 – Westbound

Monday through Friday / *lunes a viernes*

Scripps Ranch ➡ Mira Mesa

	Ⓐ Alliant International Univ. (964A) **DEPART**	Ⓑ Westview Parkway (964B) **DEPART**	Ⓒ Black Mountain Rd. & Gold Coast Drive	Ⓓ Camino Ruiz & Gold Coast Dr.	Ⓔ Camino Ruiz & Capricorn Way **ARRIVE**
B	—	6:00a	6:03a	6:07a	6:15a
B	—	6:30	6:33	6:37	6:45
B	—	7:00	7:03	7:07	7:15
A	7:24a	—	7:33	7:37	7:45
B	—	8:00	8:03	8:07	8:15
A	8:24	—	8:33	8:37	8:45
A	9:25	—	9:33	9:36	9:44
A	10:25	—	10:33	10:36	10:44
A	11:25	—	11:33	11:36	11:44
A	**12:25p**	—	**12:33p**	**12:36p**	**12:44p**
A	**1:25**	—	**1:33**	**1:36**	**1:44**
A	**2:24**	—	**2:33**	**2:37**	**2:46**
B	—	**3:00p**	**3:03**	**3:07**	**3:16**
A	**3:24**	—	**3:33**	**3:37**	**3:46**
B	—	**4:00**	**4:03**	**4:07**	**4:16**
A	**4:24**	—	**4:33**	**4:37**	**4:46**
B	—	**5:00**	**5:03**	**5:07**	**5:16**
A	**5:24**	—	**5:33**	**5:37**	**5:46**
B	—	**6:00**	**6:03**	**6:07**	**6:16**
A	**6:26**	—	**6:33**	**6:36**	**6:44**
B	—	**7:00**	**7:03**	**7:06**	**7:14**
A	**7:26**	—	**7:33**	**7:36**	**7:44**
B	—	**8:00**	**8:03**	**8:06**	**8:14**

Route 964 – Eastbound

Monday through Friday / *lunes a viernes*

Scripps Ranch ➡ Mira Mesa

	Ⓔ Camino Ruiz & Capricorn Way **DEPART**	Ⓓ Camino Ruiz & Gold Coast Dr.	Ⓒ Black Mountain Rd. & Gold Coast Drive	Ⓑ Westview Parkway (964B) **ARRIVE**	Ⓐ Alliant International Univ. (964A) **ARRIVE**
B	5:55a	6:03a	6:07a	6:14a	—
B	6:25	6:33	6:37	6:44	—
A	6:55	7:03	7:07	—	7:16a
B	7:25	7:33	7:37	7:44	—
A	7:55	8:03	8:07	—	8:16
B	8:25	8:33	8:37	8:44	—
A	8:55	9:03	9:06	—	9:14
A	9:55	10:03	10:06	—	10:14
A	10:55	11:03	11:06	—	11:14
A	11:55	**12:03p**	**12:06p**	—	**12:14p**
A	**12:55p**	**1:03**	**1:06**	—	**1:14**
A	**1:55**	**2:04**	**2:08**	—	**2:18**
A	**2:55**	**3:04**	**3:08**	—	**3:18**
B	**3:25**	**3:34**	**3:38**	**3:45p**	—
A	**3:55**	**4:04**	**4:08**	—	**4:18**
B	**4:25**	**4:34**	**4:38**	**4:45**	—
A	**4:55**	**5:04**	**5:08**	—	**5:18**
B	**5:25**	**5:34**	**5:38**	**5:45**	—
A	**5:55**	**6:04**	**6:08**	—	**6:18**
B	**6:25**	**6:33**	**6:36**	**6:42**	—
A	**6:55**	**7:03**	**7:06**	—	**7:15**
B	**7:25**	**7:33**	**7:36**	**7:42**	—
B	**7:55**	**8:03**	**8:06**	**8:12**	—

Route 964 does not operate on weekends or on the observation of the following holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, & Christmas
La ruta 964 no ofrece servicio durante el fín de semana ó durante los siguientes días festivos: Año Nuevo, Presidents' Day, Memorial Day, Día de la Independencia (E.E.U.U.), Labor Day, Día de Acción de Gracias, y Navidad
A = Route 964A serves Alliant International University / *La Ruta 964A ofrece servicio a Alliant International University*
B = Route 964B serves Mira Mesa MarketCenter / *La Ruta 964B ofrece servicio a Mira Mesa MarketCenter*
PM times are in bold / ***Los horarios de la tarde (PM) están en negrita***

The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses. / *Los horarios y información que se indican en este itinerario estan sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.*

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)*	$5.00
One-Way Fare / *Tarifa de una direccón*	$2.50
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.25*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / ***Pase diario (Regional)***

Valid for unlimited travel for one person on Trolley, most MTS buses, NCTD BREEZE and SPRINTER. Valid for a discount on COASTER fares. Not valid on Premium Express, Rural, Access, or special service buses.

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TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	(619) 685-4900
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	(619) 557-4555
SafeWatch	(619) 557-4500
The Transit Store / Lost & Found *The Transit Store / Objetos extraviados*	(619) 234-1060
Articles found on the bus are turned in at The Transit Store *Artículos encontrados en los autobuses son entregados a The Transit Store*	1st & Broadway Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	www.sdmts.com

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Effective SEPTEMBER 2, 2012

20 Downtown – Del Lago Station
via Fashion Valley

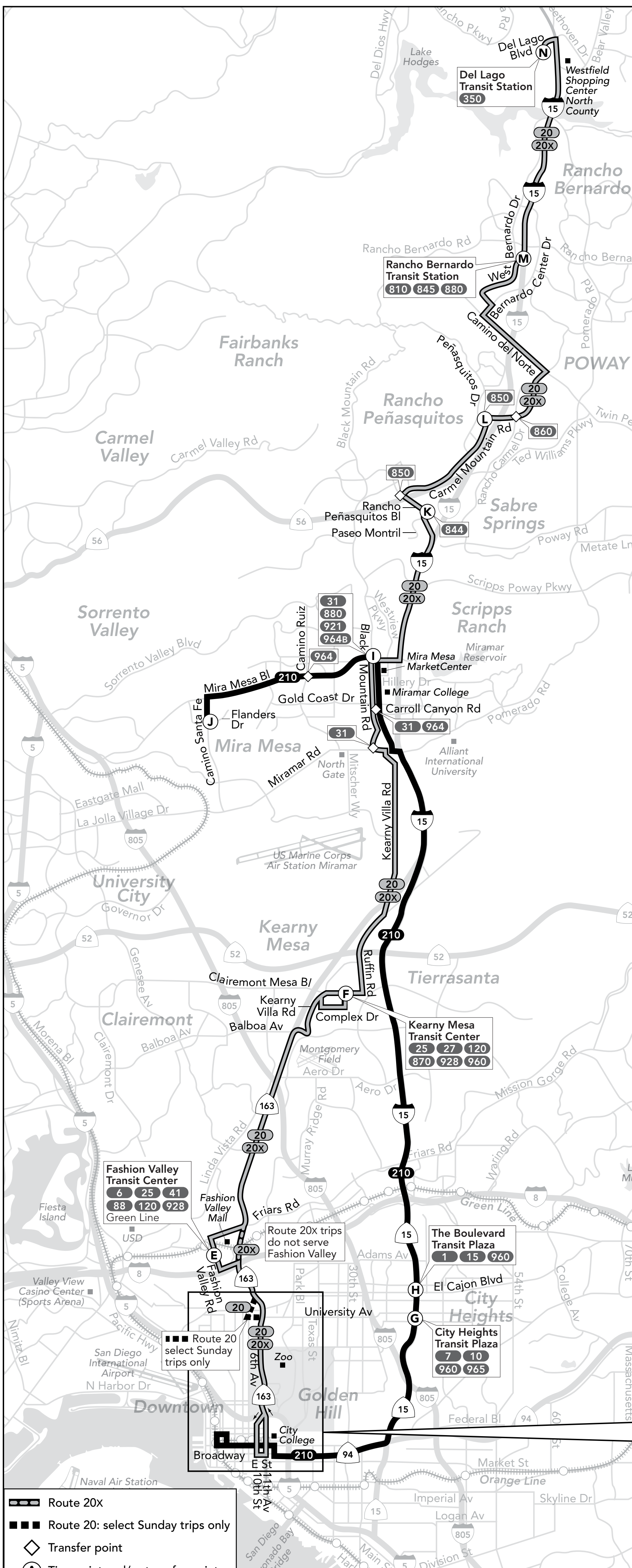
210 Downtown – Mira Mesa Express
via I-15 / Mid-City

DESTINATIONS
- City College
- Downtown Courthouses (210)
- Fashion Valley Mall (20)
- Miramar College
- Mira Mesa MarketCenter

TROLLEY CONNECTIONS
America Plaza (210)
City College
Fashion Valley (20)

MTS Metropolitan Transit System

Alternative formats available upon request. Please call: (619) 557-4555 / ***Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555***



Route 210 – Monday through Friday / *lunes a viernes*

Morning only

Mira Mesa ➡ City Heights ➡ Downtown

(J) Camino Santa Fe & Flanders Dr. DEPART	(I) Black Mountain Rd. & Mira Mesa Bl.	(H) The Boulevard Transit Plaza (El Cajon Bl.)	(G) City Heights Transit Plaza (University Av.)	(D) City College Trolley (Broadway)	(B) Broadway & 4th Av.	(A) India St. & C St. ARRIVE
6:01a	6:12a	6:30a	6:32a	6:42a	6:46a	6:54a
6:16	6:27	6:45	6:47	6:57	7:01	7:09
6:31	6:43	7:03	7:05	7:16	7:20	7:29
6:46	6:58	7:18	7:20	7:31	7:35	7:44
7:06	7:18	7:40	7:42	7:54	7:59	8:08

Route 210 – Monday through Friday / *lunes a viernes*

Afternoon only

Downtown ➡ City Heights ➡ Mira Mesa

(A) India St. & C St. DEPART	(B) Broadway & 3rd Av.	(D) City College Trolley (Broadway)	(G) City Heights Transit Plaza (University Av.)	(H) The Boulevard Transit Plaza (El Cajon Bl.)	(I) Mira Mesa Bl. & Black Mountain Rd.	(J) Camino Santa Fe & Flanders Dr. ARRIVE
4:03p	**4:10p**	**4:16p**	**4:25p**	**4:27p**	**4:49p**	**5:04p**
4:23	**4:30**	**4:36**	**4:45**	**4:47**	**5:09**	**5:24**
4:43	**4:50**	**4:56**	**5:06**	**5:08**	**5:32**	**5:47**
5:08	**5:15**	**5:21**	**5:31**	**5:33**	**5:57**	**6:12**
5:38	**5:45**	**5:51**	**6:00**	**6:02**	**6:25**	**6:39**

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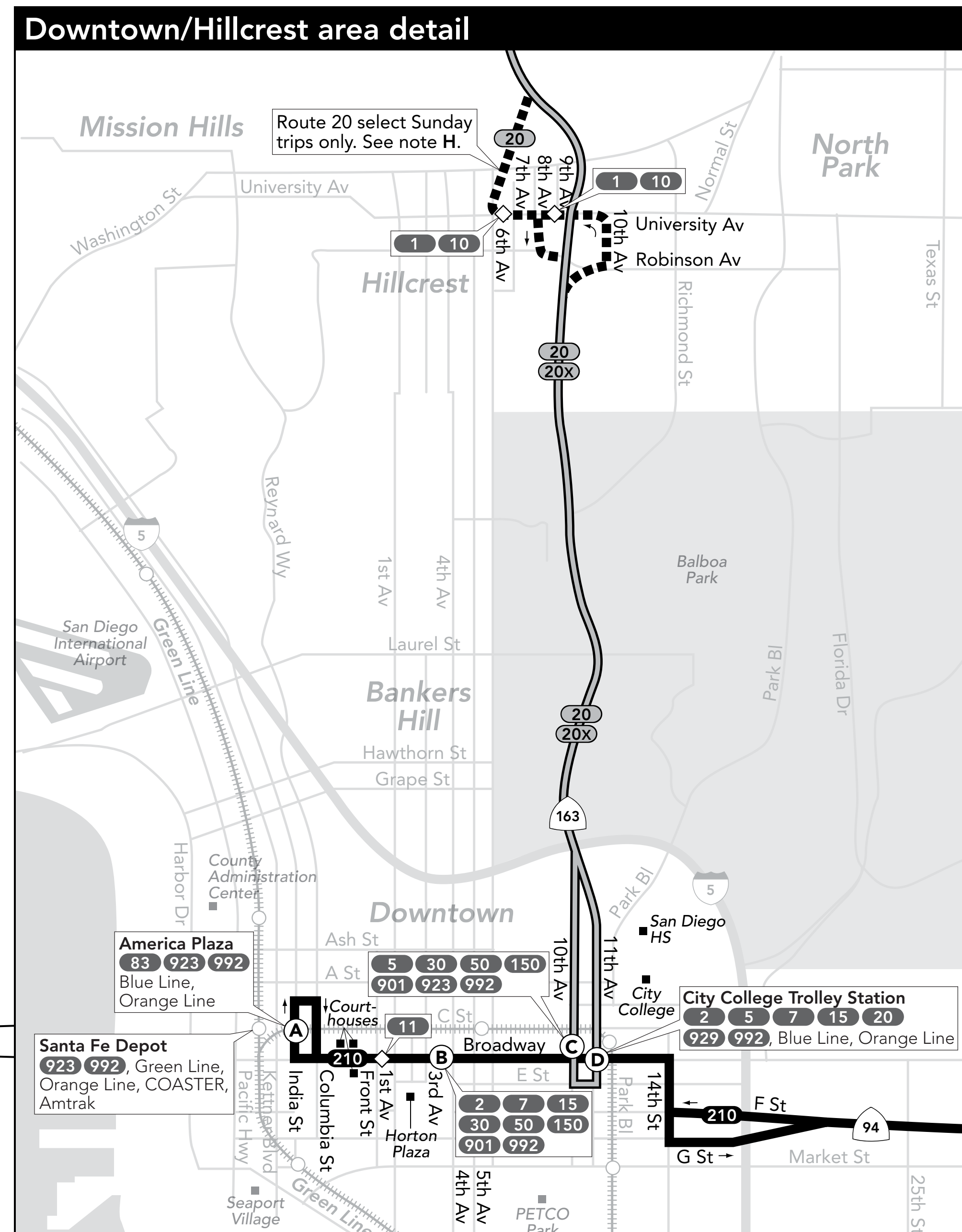
Downtown/Hillcrest area detail



A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas
Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Route 20 – Monday through Friday / *lunes a viernes*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo ➡ Escondido

(C) 10th Av. & Broadway DEPART	(D) City College Trolley Station (11th Av.)	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(F) Kearny Mesa Transit Center	(I) Mira Mesa Bl. & Black Mountain Rd.	(K) Rancho Peñasquitos & Paseo Montril	(L) Carmel Mtn. & Peñasquitos Dr.	(M) Rancho Bernardo Transit Station	(N) Del Lago Transit Station ARRIVE
—	4:52a	5:03a	5:03a	5:15a	5:31a	5:37a	5:45a	5:59a	6:06a
—	D 4:54				DIRECT EXPRESS →				5:29
—	5:24	5:35	5:35	5:47	6:03	6:09	6:17	6:31	6:38
—	5:38	5:49	5:51	6:05	—	—	—	—	—
—	X 5:55	EXPRESS →		6:09	6:29	6:37	6:45	7:00	7:07
—	6:08	6:19	6:21	6:35	—	—	—	—	—
X 6:22a	6:25	EXPRESS →		6:39	7:02	7:10	7:19	7:34	7:41
6:35	6:38	6:49	6:51	7:05	—	—	—	—	—
X 6:52	6:55	EXPRESS →		7:09	7:32	7:40	7:49	8:04	8:11
7:05	7:08	7:19	7:21	7:35	—	—	—	—	—
X 7:21	7:24	EXPRESS →		7:39	8:02	8:10	8:19	8:34	8:41
7:35	7:38	7:49	7:51	8:05	—	—	—	—	—
X 7:51	7:54	EXPRESS →		8:09	8:32	8:40	8:49	9:04	9:11
8:05	8:08	8:19	8:21	8:35	—	—	—	—	—
X 8:21	8:24	EXPRESS →		8:39	9:01	9:09	9:18	9:34	9:41
8:35	8:38	8:49	8:51	9:05	—	—	—	—	—
X 8:51	8:54	EXPRESS →		9:09	9:31	9:39	9:48	10:04	10:11
9:05	9:08	9:19	9:21	9:35	9:57	10:05	10:14	10:30	10:37
9:35	9:38	9:49	9:51	10:05	10:27	10:35	10:44	11:00	11:07
10:05	10:08	10:19	10:21	10:35	10:57	11:05	11:14	11:30	11:37
10:35	10:38	10:49	10:51	11:05	11:27	11:35	11:44	12:00p	12:07p
11:05	11:08	11:19	11:21	11:35	11:57	12:05p	12:14p	12:30	12:37
11:35	11:38	11:49	11:51	12:05p	12:27p	12:35	12:44	1:01	1:08
12:05p	12:08p	12:19p	12:21p	12:35	12:57	1:05	1:14	1:31	1:38
12:35	12:38	12:49	12:51	1:05	1:27	1:35	1:44	2:01	2:08
1:05	1:08	1:20	1:22	1:37	1:59	2:07	2:16	2:33	2:40
1:35	1:38	1:50	1:52	2:07	2:29	2:37	2:47	3:04	3:11
2:05	2:08	2:21	2:23	2:39	3:03	3:12	3:23	3:40	3:47
2:35	2:38	2:51	2:53	3:09	3:33	3:42	3:53	4:10	4:17
3:01	3:04	3:17	3:19	3:35	—	—	—	—	—
X 3:19	3:22	EXPRESS →		3:39	4:03	4:12	4:23	4:40	4:47
3:31	3:34	3:47	3:49	4:05	—	—	—	—	—
X 3:51	3:54	EXPRESS →		4:11	4:35	4:44	4:55	5:12	5:19
4:01	4:04	4:17	4:19	4:35	—	—	—	—	—
X 4:23	4:26	EXPRESS →		4:43	5:08	5:17	5:28	5:45	5:52
4:31	4:34	4:47	4:49	5:05	—	—	—	—	—
X 4:53	4:56	EXPRESS →		5:13	5:38	5:47	5:58	6:15	6:22
5:01	5:04	5:17	5:19	5:35	—	—	—	—	—
X 5:23	5:26	EXPRESS →		5:43	6:08	6:17	6:28	6:45	6:52
5:31	5:34	5:47	5:49	6:05	—	—	—	—	—
X 5:52	5:55	EXPRESS →		6:11	6:34	6:42	6:52	7:08	7:15
6:01	6:04	6:17	6:19	6:33	—	—	—	—	—
6:21	6:24	6:35	6:37	6:51	7:11	7:19	7:28	7:42	7:48
6:51	6:54	7:05	7:07	7:21	7:41	7:49	7:58	8:12	8:18
7:21	7:24	7:35	7:37	7:50	8:08	8:15	8:23	8:36	8:42
7:51	7:54	8:05	8:05	8:18	8:36	8:43	8:51	9:04	9:10
8:51	8:54	9:05	9:05	9:18	9:36	9:43	9:51	10:04	10:10

Escondido ➡ Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(N) Del Lago Transit Station DEPART	(M) Rancho Bernardo Transit Station	(L) Carmel Mtn. & Peñasquitos Dr.	(K) Rancho Peñasquitos & Paseo Montril	(I) Black Mountain Rd. & Mira Mesa Bl.	(F) Kearny Mesa Transit Center	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(C) 10th Av. & Broadway ARRIVE
4:42a	4:49a	5:04a	5:12a	5:20a	5:40a	5:52a	5:54a	6:03a
X 5:06	5:13	5:28	5:36	5:44	6:04	EXPRESS →		6:17
—	—	—	—	—	6:12	6:25	6:27	6:37
X 5:32	5:39	5:55	6:04	6:12	6:34	EXPRESS →		6:47
—	—	—	—	—	6:42	6:55	6:57	7:07
X 5:52	6:00	6:18	6:30	6:41	7:04	EXPRESS →		7:19
—	—	—	—	—	7:12	7:25	7:27	7:37
X 6:22	6:30	6:48	7:00	7:11	7:34	EXPRESS →		7:49
—	—	—	—	—	7:42	7:55	7:57	8:07
X 6:52	7:00	7:18	7:30	7:41	8:04	EXPRESS →		8:19
—	—	—	—	—	8:12	8:25	8:27	8:37
7:22	7:30	7:48	8:00	8:11	8:34	8:47	8:49	8:59
7:54	8:02	8:20	8:32	8:43	9:06	9:19	9:21	9:31
8:26	8:34	8:52	9:03	9:14	9:36	9:49	9:51	10:01
9:03	9:10	9:27	9:36	9:44	10:06	10:19	10:21	10:30
9:24	9:31	9:48	9:57	10:05	10:27	10:40	10:42	10:51
9:54	10:01	10:18	10:27	10:35	10:57	11:10	11:12	11:21
10:24	10:31	10:48	10:57	11:05	11:27	11:40	11:42	11:51
10:54	11:01	11:18	11:27	11:35	11:57	12:10p	12:12p	12:21p
11:19	11:26	11:44	11:54	12:02p	12:27p	12:41	12:43	12:52
11:49	11:56	12:14p	12:24p	12:32	12:57	1:11	1:13	1:22
12:19p	12:26p	12:44	12:54	1:02	1:27	1:41	1:43	1:52
12:49	12:56	1:14	1:24	1:32	1:57	2:11	2:13	2:22
X 1:24	1:31	1:49	1:59	2:07	2:32	EXPRESS →		2:46
—	—	—	—	—	2:41	2:55	2:57	3:06
X 1:54	2:01	2:19	2:29	2:37	3:02	EXPRESS →		3:16
—	—	—	—	—	3:10	3:25	3:27	3:38
X 2:24	2:31	2:49	2:59	3:07	3:32	EXPRESS →		3:46
—	—	—	—	—	3:40	3:55	3:57	4:08
—	—	—	—	X 3:24	3:49	EXPRESS →		4:04
X 2:56	3:03	3:21	3:31	3:39	4:04	EXPRESS →		4:18
—	—	—	—	—	4:10	4:25	4:27	4:38
—	—	—	—	X 3:55	4:20	EXPRESS →		4:35
X 3:25	3:32	3:51	4:00	4:09	4:34	EXPRESS →		4:49
—	—	—	—	—	4:40	4:55	4:57	5:08
—	—	—	—	X 4:25	4:50	EXPRESS →		5:05
X 3:59	4:06	4:25	4:34	4:43	5:08	EXPRESS →		5:23
—	—	—	—	—	5:18	5:33	5:35	5:46
—	—	—	—	X 5:01	5:26	EXPRESS →		5:41
X 4:31	4:38	4:57	5:06	5:15	5:40	EXPRESS →		5:55
—	—	—	—	—	5:48	6:03	6:05	6:14
—	—	—	—	X 5:31	5:54	EXPRESS →		6:09
5:01	5:08	5:27	5:36	5:45	6:10	6:25	6:27	6:38
5:34	5:41	5:59	6:08	6:17	6:40	6:55	6:57	7:06
6:10	6:17	6:34	6:43	6:52	7:12	7:25	7:27	7:36
7:10	7:17	7:34	7:43	7:52	8:12	8:25	8:27	8:36
D 7:23				DIRECT EXPRESS →				7:58
8:19	8:25	8:39	8:48	8:56	9:13	9:25	9:35	9:44
D 8:50				DIRECT EXPRESS →				9:25
9:20	9:26	9:40	9:49	9:56	10:13	10:25	10:35	10:44
10:20	10:26	10:40	10:49	10:56	11:13	11:25	11:35	11:44

Route 20 – Saturday / *sábado*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo ➡ Escondido

(C) 10th Av. & Broadway DEPART	(D) City College Trolley Station (11th Av.)	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(F) Kearny Mesa Transit Center	(I) Mira Mesa Bl. & Black Mountain Rd.	(K) Rancho Peñasquitos & Paseo Montril	(L) Carmel Mtn. & Peñasquitos Dr.	(M) Rancho Bernardo Transit Station	(N) Del Lago Transit Station ARRIVE
—	D 4:34a				DIRECT EXPRESS →				5:05a
—	D 5:34				DIRECT EXPRESS →				6:05
—	5:40	5:50a	5:52a	6:04a	6:21a	6:27a	6:35a	6:50a	6:57
—	6:10	6:20	6:22	6:34	6:51	6:57	7:05	7:20	7:27
6:37a	6:40	6:50	6:52	7:05	—	—	—	—	—
7:07	7:10	7:20	7:22	7:35	7:53	8:00	8:08	8:24	8:31
7:37	7:40	7:50	7:52	8:05	—	—	—	—	—
8:07	8:10	8:21	8:23	8:37	8:55	9:02	9:11	9:28	9:35
8:37	8:40	8:51	8:53	9:07	—	—	—	—	—
9:07	9:10	9:21	9:23	9:37	9:55	10:02	10:11	10:28	10:35
9:37	9:40	9:51	—	—	—	—	—	—	—
10:07	10:10	10:21	10:23	10:37	10:55	11:02	11:11	11:28	11:35
10:37	10:40	10:52	—	—	—	—	—	—	—
11:07	11:10	11:22	11:24	11:39	11:58	12:06p	12:15p	12:33p	12:40p
11:37	11:40	11:52	—	—	—	—	—	—	—
12:07p	12:10p	12:22p	12:24p	12:39p	12:58p	1:06	1:15	1:33	1:40
12:37	12:40	12:52	—	—	—	—	—	—	—
1:07	1:10	1:22	1:24	1:39	1:58	2:06	2:15	2:33	2:40
1:37	1:40	1:52	—	—	—	—	—	—	—
2:07	2:10	2:22	2:24	2:39	2:58	3:06	3:15	3:33	3:40
2:37	2:40	2:52	2:54	3:09	—	—	—	—	—
3:07	3:10	3:22	3:24	3:39	3:58	4:06	4:15	4:33	4:40
3:37	3:40	3:52	3:54	4:09	—	—	—	—	—
4:07	4:10	4:22	4:24	4:39	4:58	5:06	5:15	5:33	5:40
4:37	4:40	4:52	—	—	—	—	—	—	—
5:07	5:10	5:22	5:24	5:39	5:58	6:06	6:15	6:33	6:40
5:37	5:40	5:52	—	—	—	—	—	—	—
6:07	6:10	6:22	6:24	6:38	6:56	7:04	7:13	7:30	7:37
7:07	7:10	7:22	7:24	7:38	7:56	8:03	8:11	8:28	8:35
8:07	8:10	8:21	8:23	8:36	8:54	9:01	9:08	9:24	9:30

Escondido ➡ Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(N) Del Lago Transit Station DEPART	(M) Rancho Bernardo Transit Station	(L) Carmel Mtn. & Peñasquitos Dr.	(K) Rancho Peñasquitos & Paseo Montril	(I) Black Mountain Rd. & Mira Mesa Bl.	(F) Kearny Mesa Transit Center	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(C) 10th Av. & Broadway ARRIVE
5:07a	5:14a	5:26a	5:34a	5:40a	5:56a	6:08a	6:10a	6:19a
6:07	6:14	6:26	6:34	6:40	6:56	7:08	7:10	7:19
—	—	—	—	—	7:25	7:38	7:40	7:50
7:07	7:14	7:27	7:35	7:42	7:58	8:11	8:13	8:23
—	—	—	—	—	8:24	8:38	8:40	8:50
8:02	8:09	8:22	8:30	8:37	8:53	9:08	9:10	9:20
—	—	—	—	—	9:23	9:38	9:40	9:51
9:00	9:07	9:21	9:29	9:37	9:54	10:08	10:10	10:20
—	—	—	—	—	—	—	10:40	10:51
9:55	10:02	10:17	10:26	10:35	10:53	11:08	11:10	11:21
—	—	—	—	—	—	—	11:40	11:51
10:55	11:02	11:17	11:26	11:35	11:53	12:08p	12:10p	12:21p
—	—	—	—	—	—	—	12:40	12:51
11:55	12:02p	12:17p	12:26p	12:35p	12:53p	1:08	1:10	1:21
—	—	—	—	—	—	—	1:40	1:51
12:54p	1:01	1:16	1:26	1:35	1:53	2:08	2:10	2:21
—	—	—	—	—	—	—	2:40	2:51
1:54	2:01	2:16	2:26	2:35	2:53	3:08	3:10	3:21
—	—	—	—	—	3:23	3:38	3:40	3:51
2:54	3:01	3:16	3:26	3:35	3:53	4:08	4:10	4:21
—	—	—	—	—	4:23	4:38	4:40	4:51
3:54	4:01	4:16	4:26	4:35	4:53	5:08	5:10	5:21
—	—	—	—	—	—	—	5:40	5:50
4:57	5:04	5:18	5:27	5:35	5:53	6:08	6:10	6:21
—	—	—	—	—	—	—	6:40	6:50
6:00	6:07	6:21	6:29	6:37	6:54	7:08	7:10	7:20
—	—	—	—	—	—	—	7:40	7:50
7:00	7:07	7:21	7:29	7:37	7:54	8:08	8:10	8:20
8:02	8:09	8:22	8:30	8:38	8:54	9:08	9:10	9:19
D 8:40				DIRECT EXPRESS →				9:15
D 9:35				DIRECT EXPRESS →				10:10

Route 20 – Sunday / *domingo*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo ➡ Escondido

(C) 10th Av. & Broadway DEPART	(D) City College Trolley Station (11th Av.)	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(F) Kearny Mesa Transit Center	(I) Mira Mesa Bl. & Black Mountain Rd.	(K) Rancho Peñasquitos & Paseo Montril	(L) Carmel Mtn. & Peñasquitos Dr.	(M) Rancho Bernardo Transit Station	(N) Del Lago Transit Station ARRIVE
—	D 5:34a				DIRECT EXPRESS →				6:05a
—	H 6:10 U	6:22a	6:24a	6:36a	6:53a	6:59a	7:07a	7:22a	7:29
—	D 6:34				DIRECT EXPRESS →				7:05
H 7:07a	7:10 U	7:22	7:24	7:37	7:55	8:02	8:10	8:26	8:33
H 8:07	8:10 U	8:22	8:24	8:38	8:56	9:03	9:12	9:29	9:36
H 9:07	9:10 U	9:22	9:24	9:38	9:56	10:03	10:12	10:29	10:36
10:07	10:10	10:21	10:23	10:37	10:55	11:02	11:11	11:28	11:35
11:07	11:10	11:22	11:24	11:39	11:58	12:06p	12:15p	12:33p	12:40p
12:07p	12:10p	12:22p	12:24p	12:39p	12:58p	1:06	1:15	1:33	1:40
1:07	1:10	1:22	1:24	1:39	1:58	2:06	2:15	2:33	2:40
2:07	2:10	2:22	2:24	2:39	2:58	3:06	3:15	3:33	3:40
3:07	3:10	3:22	3:24	3:39	3:58	4:06	4:15	4:33	4:40
4:07	4:10	4:22	4:24	4:39	4:58	5:06	5:15	5:33	5:40
5:07	5:10	5:22	5:24	5:39	5:58	6:06	6:15	6:33	6:40
6:07	6:10	6:22	6:24	6:38	6:56	7:04	7:13	7:30	7:37
7:07	7:10	7:22	7:24	7:38	7:56	8:03	8:11	8:28	8:35
8:07	8:10	8:21	8:23	8:36	8:54	9:01	9:08	9:24	9:30

Escondido ➡ Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(N) Del Lago Transit Station DEPART	(M) Rancho Bernardo Transit Station	(L) Carmel Mtn. & Peñasquitos Dr.	(K) Rancho Peñasquitos & Paseo Montril	(I) Black Mountain Rd. & Mira Mesa Bl.	(F) Kearny Mesa Transit Center	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(C) 10th Av. & Broadway ARRIVE
H 6:07a	6:14a	6:26a	6:34a	6:40a	6:56a	7:08a	7:10a T	7:22a
H 7:07	7:14	7:27	7:35	7:42	7:58	8:11	8:13 T	8:25
H 8:02	8:09	8:22	8:30	8:37	8:53	9:06	9:08 T	9:20
9:00	9:07	9:21	9:29	9:37	9:54	10:08	10:10	10:20
9:55	10:02	10:17	10:26	10:35	10:53	11:08	11:10	11:21
10:55	11:02	11:17	11:26	11:35	11:53	12:08p	12:10p	12:21p
11:55	12:02p	12:17p	12:26p	12:35p	12:53p	1:08	1:10	1:21
12:54p	1:01	1:16	1:26	1:35	1:53	2:08	2:10	2:21
1:54	2:01	2:16	2:26	2:35	2:53	3:08	3:10	3:21
2:54	3:01	3:16	3:26	3:35	3:53	4:08	4:10	4:21
3:54	4:01	4:16	4:26	4:35	4:53	5:08	5:10	5:21
4:57	5:04	5:18	5:27	5:35	5:53	6:08	6:10	6:21
H 6:00	6:07	6:21	6:29	6:37	6:54	7:08	7:10 T	7:22
H 7:00	7:07	7:21	7:29	7:37	7:54	8:08	8:10 T	8:22
D 7:42				DIRECT EXPRESS →				8:17
D 8:40				DIRECT EXPRESS →				9:15
D 9:35				DIRECT EXPRESS →				10:10

D = Route 20D: Express/no stops between downtown San Diego and Del Lago Transit Station. / *Ruta 20D: Viaje 'Express' sin paradas entre el centro de San Diego y el Del Lago Transit Station.*
H = Route 20 via Fashion Valley and Hillcrest. / *Ruta 20 via Fashion Valley y Hillcrest.*
T = Route 20 arrives/departs University Ave. & 6th Ave. (Hillcrest) 5 minutes after time shown. / *Ruta 20 llegada/salida University Ave. y 6th Ave. (Hillcrest) 5 minutos después de la hora indicada.*
U = Route 20 arrives/departs University Ave. & 7th Ave. (Hillcrest) 6 minutes after time shown. / *Ruta 20 llegada/salida University Ave. y 7th Ave. (Hillcrest) 6 minutos después de la hora indicada.*
X = Route 20X does not serve Fashion Valley. / *Ruta 20X no ofrece servicio a Fashion Valley.*

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*	
Day Pass (Regional) / *Pase diario (Regional)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.25
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.10*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

Valid for unlimited travel for one person on Trolley, most MTS buses, NCTD BREEZE and SPRINTER. Valid for a discount on COASTER fares. Not valid on Premium Express, Rural, Access, or special service buses.

Válidos para viajes ilimitados de una sola persona para: el Trolley, la mayoría de los autobuses de MTS, y los servicios del NCTD de BREEZE y SPRINTER. Válidos para acceder a descuentos en el COASTER, pero no para las rutas Premium Express, rurales, Access, ni los servicios especiales.

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	511 or/ó (619) 233-3004
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	(619) 685-4900
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	(619) 557-4555
SafeWatch	(619) 557-4500
Lost & Found *Objetos extraviados*	Route 921 Weekday: (619) 427-5660 or/ó (800) 409-3310 Route 31: (619) 234-1060 Route 921 Saturday: (877) 841-3278
The Transit Store	(619) 234-1060 1st & Broadway, Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	www.sdmts.com

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Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective SEPTEMBER 2, 2012

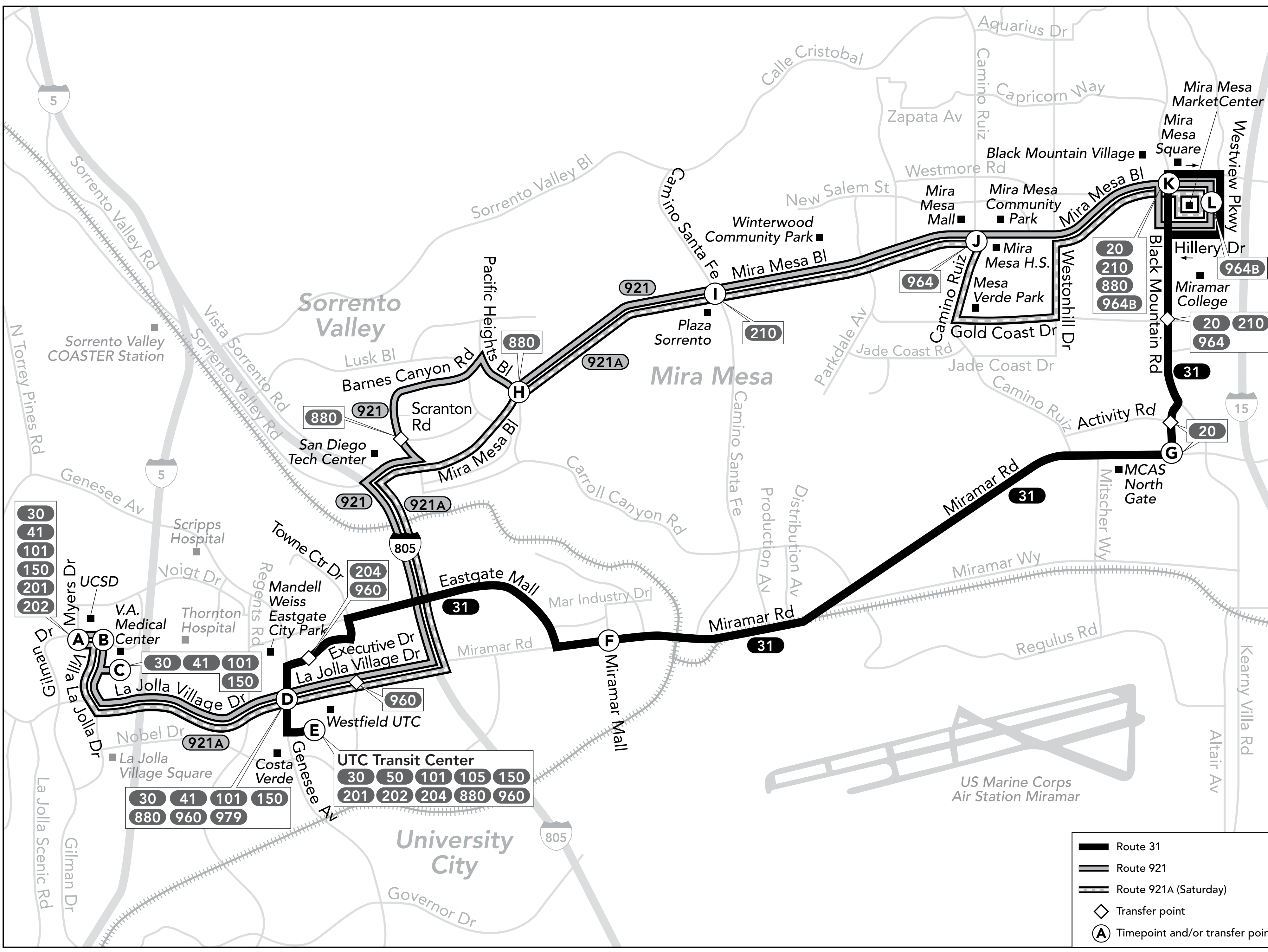
31
UTC – Mira Mesa
via Miramar Rd.

921
UCSD/VA Med. Ctr. – Mira Mesa
via Mira Mesa Bl.

DESTINATIONS
- MCAS Miramar - North Gate (31)
- Miramar College
- Mira Mesa High School (921)
- Mira Mesa Mall (921)
- Mira Mesa MarketCenter
- VA Medical Center (921)
- Westfield UTC
- Sorrento Mesa (921)
- Sorrento Valley (921)

MTS Metropolitan Transit System

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*



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Route 31 – Monday through Friday / *lunes a viernes*

University City ➡ Miramar ➡ Mira Mesa

(E) UTC Transit Center DEPART	(F) Miramar Rd. & Miramar Mall	(G) Black Mountain Rd. & Miramar Rd.	(L) Westview Parkway ARRIVE
5:37a	5:46a	5:55a	6:04a
6:07	6:16	6:25	6:34
6:37	6:48	6:59	7:08
7:02	7:13	7:24	7:33
7:30	7:41	7:52	8:01
8:00	8:11	8:22	8:31
8:30	8:41	8:52	9:01
2:58p	**3:08p**	**3:19p**	**3:30p**
3:28	**3:38**	**3:49**	**4:00**
3:58	**4:08**	**4:19**	**4:30**
4:30	**4:41**	**4:53**	**5:04**
5:00	**5:11**	**5:23**	**5:34**
5:30	**5:41**	**5:53**	**6:04**
6:00	**6:10**	**6:20**	**6:31**
6:30	**6:40**	**6:50**	**7:01**

Mira Mesa ➡ Miramar ➡ University City

(L) Westview Parkway DEPART	(G) Miramar Rd. & Black Mountain Rd.	(F) Miramar Rd. & Miramar Mall	(E) UTC Transit Center ARRIVE
6:19a	6:25a	6:35a	6:46a
6:44	6:52	7:03	7:15
7:14	7:22	7:33	7:45
7:43	7:51	8:02	8:14
8:13	8:21	8:32	8:44
8:44	8:52	9:03	9:15
9:14	9:22	9:33	9:45
2:14p	**2:21p**	**2:31p**	**2:43p**
2:44	**2:51**	**3:01**	**3:13**
3:11	**3:19**	**3:30**	**3:43**
3:41	**3:49**	**4:00**	**4:13**
4:11	**4:19**	**4:30**	**4:43**
4:41	**4:49**	**5:00**	**5:13**
5:11	**5:19**	**5:30**	**5:43**
5:44	**5:52**	**6:03**	**6:16**

Route 31 does not operate on weekends or on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas
La ruta 31 no ofrece servicio durante el fin de semana o durante los siguientes días festivos y feriados observados

Route 921 – Monday through Friday / *lunes a viernes*

University City ➡ Sorrento Valley ➡ Mira Mesa

(B) Gilman Dr. & Villa La Jolla Dr. DEPART	(C) V.A. Medical Center	(D) La Jolla Village Dr. & Genesee Av.	(H) Mira Mesa Bl. & Pacific Heights Bl.	(I) Mira Mesa Bl. & Camino Santa Fe	(J) Mira Mesa Bl. & Camino Ruiz	(K) Mira Mesa Bl. & Black Mountain Rd.	(L) Westview Parkway ARRIVE
—	6:03a	6:11a	6:23a	6:27a	6:33a	6:38a	6:40a
6:30a	6:32	6:40	6:54	6:58	7:04	7:09	7:11
7:04	7:06	7:14	7:28	7:34	7:40	7:45	7:47
7:40	7:42	7:50	8:04	8:10	8:16	8:21	8:23
8:12	8:14	8:22	8:39	8:45	8:51	8:56	8:58
8:45	8:47	8:55	9:12	9:18	9:24	9:29	9:31
9:15	9:17	9:25	9:39	9:44	9:50	9:55	9:57
9:45	9:47	9:55	10:09	10:14	10:20	10:25	10:27
10:15	10:17	10:25	10:39	10:44	10:50	10:55	10:57
10:45	10:47	10:55	11:09	11:14	11:20	11:25	11:27
11:10	11:12	11:20	11:34	11:39	11:45	11:50	11:52
11:40	11:42	11:50	**12:04p**	**12:09p**	**12:16p**	**12:22p**	**12:24p**
12:10p	**12:12p**	**12:20p**	**12:34**	**12:39**	**12:46**	**12:52**	**12:54**
12:40	**12:42**	**12:50**	**1:04**	**1:09**	**1:16**	**1:22**	**1:24**
1:10	**1:12**	**1:20**	**1:34**	**1:39**	**1:46**	**1:52**	**1:54**
1:40	**1:42**	**1:50**	**2:04**	**2:09**	**2:16**	**2:22**	**2:24**
2:05	**2:07**	**2:16**	**2:30**	**2:35**	**2:42**	**2:49**	**2:51**
2:35	**2:37**	**2:46**	**3:00**	**3:05**	**3:12**	**3:19**	**3:21**
3:05	**3:08**	**3:17**	**3:32**	**3:37**	**3:44**	**3:51**	**3:53**
3:35	**3:38**	**3:47**	**4:02**	**4:07**	**4:14**	**4:21**	**4:23**
4:05	**4:08**	**4:17**	**4:32**	**4:37**	**4:44**	**4:51**	**4:53**
4:36	**4:39**	**4:48**	**5:03**	**5:09**	**5:16**	**5:25**	**5:27**
5:06	**5:09**	**5:18**	**5:33**	**5:39**	**5:46**	**5:55**	**5:57**
5:38	**5:41**	**5:50**	**6:05**	**6:11**	**6:18**	**6:27**	**6:29**
6:14	**6:17**	**6:25**	**6:40**	**6:46**	**6:53**	**7:00**	**7:02**
6:45	**6:48**	**6:56**	**7:11**	**7:17**	**7:24**	**7:31**	**7:33**
7:15	**7:18**	**7:26**	**7:41**	**7:47**	**7:54**	**8:01**	**8:03**

Mira Mesa ➡ Sorrento Valley ➡ University City

(L) Westview Parkway DEPART	(K) Mira Mesa Bl. & Black Mountain Rd.	(J) Mira Mesa Bl. & Camino Ruiz	(I) Mira Mesa Bl. & Camino Santa Fe	(H) Pacific Heights Bl. & Mira Mesa Bl.	(D) La Jolla Village Dr. & Genesee Av.	(C) V.A. Medical Center	(A) Gilman Dr. & Myers Dr. ARRIVE
5:45a	5:48a	5:52a	5:59a	6:03a	6:14a	6:20a	6:23a
6:14	6:17	6:21	6:28	6:32	6:43	6:49	6:52
6:42	6:46	6:51	6:58	7:03	7:16	7:24	7:27
7:13	7:17	7:22	7:29	7:34	7:48	7:56	8:00
7:43	7:47	7:52	7:59	8:04	8:18	8:26	8:30
8:13	8:17	8:22	8:29	8:34	8:47	8:55	8:59
8:45	8:49	8:54	9:01	9:06	9:19	9:27	9:31
9:17	9:21	9:26	9:32	9:37	9:50	9:56	10:00
9:47	9:51	9:56	10:02	10:07	10:20	10:26	10:30
10:12	10:16	10:21	10:27	10:32	10:45	10:51	10:55
10:42	10:46	10:51	10:57	11:02	11:15	11:21	11:25
11:12	11:16	11:21	11:27	11:32	11:45	11:51	11:55
11:42	11:46	11:51	11:57	**12:02p**	**12:15p**	**12:21p**	**12:25p**
12:10p	**12:14p**	**12:19p**	**12:25p**	**12:30**	**12:43**	**12:49**	**12:53**
12:40	**12:44**	**12:49**	**12:55**	**1:00**	**1:13**	**1:19**	**1:23**
1:10	**1:14**	**1:19**	**1:25**	**1:30**	**1:43**	**1:49**	**1:53**
1:40	**1:44**	**1:49**	**1:55**	**2:00**	**2:13**	**2:19**	**2:23**
2:08	**2:12**	**2:17**	**2:23**	**2:28**	**2:42**	**2:48**	**2:52**
2:38	**2:42**	**2:47**	**2:53**	**2:58**	**3:12**	**3:18**	**3:22**
3:06	**3:10**	**3:15**	**3:20**	**3:25**	**3:42**	**3:48**	**3:53**
3:38	**3:42**	**3:47**	**3:52**	**3:57**	**4:14**	**4:20**	**4:25**
4:08	**4:12**	**4:17**	**4:22**	**4:27**	**4:46**	**4:52**	**4:57**
4:37	**4:41**	**4:46**	**4:51**	**4:56**	**5:15**	**5:21**	**5:26**
5:08	**5:12**	**5:17**	**5:22**	**5:27**	**5:52**	**5:58**	**6:03**
5:39	**5:43**	**5:48**	**5:53**	**5:58**	**6:23**	**6:29**	**6:34**
6:11	**6:15**	**6:20**	**6:25**	**6:30**	**6:47**	**6:53**	**6:57**
6:41	**6:45**	**6:50**	**6:55**	**7:00**	**7:17**	**7:23**	**7:27**

Shaded times are approximate; trip may run earlier than scheduled.
Los tiempos sombreados son aproximados; los viajes pueden operar más temprano de lo indicado.

Route 921A – Saturday / *sábado*

University City ➡ Sorrento Valley ➡ Mira Mesa

(B) Gilman Dr. & Villa La Jolla Dr. DEPART	(C) V.A. Medical Center	(D) La Jolla Village Dr. & Genesee Av.	(H) Mira Mesa Bl. & Pacific Heights Bl.	(I) Mira Mesa Bl. & Camino Santa Fe	(J) Camino Ruiz & Mira Mesa Bl.	(K) Mira Mesa Bl. & Black Mountain Rd.	(L) Westview Parkway ARRIVE
A 6:55a	—	7:03a	7:12a	7:14a	7:19a	7:28a	7:31a
A 7:55	—	8:03	8:12	8:14	8:19	8:28	8:31
A 8:55	—	9:03	9:12	9:14	9:19	9:28	9:31
A 9:53	—	10:02	10:11	10:13	10:18	10:28	10:31
A 10:53	—	11:02	11:11	11:13	11:18	11:28	11:31
A 11:53	—	**12:02p**	**12:11p**	**12:13p**	**12:18p**	**12:28p**	**12:31p**
A **12:53p**	—	**1:02**	**1:11**	**1:13**	**1:18**	**1:28**	**1:31**
A **1:53**	—	**2:02**	**2:11**	**2:13**	**2:18**	**2:28**	**2:31**
A **2:53**	—	**3:02**	**3:11**	**3:13**	**3:18**	**3:28**	**3:31**
A **3:53**	—	**4:02**	**4:11**	**4:13**	**4:18**	**4:28**	**4:31**
A **4:53**	—	**5:02**	**5:11**	**5:13**	**5:18**	**5:28**	**5:31**
A **5:53**	—	**6:02**	**6:11**	**6:13**	**6:18**	**6:28**	**6:31**
A **6:55**	—	**7:03**	**7:12**	**7:14**	**7:19**	**7:28**	**7:31**

Mira Mesa ➡ Sorrento Valley ➡ University City

(L) Westview Parkway DEPART	(K) Mira Mesa Bl. & Black Mountain Rd.	(J) Mira Mesa Bl. & Camino Ruiz	(I) Mira Mesa Bl. & Camino Santa Fe	(H) Mira Mesa Bl. & Pacific Heights Bl.	(D) La Jolla Village Dr. & Genesee Av.	(C) V.A. Medical Center	(A) Gilman Dr. & Myers Dr. ARRIVE
A 7:02a	7:05a	7:14a	7:19a	7:21a	7:30a	—	7:39a
A 8:02	8:05	8:14	8:19	8:21	8:30	—	8:39
A 9:01	9:05	9:15	9:20	9:23	9:32	—	9:43
A 10:01	10:05	10:15	10:20	10:23	10:32	—	10:43
A 11:01	11:05	11:15	11:20	11:23	11:32	—	11:43
A **12:01p**	**12:05p**	**12:15p**	**12:20p**	**12:23p**	**12:32p**	—	**12:43p**
A **1:01**	**1:05**	**1:15**	**1:20**	**1:23**	**1:32**	—	**1:43**
A **2:01**	**2:05**	**2:15**	**2:20**	**2:23**	**2:32**	—	**2:43**
A **3:01**	**3:05**	**3:15**	**3:20**	**3:23**	**3:32**	—	**3:43**
A **4:01**	**4:05**	**4:15**	**4:20**	**4:23**	**4:32**	—	**4:43**
A **5:01**	**5:05**	**5:15**	**5:20**	**5:23**	**5:32**	—	**5:43**
A **6:01**	**6:05**	**6:15**	**6:20**	**6:23**	**6:32**	—	**6:43**
A **7:01**	**7:05**	**7:14**	**7:19**	**7:21**	**7:30**	—	**7:39**

A = Saturday trips have an alternate routing in Mira Mesa & Sorrento Valley. Route 921A does not serve VA Medical Center stop on Saturday. See map.
Viajes de sábado tienen ruta alternativa en Mira Mesa y Sorrento Valley. Los sábados la Ruta 921A no ofrece servicio a la parada del VA Medical Center. Vea el mapa.

Route 921/921A – Sunday / *domingo*

Route 921/921A does not operate on Sunday. Alternative Sunday service may include Routes 20, 30, 101 and 201/202/204.
Ruta 921/921A no opera los domingos. Servicio alternativo de domingo puede incluir las rutas 20, 30, 101 y 201/202/204.

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Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*	
Day Pass (Regional) / *Pase diario (Regional)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.50
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.25*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

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DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	511 or/ó (619) 233-3004
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	(619) 685-4900
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	(619) 557-4555
SafeWatch	(619) 557-4500
The Transit Store / Lost & Found *The Transit Store / Objetos extraviados*	(619) 234-1060
Articles found on the bus are turned in at The Transit Store *Artículos encontrados en los autobuses son entregados a The Transit Store*	1st & Broadway Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	www.sdmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.
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Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective SEPTEMBER 2, 2012

20 Downtown – Del Lago Station
via Fashion Valley

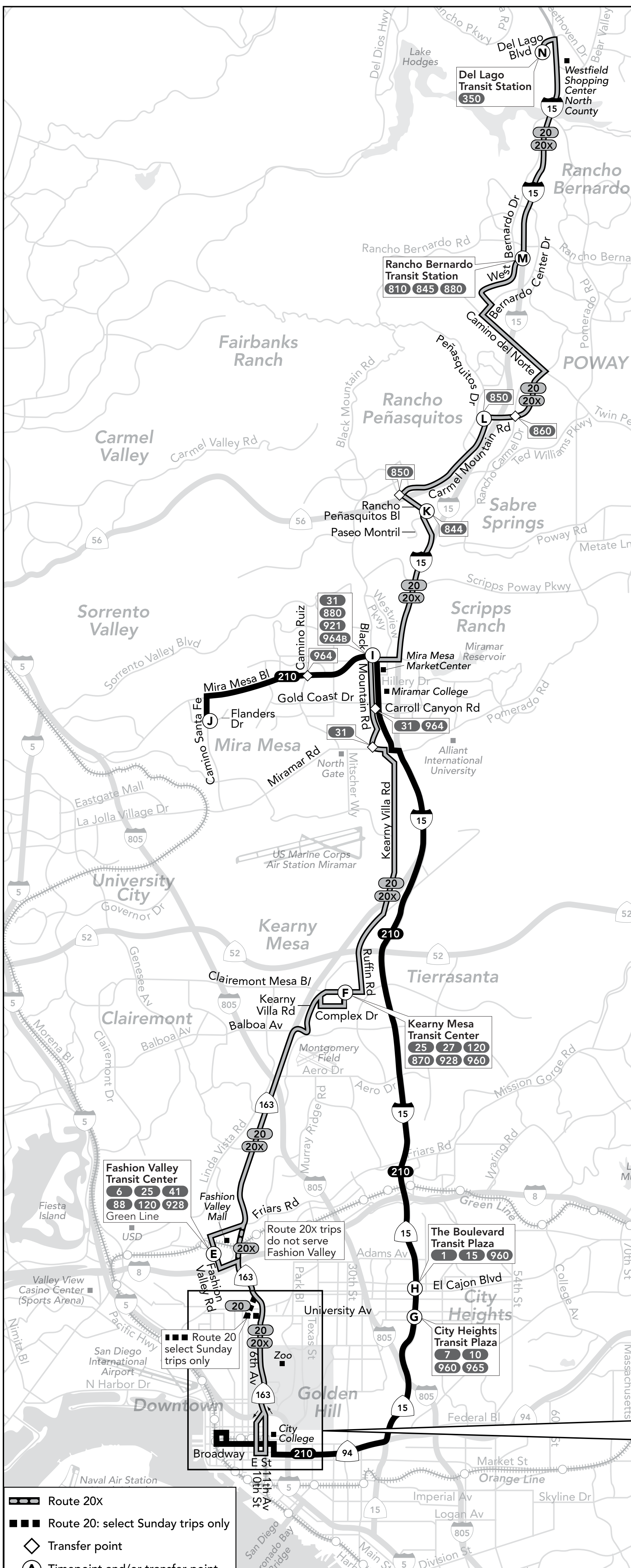
210 Downtown – Mira Mesa Express
via I-15 / Mid-City

DESTINATIONS
- City College
- Downtown Courthouses (210)
- Fashion Valley Mall (20)
- Miramar College
- Mira Mesa MarketCenter

TROLLEY CONNECTIONS
America Plaza (210)
City College
Fashion Valley (20)

Metropolitan Transit System

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*



Route 210 – Monday through Friday / *lunes a viernes*
Morning only
Mira Mesa ➡ City Heights ➡ Downtown

(J) Camino Santa Fe & Flanders Dr. DEPART	(I) Black Mountain Rd. & Mira Mesa Bl.	(H) The Boulevard Transit Plaza (El Cajon Bl.)	(G) City Heights Transit Plaza (University Av.)	(D) City College Trolley (Broadway)	(B) Broadway & 4th Av.	(A) India St. & C St. ARRIVE
6:01a	6:12a	6:30a	6:32a	6:42a	6:46a	6:54a
6:16	6:27	6:45	6:47	6:57	7:01	7:09
6:31	6:43	7:03	7:05	7:16	7:20	7:29
6:46	6:58	7:18	7:20	7:31	7:35	7:44
7:06	7:18	7:40	7:42	7:54	7:59	8:08

Route 210 – Monday through Friday / *lunes a viernes*
Afternoon only
Downtown ➡ City Heights ➡ Mira Mesa

(A) India St. & C St. DEPART	(B) Broadway & 3rd Av.	(D) City College Trolley (Broadway)	(G) City Heights Transit Plaza (University Av.)	(H) The Boulevard Transit Plaza (El Cajon Bl.)	(I) Mira Mesa Bl. & Black Mountain Rd.	(J) Camino Santa Fe & Flanders Dr. ARRIVE
4:03p	**4:10p**	**4:16p**	**4:25p**	**4:27p**	**4:49p**	**5:04p**
4:23	**4:30**	**4:36**	**4:45**	**4:47**	**5:09**	**5:24**
4:43	**4:50**	**4:56**	**5:06**	**5:08**	**5:32**	**5:47**
5:08	**5:15**	**5:21**	**5:31**	**5:33**	**5:57**	**6:12**
5:38	**5:45**	**5:51**	**6:00**	**6:02**	**6:25**	**6:39**

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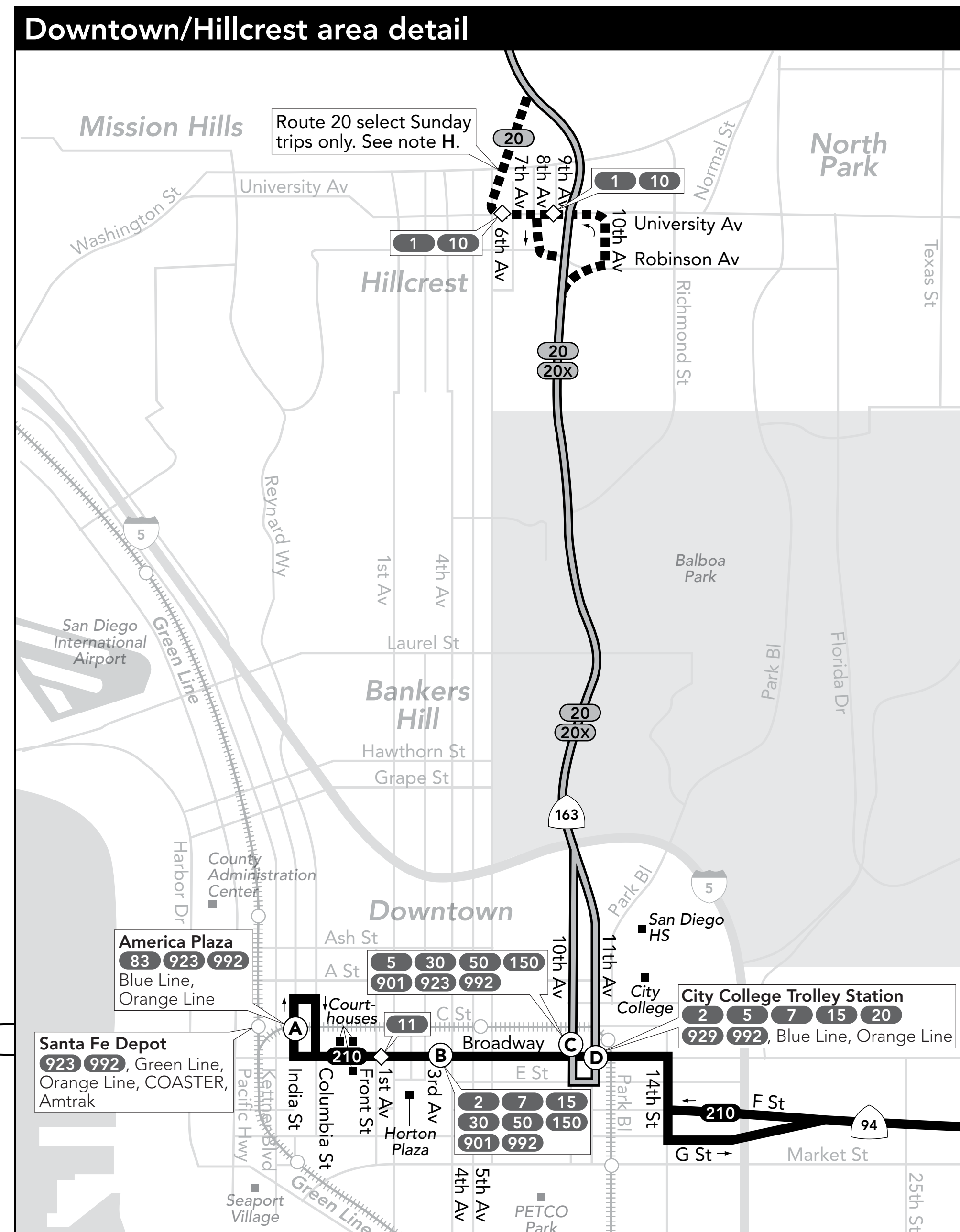
Downtown/Hillcrest area detail



A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Route 20 – Monday through Friday / *lunes a viernes*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo ➡ Escondido

(C) 10th Av. & Broadway DEPART	(D) City College Trolley Station (11th Av.)	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(F) Kearny Mesa Transit Center	(I) Mira Mesa Bl. & Black Mountain Rd.	(K) Rancho Peñasquitos & Paseo Montril	(L) Carmel Mtn. & Peñasquitos Dr.	(M) Rancho Bernardo Transit Station	(N) Del Lago Transit Station ARRIVE
—	4:52a	5:03a	5:03a	5:15a	5:31a	5:37a	5:45a	5:59a	6:06a
—	D 4:54	DIRECT EXPRESS →							5:29
—	5:24	5:35	5:35	5:47	6:03	6:09	6:17	6:31	6:38
—	5:38	5:49	5:51	6:05	—	—	—	—	—
—	X 5:55	EXPRESS →		6:09	6:29	6:37	6:45	7:00	7:07
—	6:08	6:19	6:21	6:35	—	—	—	—	—
X 6:22a	6:25	EXPRESS →		6:39	7:02	7:10	7:19	7:34	7:41
6:35	6:38	6:49	6:51	7:05	—	—	—	—	—
X 6:52	6:55	EXPRESS →		7:09	7:32	7:40	7:49	8:04	8:11
7:05	7:08	7:19	7:21	7:35	—	—	—	—	—
X 7:21	7:24	EXPRESS →		7:39	8:02	8:10	8:19	8:34	8:41
7:35	7:38	7:49	7:51	8:05	—	—	—	—	—
X 7:51	7:54	EXPRESS →		8:09	8:32	8:40	8:49	9:04	9:11
8:05	8:08	8:19	8:21	8:35	—	—	—	—	—
X 8:21	8:24	EXPRESS →		8:39	9:01	9:09	9:18	9:34	9:41
8:35	8:38	8:49	8:51	9:05	—	—	—	—	—
X 8:51	8:54	EXPRESS →		9:09	9:31	9:39	9:48	10:04	10:11
9:05	9:08	9:19	9:21	9:35	9:57	10:05	10:14	10:30	10:37
9:35	9:38	9:49	9:51	10:05	10:27	10:35	10:44	11:00	11:07
10:05	10:08	10:19	10:21	10:35	10:57	11:05	11:14	11:30	11:37
10:35	10:38	10:49	10:51	11:05	11:27	11:35	11:44	12:00p	12:07p
11:05	11:08	11:19	11:21	11:35	11:57	12:05p	12:14p	12:30	12:37
11:35	11:38	11:49	11:51	12:05p	12:27p	12:35	12:44	1:01	1:08
12:05p	12:08p	12:19p	12:21p	12:35	12:57	1:05	1:14	1:31	1:38
12:35	12:38	12:49	12:51	1:05	1:27	1:35	1:44	2:01	2:08
1:05	1:08	1:20	1:22	1:37	1:59	2:07	2:16	2:33	2:40
1:35	1:38	1:50	1:52	2:07	2:29	2:37	2:47	3:04	3:11
2:05	2:08	2:21	2:23	2:39	3:03	3:12	3:23	3:40	3:47
2:35	2:38	2:51	2:53	3:09	3:33	3:42	3:53	4:10	4:17
3:01	3:04	3:17	3:19	3:35	—	—	—	—	—
X 3:19	3:22	EXPRESS →		3:39	4:03	4:12	4:23	4:40	4:47
3:31	3:34	3:47	3:49	4:05	—	—	—	—	—
X 3:51	3:54	EXPRESS →		4:11	4:35	4:44	4:55	5:12	5:19
4:01	4:04	4:17	4:19	4:35	—	—	—	—	—
X 4:23	4:26	EXPRESS →		4:43	5:08	5:17	5:28	5:45	5:52
4:31	4:34	4:47	4:49	5:05	—	—	—	—	—
X 4:53	4:56	EXPRESS →		5:13	5:38	5:47	5:58	6:15	6:22
5:01	5:04	5:17	5:19	5:35	—	—	—	—	—
X 5:23	5:26	EXPRESS →		5:43	6:08	6:17	6:28	6:45	6:52
5:31	5:34	5:47	5:49	6:05	—	—	—	—	—
X 5:52	5:55	EXPRESS →		6:11	6:34	6:42	6:52	7:08	7:15
6:01	6:04	6:17	6:19	6:33	—	—	—	—	—
6:21	6:24	6:35	6:37	6:51	7:11	7:19	7:28	7:42	7:48
6:51	6:54	7:05	7:07	7:21	7:41	7:49	7:58	8:12	8:18
7:21	7:24	7:35	7:37	7:50	8:08	8:15	8:23	8:36	8:42
7:51	7:54	8:05	8:05	8:18	8:36	8:43	8:51	9:04	9:10
8:51	8:54	9:05	9:05	9:18	9:36	9:43	9:51	10:04	10:10

Escondido ➡ Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(N) Del Lago Transit Station DEPART	(M) Rancho Bernardo Transit Station	(L) Carmel Mtn. & Peñasquitos Dr.	(K) Rancho Peñasquitos & Paseo Montril	(I) Black Mountain Rd. & Mira Mesa Bl.	(F) Kearny Mesa Transit Center	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(C) 10th Av. & Broadway ARRIVE
4:42a	4:49a	5:04a	5:12a	5:20a	5:40a	5:52a	5:54a	6:03a
X 5:06	5:13	5:28	5:36	5:44	6:04	EXPRESS →		6:17
—	—	—	—	—	6:12	6:25	6:27	6:37
X 5:32	5:39	5:55	6:04	6:12	6:34	EXPRESS →		6:47
—	—	—	—	—	6:42	6:55	6:57	7:07
X 5:52	6:00	6:18	6:30	6:41	7:04	EXPRESS →		7:19
—	—	—	—	—	7:12	7:25	7:27	7:37
X 6:22	6:30	6:48	7:00	7:11	7:34	EXPRESS →		7:49
—	—	—	—	—	7:42	7:55	7:57	8:07
X 6:52	7:00	7:18	7:30	7:41	8:04	EXPRESS →		8:19
—	—	—	—	—	8:12	8:25	8:27	8:37
7:22	7:30	7:48	8:00	8:11	8:34	8:47	8:49	8:59
7:54	8:02	8:20	8:32	8:43	9:06	9:19	9:21	9:31
8:26	8:34	8:52	9:03	9:14	9:36	9:49	9:51	10:01
9:03	9:10	9:27	9:36	9:44	10:06	10:19	10:21	10:30
9:24	9:31	9:48	9:57	10:05	10:27	10:40	10:42	10:51
9:54	10:01	10:18	10:27	10:35	10:57	11:10	11:12	11:21
10:24	10:31	10:48	10:57	11:05	11:27	11:40	11:42	11:51
10:54	11:01	11:18	11:27	11:35	11:57	12:10p	12:12p	12:21p
11:19	11:26	11:44	11:54	12:02p	12:27p	12:41	12:43	12:52
11:49	11:56	12:14p	12:24p	12:32	12:57	1:11	1:13	1:22
12:19p	12:26p	12:44	12:54	1:02	1:27	1:41	1:43	1:52
12:49	12:56	1:14	1:24	1:32	1:57	2:11	2:13	2:22
X 1:24	1:31	1:49	1:59	2:07	2:32	EXPRESS →		2:46
—	—	—	—	—	2:41	2:55	2:57	3:06
X 1:54	2:01	2:19	2:29	2:37	3:02	EXPRESS →		3:16
—	—	—	—	—	3:10	3:25	3:27	3:38
X 2:24	2:31	2:49	2:59	3:07	3:32	EXPRESS →		3:46
—	—	—	—	—	3:40	3:55	3:57	4:08
—	—	—	—	X 3:24	3:49	EXPRESS →		4:04
X 2:56	3:03	3:21	3:31	3:39	4:04	EXPRESS →		4:18
—	—	—	—	—	4:10	4:25	4:27	4:38
—	—	—	—	X 3:55	4:20	EXPRESS →		4:35
X 3:25	3:32	3:51	4:00	4:09	4:34	EXPRESS →		4:49
—	—	—	—	—	4:40	4:55	4:57	5:08
—	—	—	—	X 4:25	4:50	EXPRESS →		5:05
X 3:59	4:06	4:25	4:34	4:43	5:08	EXPRESS →		5:23
—	—	—	—	—	5:18	5:33	5:35	5:46
—	—	—	—	X 5:01	5:26	EXPRESS →		5:41
X 4:31	4:38	4:57	5:06	5:15	5:40	EXPRESS →		5:55
—	—	—	—	—	5:48	6:03	6:05	6:14
—	—	—	—	X 5:31	5:54	EXPRESS →		6:09
5:01	5:08	5:27	5:36	5:45	6:10	6:25	6:27	6:38
5:34	5:41	5:59	6:08	6:17	6:40	6:55	6:57	7:06
6:10	6:17	6:34	6:43	6:52	7:12	7:25	7:27	7:36
7:10	7:17	7:34	7:43	7:52	8:12	8:25	8:27	8:36
D 7:23	DIRECT EXPRESS →							7:58
8:19	8:25	8:39	8:48	8:56	9:13	9:25	9:35	9:44
D 8:50	DIRECT EXPRESS →							9:25
9:20	9:26	9:40	9:49	9:56	10:13	10:25	10:35	10:44
10:20	10:26	10:40	10:49	10:56	11:13	11:25	11:35	11:44

Route 20 – Saturday / *sábado*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo ➡ Escondido

(C) 10th Av. & Broadway DEPART	(D) City College Trolley Station (11th Av.)	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(F) Kearny Mesa Transit Center	(I) Mira Mesa Bl. & Black Mountain Rd.	(K) Rancho Peñasquitos & Paseo Montril	(L) Carmel Mtn. & Peñasquitos Dr.	(M) Rancho Bernardo Transit Station	(N) Del Lago Transit Station ARRIVE
—	D 4:34a	DIRECT EXPRESS →							5:05a
—	D 5:34	DIRECT EXPRESS →							6:05
—	5:40	5:50a	5:52a	6:04a	6:21a	6:27a	6:35a	6:50a	6:57
—	6:10	6:20	6:22	6:34	6:51	6:57	7:05	7:20	7:27
6:37a	6:40	6:50	6:52	7:05	—	—	—	—	—
7:07	7:10	7:20	7:22	7:35	7:53	8:00	8:08	8:24	8:31
7:37	7:40	7:50	7:52	8:05	—	—	—	—	—
8:07	8:10	8:21	8:23	8:37	8:55	9:02	9:11	9:28	9:35
8:37	8:40	8:51	8:53	9:07	—	—	—	—	—
9:07	9:10	9:21	9:23	9:37	9:55	10:02	10:11	10:28	10:35
9:37	9:40	9:51	—	—	—	—	—	—	—
10:07	10:10	10:21	10:23	10:37	10:55	11:02	11:11	11:28	11:35
10:37	10:40	10:52	—	—	—	—	—	—	—
11:07	11:10	11:22	11:24	11:39	11:58	12:06p	12:15p	12:33p	12:40p
11:37	11:40	11:52	—	—	—	—	—	—	—
12:07p	12:10p	12:22p	12:24p	12:39p	12:58p	1:06	1:15	1:33	1:40
12:37	12:40	12:52	—	—	—	—	—	—	—
1:07	1:10	1:22	1:24	1:39	1:58	2:06	2:15	2:33	2:40
1:37	1:40	1:52	—	—	—	—	—	—	—
2:07	2:10	2:22	2:24	2:39	2:58	3:06	3:15	3:33	3:40
2:37	2:40	2:52	2:54	3:09	—	—	—	—	—
3:07	3:10	3:22	3:24	3:39	3:58	4:06	4:15	4:33	4:40
3:37	3:40	3:52	3:54	4:09	—	—	—	—	—
4:07	4:10	4:22	4:24	4:39	4:58	5:06	5:15	5:33	5:40
4:37	4:40	4:52	—	—	—	—	—	—	—
5:07	5:10	5:22	5:24	5:39	5:58	6:06	6:15	6:33	6:40
5:37	5:40	5:52	—	—	—	—	—	—	—
6:07	6:10	6:22	6:24	6:38	6:56	7:04	7:13	7:30	7:37
7:07	7:10	7:22	7:24	7:38	7:56	8:03	8:11	8:28	8:35
8:07	8:10	8:21	8:23	8:36	8:54	9:01	9:08	9:24	9:30

Escondido ➡ Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(N) Del Lago Transit Station DEPART	(M) Rancho Bernardo Transit Station	(L) Carmel Mtn. & Peñasquitos Dr.	(K) Rancho Peñasquitos & Paseo Montril	(I) Black Mountain Rd. & Mira Mesa Bl.	(F) Kearny Mesa Transit Center	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(C) 10th Av. & Broadway ARRIVE
5:07a	5:14a	5:26a	5:34a	5:40a	5:56a	6:08a	6:10a	6:19a
6:07	6:14	6:26	6:34	6:40	6:56	7:08	7:10	7:19
—	—	—	—	—	7:25	7:38	7:40	7:50
7:07	7:14	7:27	7:35	7:42	7:58	8:11	8:13	8:23
—	—	—	—	—	8:24	8:38	8:40	8:50
8:02	8:09	8:22	8:30	8:37	8:53	9:08	9:10	9:20
—	—	—	—	—	9:23	9:38	9:40	9:51
9:00	9:07	9:21	9:29	9:37	9:54	10:08	10:10	10:20
—	—	—	—	—	—	—	10:40	10:51
9:55	10:02	10:17	10:26	10:35	10:53	11:08	11:10	11:21
—	—	—	—	—	—	—	11:40	11:51
10:55	11:02	11:17	11:26	11:35	11:53	12:08p	12:10p	12:21p
—	—	—	—	—	—	—	12:40	12:51
11:55	12:02p	12:17p	12:26p	12:35p	12:53p	1:08	1:10	1:21
—	—	—	—	—	—	—	1:40	1:51
12:54p	1:01	1:16	1:26	1:35	1:53	2:08	2:10	2:21
—	—	—	—	—	—	—	2:40	2:51
1:54	2:01	2:16	2:26	2:35	2:53	3:08	3:10	3:21
—	—	—	—	—	3:23	3:38	3:40	3:51
2:54	3:01	3:16	3:26	3:35	3:53	4:08	4:10	4:21
—	—	—	—	—	4:23	4:38	4:40	4:51
3:54	4:01	4:16	4:26	4:35	4:53	5:08	5:10	5:21
—	—	—	—	—	—	—	5:40	5:50
4:57	5:04	5:18	5:27	5:35	5:53	6:08	6:10	6:21
—	—	—	—	—	—	—	6:40	6:50
6:00	6:07	6:21	6:29	6:37	6:54	7:08	7:10	7:20
—	—	—	—	—	—	—	7:40	7:50
7:00	7:07	7:21	7:29	7:37	7:54	8:08	8:10	8:20
8:02	8:09	8:22	8:30	8:38	8:54	9:08	9:10	9:19
D 8:40	DIRECT EXPRESS →							9:15
D 9:35	DIRECT EXPRESS →							10:10

Route 20 – Sunday / *domingo*

Downtown ➡ Kearny Mesa ➡ Rancho Bernardo ➡ Escondido

(C) 10th Av. & Broadway DEPART	(D) City College Trolley Station (11th Av.)	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(F) Kearny Mesa Transit Center	(I) Mira Mesa Bl. & Black Mountain Rd.	(K) Rancho Peñasquitos & Paseo Montril	(L) Carmel Mtn. & Peñasquitos Dr.	(M) Rancho Bernardo Transit Station	(N) Del Lago Transit Station ARRIVE
—	D 5:34a	DIRECT EXPRESS →							6:05a
—	H 6:10 U	6:22a	6:24a	6:36a	6:53a	6:59a	7:07a	7:22a	7:29
—	D 6:34	DIRECT EXPRESS →							7:05
H 7:07a	7:10 U	7:22	7:24	7:37	7:55	8:02	8:10	8:26	8:33
H 8:07	8:10 U	8:22	8:24	8:38	8:56	9:03	9:12	9:29	9:36
H 9:07	9:10 U	9:22	9:24	9:38	9:56	10:03	10:12	10:29	10:36
10:07	10:10	10:21	10:23	10:37	10:55	11:02	11:11	11:28	11:35
11:07	11:10	11:22	11:24	11:39	11:58	12:06p	12:15p	12:33p	12:40p
12:07p	12:10p	12:22p	12:24p	12:39p	12:58p	1:06	1:15	1:33	1:40
1:07	1:10	1:22	1:24	1:39	1:58	2:06	2:15	2:33	2:40
2:07	2:10	2:22	2:24	2:39	2:58	3:06	3:15	3:33	3:40
3:07	3:10	3:22	3:24	3:39	3:58	4:06	4:15	4:33	4:40
4:07	4:10	4:22	4:24	4:39	4:58	5:06	5:15	5:33	5:40
5:07	5:10	5:22	5:24	5:39	5:58	6:06	6:15	6:33	6:40
6:07	6:10	6:22	6:24	6:38	6:56	7:04	7:13	7:30	7:37
7:07	7:10	7:22	7:24	7:38	7:56	8:03	8:11	8:28	8:35
8:07	8:10	8:21	8:23	8:36	8:54	9:01	9:08	9:24	9:30

Escondido ➡ Rancho Bernardo ➡ Kearny Mesa ➡ Downtown

(N) Del Lago Transit Station DEPART	(M) Rancho Bernardo Transit Station	(L) Carmel Mtn. & Peñasquitos Dr.	(K) Rancho Peñasquitos & Paseo Montril	(I) Black Mountain Rd. & Mira Mesa Bl.	(F) Kearny Mesa Transit Center	(E) Fashion Valley Transit Center ARRIVE	(E) Fashion Valley Transit Center DEPART	(C) 10th Av. & Broadway ARRIVE
H 6:07a	6:14a	6:26a	6:34a	6:40a	6:56a	7:08a	7:10a T	7:22a
H 7:07	7:14	7:27	7:35	7:42	7:58	8:11	8:13 T	8:25
H 8:02	8:09	8:22	8:30	8:37	8:53	9:06	9:08 T	9:20
9:00	9:07	9:21	9:29	9:37	9:54	10:08	10:10	10:20
9:55	10:02	10:17	10:26	10:35	10:53	11:08	11:10	11:21
10:55	11:02	11:17	11:26	11:35	11:53	12:08p	12:10p	12:21p
11:55	12:02p	12:17p	12:26p	12:35p	12:53p	1:08	1:10	1:21
12:54p	1:01	1:16	1:26	1:35	1:53	2:08	2:10	2:21
1:54	2:01	2:16	2:26	2:35	2:53	3:08	3:10	3:21
2:54	3:01	3:16	3:26	3:35	3:53	4:08	4:10	4:21
3:54	4:01	4:16	4:26	4:35	4:53	5:08	5:10	5:21
4:57	5:04	5:18	5:27	5:35	5:53	6:08	6:10	6:21
H 6:00	6:07	6:21	6:29	6:37	6:54	7:08	7:10 T	7:22
H 7:00	7:07	7:21	7:29	7:37	7:54	8:08	8:10 T	8:22
D 7:42	DIRECT EXPRESS →							8:17
D 8:40	DIRECT EXPRESS →							9:15
D 9:35	DIRECT EXPRESS →							10:10

D = Route 20D: Express/no stops between downtown San Diego and Del Lago Transit Station. / *Ruta 20D: Viaje 'Express' sin paradas entre el centro de San Diego y el Del Lago Transit Station.*
H = Route 20 via Fashion Valley and Hillcrest. / *Ruta 20 via Fashion Valley y Hillcrest.*
T = Route 20 arrives/departs University Ave. & 6th Ave. (Hillcrest) 5 minutes after time shown. / *Ruta 20 llegada/salida University Ave. y 6th Ave. (Hillcrest) 5 minutos después de la hora indicada.*
U = Route 20 arrives/departs University Ave. & 7th Ave. (Hillcrest) 6 minutes after time shown. / *Ruta 20 llegada/salida University Ave. y 7th Ave. (Hillcrest) 6 minutos después de la hora indicada.*
X = Route 20X does not serve Fashion Valley. / *Ruta 20X no ofrece servicio a Fashion Valley.*

Appendix Y

Excerpts from City of San Diego Bicycle Master Plan Update

City of San Diego Bicycle Master Plan Update

San Diego, California

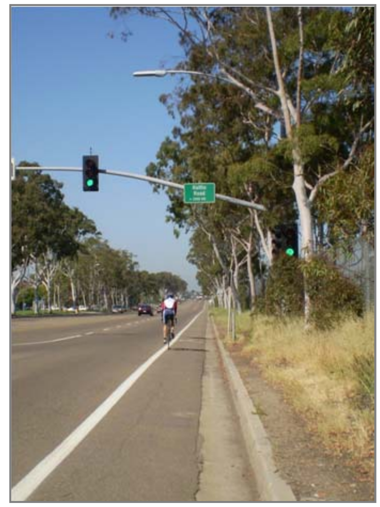
June 2011

PREPARED BY:
Alta Planning + Design
PREPARED FOR:
The City of San Diego

alta PLANNING + DESIGN

4.5.36 Scripps Miramar Ranch Community Plan

The Scripps Miramar Ranch Community Plan states that non-motorized transportation shall be accommodated through the development of accessible pathways and/or sidewalks and bikeways along parking strips and sidewalks in all residential areas. A Non-Motorized Circulation Element included in the plan identifies a system of bikeways and hiking and equestrian trails. The bikeways include the highly used Class I Bike Path around Miramar Reservoir and along Interstate 15, which connects with Poway Road to the north. Class II Bike Lanes are identified along the major roads including Carroll Canyon Road, Mira Mesa Boulevard, and Scripps Lake Drive. Class III routes are identified on Mesa Madra Drive, Sunset Ridge Drive, Spring Canyon Road, Pomerado Road, and Avenida Magnifica.



Bicyclist riding on the Aero Drive Bike Lane

4.5.37 Southeast San Diego Community Plan (Encanto)

This community plan notes that the surface streets provide excellent access to San Diego Bay, Balboa Park, and downtown for both recreational and commuter bicyclists, and most of the roadways are proposed as Bike Routes. Bike Routes have been designated for 28th Street, L Street, Ocean View Boulevard, and Alpha Street. According to the plan, two Class I paths are located in this area: one parallel to I-805 between Hilltop Drive and the railroad tracks, and one parallel to SR-94 between Kelton Road and 60th Street. A Bike Path exists along SR-94.

Currently, Bike Routes exist along segments of Market Street, Imperial Avenue, Valencia Parkway, and Euclid Avenue. Portions of Imperial Avenue, Churchward Street, and Skyline Drive have Bike Lanes.

4.5.38 Tierrasanta Community Plan

Personal health and the environment are some important reasons for bicycling according to the Tierrasanta Community Plan. In response, the plan encourages alternative forms of transportation and a bikeway system for both community and regional needs. The bikeway plan identifies Class II lanes along Clairemont Mesa Boulevard and Tierrasanta Boulevard. Bike Lanes currently exist along Clairemont Mesa Boulevard and Tierrasanta Boulevard, but not along Spring Canyon Road.

4.5.39 Torrey Highlands

Torrey Highlands contains several bikeways which travel the span of the community providing access to adjacent communities, including the SR-56 Bike Path, Carmel Valley Road, and Camino del Sur.

4.5.40 Torrey Hills

The Torrey Hills Community Plan proposes a network of bicycle facilities through Torrey Hills. These bikeways include Carmel Mountain Road, El Camino Real, Vista Sorrento Parkway, Arroyo Sorrento Road and Carmel Creek Road. The Torrey Hills Community Plan has proposed and built bikeways along Carmel Mountain Road and El Camino Real and along Vista Sorrento Parkway. Class II bicycle facilities also exist on Ocean Air Drive. All streets designated as major streets are proposed to have Class II Bike Lanes with the exception of Vista Sorrento Parkway, south of the Penasquitos Creek crossing, where a Class III Bicycle Route

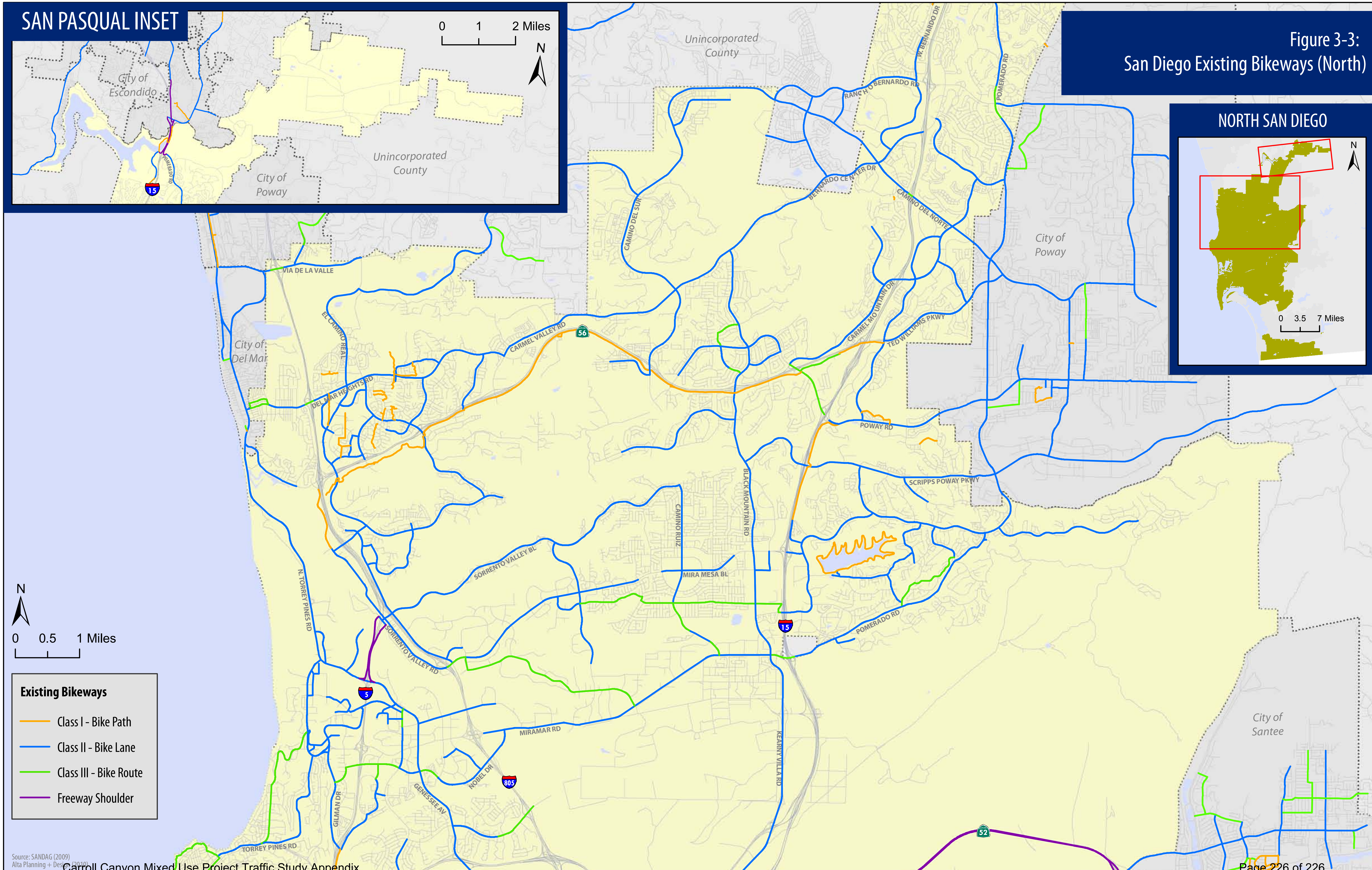


Figure 3-3:
San Diego Existing Bikeways (North)
SAN PASQUAL INSET
0 1 2 Miles
N
City of Escondido
Unincorporated County
City of Poway
NORTH SAN DIEGO
0 3.5 7 Miles
Unincorporated County
City of Poway
City of Del Mar
City of Santee
VIA DE LA VALLE
EL CAMINO REAL
DEL MAR HEIGHTS RD
CARMEL VALLEY RD
CAMINO DEL SUR
BERNARDO CENTER DR
RANCHO BERNARDO RD
W. BERNARDO DR
POMERADO RD
CAMINO DEL NORTE
CARMEL MOUNTAIN DR
TED WILLIAMS PKWY
POWAY RD
SCRIPPS POWAY PKWY
BLACK MOUNTAIN RD
CAMINO RUIZ
MIRA MESA BL
SORRENTO VALLEY BL
SORRENTO VALLEY RD
N. TORREY PINES RD
MIRAMAR RD
NOBEL DR
GENESSEE AV
GILMAN DR
TORREY PINES RD
KEARNY VILLA RD
N
0 0.5 1 Miles
Existing Bikeways
Class I - Bike Path
Class II - Bike Lane
Class III - Bike Route
Freeway Shoulder
Source: SANDAG (2009)

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May 26, 2016

To: Mr. Jeff Rogers
Sudberry Development, Inc.
5465 Morehouse Drive, Suite 260
San Diego, CA 92121

From: Justin Rasas, T.E.

RE: Carroll Canyon Mixed Use Retail Pad A Trip Generation and Parking Update

---

The Carroll Canyon Mixed Use project site plan has been revised with a change to Retail Pad A (5,600 sf without drive-thru reduced to 4,100 sf with drive-thru) that resulted in a reduction in the total commercial square footage from 12,200 sf down to 10,700 sf. Along with this change was a reduction in open parking spaces from 114 down to 109 spaces. Additionally, the retail uses were updated to reflect the currently planned mix of food and retail. No change is proposed to the 260 apartments. A copy of the new site plan is included in **Attachment A**.

The accepted traffic study included 2,400 sf fast food (w or w/o drive-thru), 6,200 sf quality restaurant, 3,600 sf retail, and 260 apartments. The trip generation documented in the traffic study is shown in **Table 1**.

Table 1: Original Project Traffic Study Trip Generation

Proposed Land Use	Rate		Size & Units		ADT	AM %	AM Split		AM IN	AM OUT	PM %	PM Split		PM IN	PM OUT
Driveway Rate (for the main entrance)															
Fast Food (w or w/o DT)	700	/KSF	2,400	SF	1,680	4%	0.6	0.4	40	27	8%	0.5	0.5	67	67
Restaurant (Quality)	100	/KSF	6,200	SF	620	1%	0.6	0.4	4	2	8%	0.7	0.3	35	15
Retail	40	/KSF	3,600	SF	144	3%	0.6	0.4	3	2	9%	0.5	0.5	6	6
Apartments	6	/DU	260	DU	1,560	8%	0.2	0.8	25	100	9%	0.7	0.3	98	42
					4,004				**72**	**131**				**206**	**130**
Cumulative Rate (for surrounding study roadways)															
Fast Food (w or w/o DT)	420	/KSF	2,400	SF	1,008	4%	0.6	0.4	24	16	8%	0.5	0.5	40	40
Restaurant (Quality)	90	/KSF	6,200	SF	558	1%	0.6	0.4	3	2	8%	0.7	0.3	31	13
Retail	36	/KSF	3,600	SF	130	3%	0.6	0.4	2	2	9%	0.5	0.5	6	6
Apartments	6	/DU	260	DU	1,560	8%	0.2	0.8	25	100	9%	0.7	0.3	98	42
					3,256				**54**	**120**				**175**	**101**

Source: City of San Diego *Trip Generation Manual*, May 2003. ADT=Average Daily Trips, KSF=1,000 Square Feet; Split=% inbound vs outbound

The revised project is proposed with 2,500 sf fast food (w or w/o drive-thru), 6,100 sf quality restaurant, 2,100 sf retail, and 260 apartments. The trip generation for the project with the revised Retail Pad A is shown in **Table 2**.

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Table 2: Project Trip Generation with Revised Retail Pad A

Proposed Land Use	Rate		Size & Units		ADT	AM %	AM Split		AM IN	AM OUT	PM %	PM Split		PM IN	PM OUT
Driveway Rate (for the main entrance)															
Fast Food (w or w/o DT)	700	/KSF	2,500	SF	1,750	4%	0.6	0.4	42	28	8%	0.5	0.5	70	70
Restaurant (Quality)	100	/KSF	6,100	SF	610	1%	0.6	0.4	3	2	8%	0.7	0.3	34	14
Retail	40	/KSF	2,100	SF	84	3%	0.6	0.4	2	1	9%	0.5	0.5	4	4
Apartments	6	/DU	260	DU	1,560	8%	0.2	0.8	25	100	9%	0.7	0.3	98	42
Shopping Center:			*10,700*		**4,004**				**72**	**131**				**206**	**130**
Cumulative Rate (for surrounding study roadways)															
Fast Food (w or w/o DT)	420	/KSF	2,500	SF	1,050	4%	0.6	0.4	25	17	8%	0.5	0.5	42	42
Restaurant (Quality)	90	/KSF	6,100	SF	549	1%	0.6	0.4	3	2	8%	0.7	0.3	31	13
Retail	36	/KSF	2,100	SF	76	3%	0.6	0.4	1	1	9%	0.5	0.5	3	3
Apartments	6	/DU	260	DU	1,560	8%	0.2	0.8	25	100	9%	0.7	0.3	98	42
					3,235				**54**	**120**				**174**	**100**

Source: City of San Diego *Trip Generation Manual*, May 2003. ADT=Average Daily Trips, KSF=1,000 Square Feet; Split=% inbound vs outbou

The change in trip generation is minimal with a slight reduction in cumulative trips as shown in **Table 3**.

Table 3: Reduction in Trip Generation between Original and Revised Project

Proposed Land Use	Rate	ADT	AM IN	AM OUT	PM IN	PM OUT
Driveway Rate (for the main entrance)						
	Accepted Traffic Study:	**4,004**	**72**	**131**	**206**	**130**
	Project with revised Retail Pad A:	**4,004**	**72**	**131**	**206**	**130**
	Change in Trip Generation:	***0***	***0***	***0***	***0***	***0***
Cumulative Rate (for surrounding study roadways)						
	Accepted Traffic Study:	**3,256**	**54**	**120**	**175**	**101**
	Project with revised Retail Pad A:	**3,235**	**54**	**120**	**174**	**100**
	Change in Trip Generation:	***-21***	***0***	***0***	***-1***	***-1***

As shown above, the driveway trip generation remains unchanged and the cumulative trip generation is reduced by 21 daily trips and 2 PM peak hour trips. Due to the small reduction in trip generation, it is not recommended to revise the traffic study.

The traffic study included a signal warrant analysis that was based on the daily driveway trip generation. With no change to the daily driveway volume (4,004 ADT), the signal warrant analysis conclusion remains unchanged.

The parking supply was also reduced with the modification to Retail Pad A. The original open parking spaces of 114 was reduced to 109 spaces. No changes are proposed to the gated spaces (remaining at 419), motorcycle spaces (remaining at 29), and bicycle spaces (remaining at 76). The updated parking summary from the site plan is included in **Attachment B**.

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The accepted traffic study included a parking write up. The following paragraph and table reflect the same parking write up that has been updated to reflect the Retail Pad A change and reduction in open parking of 114 spaces to 109 spaces.

The total project minimum parking requirement by San Diego Municipal Code, based on individual stand-alone uses, is 604 spaces (143 spaces for retail and 461 spaces for residential). The minimum required parking based on the City of San Diego shared parking approach is 477 spaces on a weekday and 503 spaces on a Saturday. The proposed on-site parking includes 528 stalls (419 gated and 109 non-gated). The project will have a shared parking agreement between the residential and retail components that will provide for residential parking overnight in the non-gated area and retail employee parking during the day in the gated areas during peak demands. The retail employees will be provided access to (by fob or equivalent) and be required to use the gated parking areas that will be enforced through on-site property management. Additionally, retail tenants require open parking in front of their establishments to provide easy access for patrons; therefore, the retail tenants will also enforce employees' use of the gated parking areas. The provided non-gated retail parking rate is 8.9 spaces per 1,000 square feet (109 spaces/12.2 ksf = 8.9 spaces/1,000sf). A copy of the shared parking calculations and details of individual use parking requirements are included in **Attachment C** with a summary shown in **Table 4**.

TABLE 4: REVISED PROJECT PARKING SUMMARY

Project Component	Minimum Required Parking By Code (Standalone)	
Retail (12,200sf)*	143 spaces	
Residential (125 one bedroom units)	188 spaces	
Residential (124 two bedroom units)	248 spaces	
Residential (11 three bedroom units)	25 spaces	
	TOTAL = 604 Spaces	
Project Component	**Minimum Required Parking based on Shared Parking****	**Provided Parking**
Combined Retail and Residential	477 Weekday 503 Saturday	528 Weekday 528 Saturday
Other	**Minimum Required**	**Provided**
Motorcycle Parking	29 motorcycle spaces	29 motorcycle spaces
Bicycle Parking	69 bicycle spaces	76 bicycle spaces

Source: *12,200sf includes 10,700sf of retail and restaurant space and 1,500sf leasing office as part of the apartment component. **Shared parking calculations are included in Attachment C.

The revised Carroll Canyon Mixed Use project included a reduction of Retail Pad A from 5,600sf w/o drive-thru down to 4,100 sf with drive-thru; an update to the mix of retail and food uses; and a reduction in open parking of 114 spaces to 109 spaces. With these changes, the trip generation remained unchanged for the driveway volumes with a slight reduction in the cumulative volumes. The signal warrant analysis remains unchanged because it was based on the unchanged driveway volumes. The shared parking analysis was updated and determined that sufficient on-site parking is available with the implementation of on-site shared parking between the gated and non-gated areas.

ATTACHMENT A

UNIT SCHEDULE PER BUILDING

	Building Number	Unit Name	Unit Type	Unit Count	
BUILDING 1 & 1A	BUILDING 1	Unit A	1BR	14	57+2 = 59 UNITS 53+6 = 59 STORAGES
	BUILDING 1	Unit B	1BR	19	
	BUILDING 1	Unit CA.1	1BR	6	
	BUILDING 1	Unit C	2BR	4	
	BUILDING 1	Unit D	2BR	8	
	BUILDING 1	Unit G	2BR+DEN	6	
				57	
	BUILDING 1A	Unit CA	1BR	2	
				2	
BUILDING 2 & 2A	BUILDING 2	Unit A	1BR	20	54+2 = 56 UNITS 50+6 = 56 STORAGES
	BUILDING 2	Unit B	1BR	16	
	BUILDING 2	Unit C	2BR	4	
	BUILDING 2	Unit D	2BR	8	
	BUILDING 2	Unit G	2BR+DEN	6	
				54	
	BUILDING 2A	Unit CA	1BR	2	
				2	
BUILDING 3, 3A & 3B	BUILDING 3	Unit A	1BR	14	69+2+2 = 73 UNITS 61+6+6 = 73 STORAGES
	BUILDING 3	Unit B	1BR	3	
	BUILDING 3	Unit C	2BR	17	
	BUILDING 3	Unit D	2BR	3	
	BUILDING 3	Unit F	2BR	6	
	BUILDING 3	Unit E	2BR	16	
	BUILDING 3	Unit G	2BR+DEN	6	
	BUILDING 3	Unit I	3BR	4	
				69	
	BUILDING 3A	Unit CA	1BR	2	
				2	
	BUILDING 3B	Unit CA	1BR	2	
				2	
BUILDING 4 & 4A	BUILDING 4	Unit A	1BR	20	56+2 = 58 UNITS 52+6 = 58 STORAGES
	BUILDING 4	Unit B	1BR	10	
	BUILDING 4	Unit E	1BR	1	
	BUILDING 4	Unit C	2BR	3	
	BUILDING 4	Unit D	2BR	2	
	BUILDING 4	Unit E	2BR	7	
	BUILDING 4	Unit G	2BR+DEN	6	
	BUILDING 4	Unit I	3BR	7	
				56	
	BUILDING 4A	Unit CA	1BR	2	
				2	
BUILDING 5	BUILDING 5	Unit B	1BR	2	14 UNITS 14 STOR.
	BUILDING 5	Unit C	2BR	12	
				14	
	Grand total			260	

PERSONAL STORAGE SCHEDULE PER BUILDING

Building Number	Comments	Count	Storage Volume
BUILDING 1	CORRIDOR	19	4,848.75 CF
BUILDING 1	GARAGE	34	9,379.25 CF
		53	14,228 CF
BUILDING 1A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 2	CORRIDOR	23	5,856.75 CF
BUILDING 2	GARAGE	27	7,695 CF
		50	13,551.75 CF
BUILDING 2A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 3	CORRIDOR	32	8,505.57 CF
BUILDING 3	GARAGE	29	8,419.41 CF
		61	16,924.97 CF
BUILDING 3A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 3B	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 4	CORRIDOR	39	10,477.69 CF
BUILDING 4	GARAGE	13	3,515.25 CF
		52	13,992.94 CF
BUILDING 4A	GARAGE	6	1,449 CF
		6	1,449 CF
BUILDING 5	CORRIDOR	14	4,530.75 CF
		14	4,530.75 CF
		260	70,473.41 CF
		AVERAGE	271 CF/UNIT

SITE PLAN LEGEND

Symbol	Description
	CARPORT PARKING / PARK LIFT
8' - 0"; 18' - 0"	TYP. RESIDENTIAL PARKING
8' - 6"; 18' - 0"	TYP. RETAIL PARKING
9' - 0"; 18' - 0"	5'-0" @ TYP HC STALLS 8'-0" @ VAN STALLS ACCESSIBLE PARKING
3' - 0"; 8' - 0"	MOTOCYCLE PARKING
	TRANSFORMER
4' - 0"; 3' - 0"; 7' - 0"; 10' - 0"	TYP. PERSONAL STORAGE (240cf min.)
	BICYCLE RACK (8 BIKES / RACK)
T/R	TRASH / RECYCLE

Carroll Canyon Residential-Mixed Use
Sand Diego, CA
5/26/2016 2014-10199

OVERALL SITE AREA:	404,177 SF =	9.28 Acres	
RESIDENTIAL SITE AREA:	347,646 SF =	7.98 Acres	
RETAIL SITE AREA:	56,532 SF =	1.30 Acres	
TOTAL BUILDING AREA:	388,000 SF		
F.A.R.	0.96		
TOTAL RESIDENTIAL UNITS:	260 DU		
DENSITY (du/ac):	28.02 du/ac	(Overall Site)	
	32.58 du/ac	(Net Residential Site)	

NET RENTABLE *(SF)* :	235,991 SF
AVG. UNIT SIZE *(SF)* :	908 SF
LEASING OFFICE AREA *(GROSS)* :	3,200 SF
AMENTIES AREA *(GROSS):*	4,300 SF

RETAIL & LEASING:		Vehicle Parking Req'd (Code)	
RESTAURANT:	8600 SF	15/1000	129.00 Stalls
RETAIL:	2100 SF	5/1000	10.50 Stalls
LEASING:	1500 SF	2.5/1000	3.75 **Stalls**
Total:	**12200 SF**	**Total:**	**143 Stalls**
		Motorcyle Req'd (Code)	**3 Stalls**
		Bicyle Req'd (Code)	**14 Stalls**

RESIDENTIAL (Code)		Vehicle Parking			Motorcycle		Bicycle (Req'd for units w/o garage)				
		Stalls/du	Parking Required		Stall/du	Req'd		%	DU	Stall/du	Req'd
1BR	125	1.5	188	Stalls	0.1	13	Units w/o Garage **260du-143garage = 117du**	48.1%	56	0.4	22
2BR	124	2	248	Stalls	0.1	12		47.7%	56	0.5	28
3BD	11	2.25	25	Stalls	0.1	1		4.2%	5	0.6	3
Total Required			**461**	Stalls		**26**			117		**53**
		Ratio	1.77	Stalls/du							

Total Parking Req'd by Code (Retail + Residential):	**604**	Stalls
Total Motorcycle Parking Req'd by Code (Retail + Residential):	**29**	Stalls
Total Bicycle Parking Req'd by Code (Retail + Residential):	**67**	Stalls

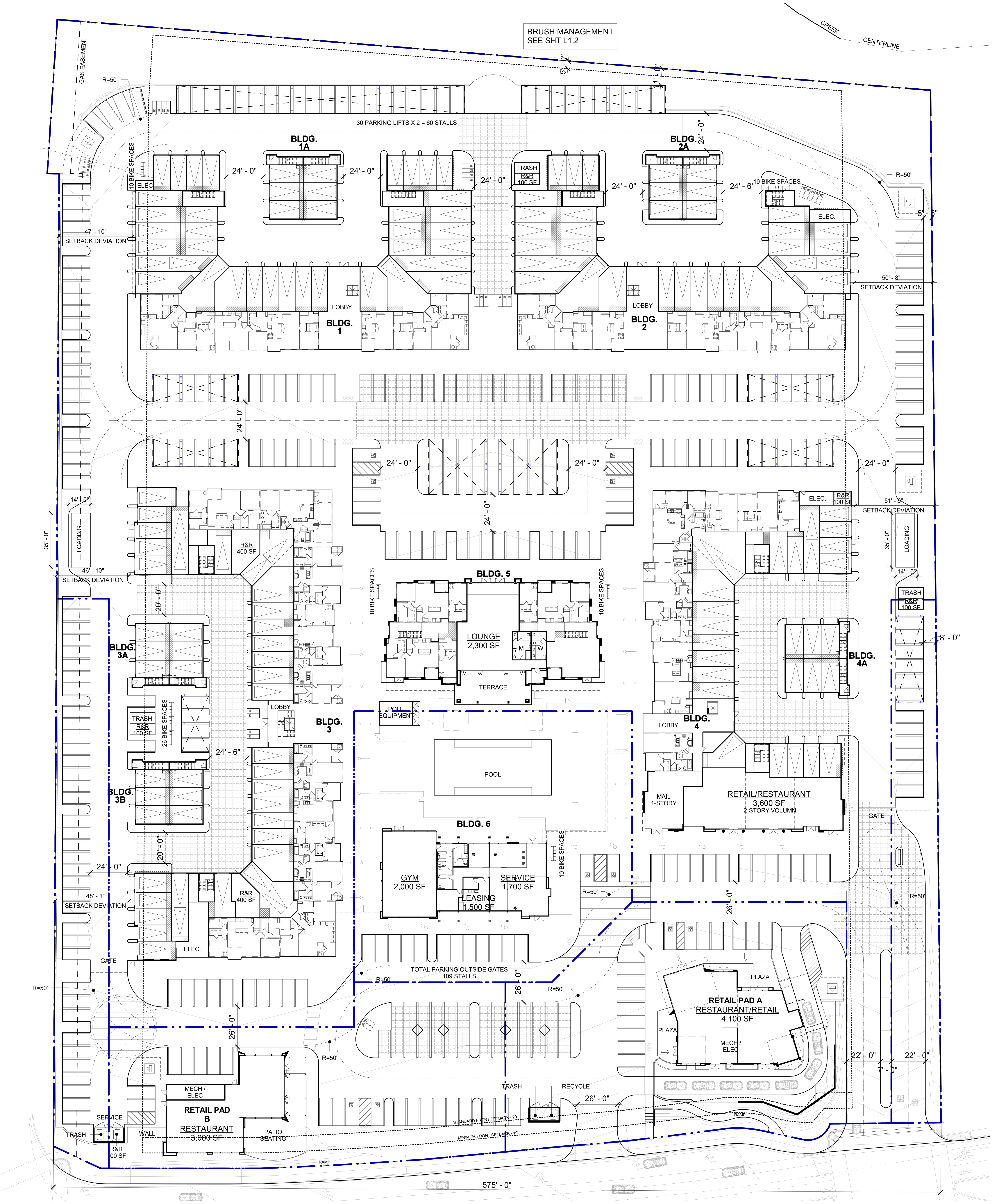
UNIT TYPE		BLDG 1	BLDG 2	BLDG 3	BLDG 4	BLDG 5	BLDG 6	TOTAL			TARGET	RENTABLE S.F.		PRIVATE OPEN SPACE (DECK) S.F.	
1BR	UNIT A	14	20	14	20			**68**	26.2%	48.1%	46.0%	621	42,228	60	4,080
	UNIT B	19	16	3	11	2		**51**	19.6%			745	37,995	60	3,060
	UNIT CA.1	6						**6**	2.3%			871	5,226	60	360
2BR	UNIT D	8	8	3	2			**21**	8.1%	47.7%	46.0%	1,077	22,617	65	1,365
	UNIT E			16	7			**23**	8.8%			1,055	24,265	60	1,380
	UNIT C	4	4	17	3	12		**40**	15.4%			1,100	44,000	60	2,400
	UNIT F			6				**6**	2.3%			1,081	6,486	60	360
	UNIT G	6	6	6	6			**24**	9.2%			1,117	26,808	84	2,016
	UNIT CA	2	2	4	2			**10**	3.8%			1,211	12,110	150	1,500
3BR	UNIT I			4	7			**11**	4.2%	4.2%	8.0%	1,296	14,256	80	880
TOTAL		**59**	**56**	**73**	**58**	**14**		**260**	**100.0%**				**235,991**		**17,401**

GATED PARKING

Covered	Garage	153	263	Stalls
	Carport	50		
	Car Lifts	60		
Open	Gated	156	156	Stalls
Grand Total:			**419**	**Stalls**

OPEN PARKING (NOT GATED)	**109**	Stalls

Total Parking Provided (Retail + Residential):	**528**	Stalls
Total Motorcycle Parking Provided (Retail + Residential):	**29**	Stalls
Total Bicycle Parking Provided (besides private garages):	**76**	Stalls



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www.mve-architects.com

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San Diego, CA 92121-4714
T 858.546.3000
F 858.546.3009

SITE PLAN - GROUND LEVEL

1" = 30'-0"

0' 15' 30' 60'

SITE DEVELOPMENT PERMIT SUBMITTAL

Carroll Canyon Mixed-Use

9850 CARROLL CANYON ROAD, SAN DIEGO, CA 92131

2014.10199

A 0.1

May 26, 2016

5/26/2016 11:26:16 AM

ATTACHMENT B

Carroll Canyon Residential-Mixed Use

Sand Diego, CA
5/26/2016 2014-10199

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	UNIT E			16	7			**23**	8.8%			1,055	24,265	60	1,380
	UNIT C	4	4	17	3	12		**40**	15.4%			1,100	44,000	60	2,400
	UNIT F			6				**6**	2.3%			1,081	6,486	60	360
	UNIT G	6	6	6	6			**24**	9.2%			1,117	26,808	84	2,016
	UNIT CA	2	2	4	2			**10**	3.8%			1,211	12,110	150	1,500
3BR	UNIT I			4	7			**11**	4.2%	4.2%	8.0%	1,296	14,256	80	880
TOTAL		**59**	**56**	**73**	**58**	**14**		**260**		**100.0%**			**235,991**		**17,401**

GATED PARKING

Covered	Garage	153	263	Stalls
	Carport	50		
	Car Lifts	60		
Open	Gated	156	156	Stalls
Grand Total:			**419**	**Stalls**

OPEN PARKING (NOT GATED)	**109**	Stalls

Total Parking Provided (Retail + Residential):	**528**	Stalls
Total Motorcycle Parking Provided (Retail + Residential):	**29**	Stalls
Total Bicycle Parking Provided (besides private garages):	**76**	Stalls

ATTACHMENT C

WEEKDAY SHARED PARKING ANALYSIS

San Diego Municipal Code Article 2 Division 5 Parking Requirements																			
Land Use	Retail		Eating & Drinking Establishments		Fast Food		Leasing Clients[a]		*Non-Gated*	Residential (1 bedroom)		Residential (2 bedroom)		Residential (3 bedroom)		Leasing Employees[a]		*Gated*	**Parking**
Gross Floor Area (Square Feet)	2,100		6,100		2,500		750		*Parking*	125		124		11		750		*Parking*	**Demand**
Parking Rate	5 space/1,000 sf		15 space/1,000 sf		15 space/1,000 sf		2.5 space/1,000 sf		*Subtotal*	1.5 space/unit		2 space/unit		2.25 space/unit		2.5 space/1,000 sf		*Subtotal*	**Totals**
Required Parking	11		92		38		2		*143*	188		248		25		2		*463*	604
City of San Diego Shared Parking																			
Time Period	Weekday Usage	Parking Demand	Weekday Usage	Parking Demand	Weekday Usage	Parking Demand	Weekday Usage	Parking Demand	*Parking Demand*	Weekday Usage	Parking Demand	Weekday Usage	Parking Demand	Weekday Usage	Parking Demand	Weekday Usage	Parking Demand	*Parking Demand*	Total Demand
6:00 AM	0%	0	15%	14	5%	2	0%	0	*16*	100%	188	100%	248	100%	25	0%	0	*461*	477
7:00 AM	10%	1	55%	51	10%	4	10%	0	*56*	80%	150	80%	198	80%	20	10%	0	*368*	424
8:00 AM	30%	3	80%	74	20%	8	30%	1	*86*	60%	113	60%	149	60%	15	30%	1	*278*	364
9:00 AM	50%	6	65%	60	30%	11	50%	1	*78*	50%	94	50%	124	50%	13	50%	1	*232*	310
10:00 AM	70%	8	25%	23	55%	21	70%	1	*53*	40%	75	40%	99	40%	10	70%	1	*185*	238
11:00 AM	80%	9	65%	60	85%	32	80%	2	*103*	40%	75	40%	99	40%	10	80%	2	*186*	289
12:00 PM	100%	11	100%	92	100%	38	100%	2	*143*	40%	75	40%	99	40%	10	100%	2	*186*	329
1:00 PM	95%	10	80%	74	100%	38	95%	2	*124*	35%	66	35%	87	35%	9	95%	2	*164*	288
2:00 PM	85%	9	55%	51	90%	34	85%	2	*96*	40%	75	40%	99	40%	10	85%	2	*186*	282
3:00 PM	80%	9	35%	32	60%	23	80%	2	*66*	45%	85	45%	112	45%	11	80%	2	*210*	276
4:00 PM	75%	8	30%	28	55%	21	75%	2	*59*	45%	85	45%	112	45%	11	75%	2	*210*	269
5:00 PM	80%	9	45%	41	60%	23	80%	2	*75*	50%	94	50%	124	50%	13	80%	2	*233*	308
6:00 PM	80%	9	65%	60	85%	32	80%	2	*103*	65%	122	65%	161	65%	16	80%	2	*301*	404
7:00 PM	75%	8	55%	51	80%	30	75%	2	*91*	70%	132	70%	174	70%	18	75%	2	*326*	417
8:00 PM	60%	7	55%	51	50%	19	60%	1	*78*	75%	141	75%	186	75%	19	60%	1	*347*	425
9:00 PM	45%	5	45%	41	30%	11	45%	1	*58*	85%	160	85%	211	85%	21	45%	1	*393*	451
10:00 PM	30%	3	35%	32	20%	8	30%	1	*44*	90%	169	90%	223	90%	23	30%	1	*416*	460
11:00 PM	15%	2	15%	14	10%	4	15%	0	*20*	95%	179	95%	236	95%	24	15%	0	*439*	459
12:00 AM	0%	0	5%	5	5%	2	0%	0	*7*	100%	188	100%	248	100%	25	0%	0	*461*	468
Source:	City of San Diego		City of San Diego		ULI (b)		City of San Diego			City of San Diego		City of San Diego		City of San Diego		City of San Diego			

Overnight Parking Requirements (total parking supply of 528 spaces available [non-gated 109 + gated 419])

Highest 24 hour demand (12am to 6am) for total parking:	477
Parking Supply (gated and non-gated):	528
Parking Surplus between 12am and 6am:	**51**

Daytime Parking Requirements:

Maximum hourly space requirement based on retail shared parking:	*143*
From 12pm to 2pm, non-gated max demand 143 exceeds 109 supply:	34

Daytime gated supply (528 total minus 109 non-gated):	419
Assigned gated supply (garage & lifts):	213
Unassigned gated supply (419-213):	206
Daytime peak residential demand (12-2pm):	186
Ten percent of residents anticipated to occupy unassigned gated supply (c):	19
Estimated available gated unassigned spaces during peak periods as noted by shaded cells above (206-19)	187
Daytime retail employees (d) required use of gated unassigned spaces (34 from above left)	34
Surplus after retail occupancy of gated unassigned spaces (187-34):	153
Non-Gated daytime peak supply:	109
Gated unassigned daytime supply during time when retail demand exceeds 109 spaces	187
Total daytime supply when retail demand exceeds 109 open spaces (available gated and 109 non-gated spaces)	296
Total daytime peak demand when retail demand exceeds 109 open spaces (available gated and 109 non-gated)	143
Total weekday peak use daytime surplus when retail demand exceeds 109 open spaces (available gated and 109 non-gated)	**153**

Notes: (a) Leasing SF evenly split between gated (for employees) and non-gated (for clients) and the leasing parking demand is based on retail time of day percentages. (b) ULI: Urban Land Institute fast food hourly percentage used as this has long lunch time coverage and higher dinner time usage over City of San Diego percentages. (c) According to applicant, the residential lease agreement will require residents to park in their assigned space (i.e. garages or lift), will be monitored, and will be subject to fines if not in compliance; however, to account for preiods of move-in/out with boxes occupying garages 10% of the residential peak in the shaded cells above (186*.1=19) are assumed to not be in their assigned space and will occupy the unassigned gated supply. (d) According to the applicant, retail lease agreements will require retail employees to have access and use gated unassigned parking areas for periods that exceed the 109 space demand as noted by shaded cells.

SATURDAY SHARED PARKING ANALYSIS

San Diego Municipal Code Article 2 Division 5 Parking Requirements

Land Use	Retail		Eating & Drinking Establishments		Fast Food		Leasing Clients[a]		*Non-Gated*	Residential (1 bedroom)		Residential (2 bedroom)		Residential (3 bedroom)		Leasing Employees[a]		*Gated*	**Parking**
Gross Floor Area (Square Feet)	2,100		6,100		2,500		750		*Parking*	125		124		11		750		*Parking*	**Demand**
Parking Rate	5 space/1,000 sf		15 space/1,000 sf		15 space/1,000 sf		2.5 space/1,000 sf		*Subtotal*	1.5 space/unit		2 space/unit		2.25 space/unit		2.5 space/1,000 sf		*Subtotal*	**Totals**
Required Parking	11		92		38		2		*143*	188		248		25		2		*463*	*604*
City of San Diego Shared Parking																			
Time Period	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	*Parking Demand*	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	Saturday Usage	Parking Demand	*Parking Demand*	Total Demand
6:00 AM	0%	0	20%	18	5%	2	0%	0	*20*	100%	188	100%	248	100%	25	0%	0	*461*	481
7:00 AM	5%	1	35%	32	10%	4	5%	0	*37*	100%	188	100%	248	100%	25	5%	0	*461*	498
8:00 AM	30%	3	55%	51	20%	8	30%	1	*63*	95%	179	95%	236	95%	24	30%	1	*440*	503
9:00 AM	50%	6	70%	64	30%	11	50%	1	*82*	85%	160	85%	211	85%	21	50%	1	*393*	475
10:00 AM	75%	8	30%	28	55%	21	75%	2	*59*	80%	150	80%	198	80%	20	75%	2	*370*	429
11:00 AM	90%	10	40%	37	85%	32	90%	2	*81*	75%	141	75%	186	75%	19	90%	2	*348*	429
12:00 PM	95%	10	60%	55	100%	38	95%	2	*105*	70%	132	70%	174	70%	18	95%	2	*326*	431
1:00 PM	100%	11	65%	60	100%	38	100%	2	*111*	65%	122	65%	161	65%	16	100%	2	*301*	412
2:00 PM	100%	11	60%	55	90%	34	100%	2	*102*	65%	122	65%	161	65%	16	100%	2	*301*	403
3:00 PM	90%	10	60%	55	60%	23	90%	2	*90*	65%	122	65%	161	65%	16	90%	2	*301*	391
4:00 PM	85%	9	50%	46	55%	21	85%	2	*78*	65%	122	65%	161	65%	16	85%	2	*301*	379
5:00 PM	75%	8	65%	60	60%	23	75%	2	*93*	65%	122	65%	161	65%	16	75%	2	*301*	394
6:00 PM	65%	7	85%	78	85%	32	65%	1	*118*	70%	132	70%	174	70%	18	65%	1	*325*	443
7:00 PM	60%	7	100%	92	80%	30	60%	1	*130*	75%	141	75%	186	75%	19	60%	1	*347*	477
8:00 PM	55%	6	100%	92	50%	19	55%	1	*118*	80%	150	80%	198	80%	20	55%	1	*369*	487
9:00 PM	45%	5	85%	78	30%	11	45%	1	*95*	80%	150	80%	198	80%	20	45%	1	*369*	464
10:00 PM	35%	4	75%	69	20%	8	35%	1	*82*	85%	160	85%	211	85%	21	35%	1	*393*	475
11:00 PM	15%	2	30%	28	10%	4	15%	0	*34*	90%	169	90%	223	90%	23	15%	0	*415*	449
12:00 AM	0%	0	25%	23	5%	2	0%	0	*25*	95%	179	95%	236	95%	24	0%	0	*439*	464
Source:	City of San Diego		City of San Diego		ULI (b)		City of San Diego			City of San Diego		City of San Diego		City of San Diego		City of San Diego			

Overnight Parking Requirements (total parking supply of 528 spaces available [non-gated 109 + gated 419]):

Highest 24 hour demand (12am to 6am) for total parking:	503
Parking Supply (gated and non-gated):	528
Parking Surplus between 12am and 6am:	**25**

Daytime Parking Requirements:

Maximum hourly space requirement based on retail shared parking:	*130*
From 1pm-2pm and 6pm-9pm, non-gated max demand of 130 exceeds 109 supply by:	21

Daytime gated supply (533 total minus 109 non-gated):	419
Assigned gated supply (garage & lifts):	213
Unassigned gated supply (419-213):	206
Daytime peak residential demand (1-2pm, 6-9pm):	369
Ten percent of residents anticipated to occupy unassigned gated supply (c):	37
Estimated available gated unassigned spaces during peak periods as noted by shaded cells above (206-37):	169
Daytime retail employees (d) required use of gated unassigned spaces (21 from above left):	21
Surplus after retail occupancy of gated unassigned spaces (169-21):	148
Non-Gated daytime peak supply:	109
Gated unassigned daytime supply during time when retail demand exceeds 109 spaces:	169
Total daytime supply when retail demand exceeds 109 open spaces (available gated and 109 non-gated spaces):	278
Total daytime peak demand when retail demand exceeds 109 open spaces (available gated and 109 non-gated):	130
Total Saturday peak use daytime surplus when retail demand exceeds 109 open spaces (available gated and 109 non-gated):	**148**

Notes: (a) Leasing SF evenly split between gated (for employees) and non-gated (for clients) and the leasing parking demand is based on retail time of day percentages. (b) ULI: Urban Land Institute fast food hourly percentage used as this has long lunch time coverage and higher dinner time usage over City of San Diego percentages. (c) According to applicant, the residential lease agreement will require residents to park in their assigned space (i.e. garages or lift), will be monitored, and will be subject to fines if not in compliance; however, to account for preiods of move-in/out with boxes occupying garages 10% of the residential peak in the shaded cells above (369*.1=37) are assumed to not be in their assigned space and will occupy the unassigned gated supply. (d) According to the applicant, retail lease agreements will require retail employees to have access and use gated unassigned parking areas for periods that exceed the 109 space demand as noted by shaded cells.

Air Quality Technical Report

for the

Carroll Canyon Mixed Use Project

Submitted To:

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October 7, 2015

Table of Contents

1.0 Introduction 1
2.0 Existing Conditions 2
2.1 Regulatory Framework 2
2.1.1 Federal Regulations 2
2.1.2 State Regulations 4
2.1.3 Local Regulations 11
2.2 Climate and Meteorology 11
2.3 Background Air Quality 13
3.0 Thresholds of Significance 14
4.0 Impacts 16
4.1 Consistency with the RAQS and SIP 16
4.2 Violation of an Air Quality Standard 20
4.2.1 Construction Impacts 20
4.2.2 Operational Impacts 23
4.3 Cumulatively Considerable Net Increase of Nonattainment Pollutants 27
4.4 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations 27
4.5 Objectionable Odors 28
5.0 Conclusions 29
6.0 References 31

Glossary of Terms and Acronyms

APCD	Air Pollution Control District
AQIA	Air Quality Impact Assessment
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measure
BACT	Best Available Control Technology
BMPs	Best Management Practices
CAA	Clean Air Act (Federal)
CAAQS	California Ambient Air Quality Standard
CALINE4	California Line Source Dispersion Model (Version 4)
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CO	Carbon Monoxide
EPA	United States Environmental Protection Agency
H_2S	Hydrogen Sulfide
HARP	HotSpots Analysis and Reporting Program
HI	Hazard Index
ISCST	Industrial Source Complex Short Term Model
mg/m^3	Milligrams per Cubic Meter
$\mu g/m^3$	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standard
NOx	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
O_3	Ozone
$PM_{2.5}$	Fine Particulate Matter (particulate matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}	Respirable Particulate Matter (particulate matter with an aerodynamic diameter of 10 microns or less
ppm	Parts per million
PSD	Prevention of Significant Deterioration
RAQS	San Diego County Regional Air Quality Strategy
ROCs	Reactive Organic Compounds
ROG	Reactive Organic Gases
SANDAG	San Diego Association of Governments
SCAQMD	South Coast Air Quality Management District
SCAB	South Coast Air Basin
SDAB	San Diego Air Basin
SDAPCD	San Diego County Air Pollution Control District
SIP	State Implementation Plan
SOx	Oxides of Sulfur
SO_2	Sulfur Dioxide
TACs	Toxic Air Contaminants

T-BACT	Toxics Best Available Control Technology
VOCs	Volatile Organic Compounds

1.0 Introduction

This report presents an assessment of potential air quality impacts associated with the Carroll Canyon Mixed Use Project in the City of San Diego, California.

The proposed Carroll Canyon Mixed Use project is a redevelopment project of approximately 9.3 net acres located on the northeast corner of Carroll Canyon Road and I-15 in the Scripps Ranch community of San Diego, California. The redevelopment project with 260 apartments and 12,200 square feet of commercial/retail space will replace an existing mostly vacant office complex of approximately 76,241 square feet. The site is currently zoned as an Industrial Park (IP-2-1) and is proposed to be zoned as Residential (RM-3-7). The project involves a rezone of the project site from IP-2-1 to RM-3-7, a Community Plan Amendment to change the designation of the project site from Industrial Park to Residential. The project actions would allow for the proposed redevelopment of the existing, 76,241-square foot office complex.

This Air Quality Technical Report includes an evaluation of existing conditions in the project vicinity, an assessment of potential impacts associated with project construction, and an evaluation of project operational impacts.

2.0 Existing Conditions

The following section provides information about the existing air quality regulatory framework, climate, air pollutants and sources, and sensitive receptors in the project area.

2.1 Regulatory Framework

2.1.1 Federal Regulations

Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (EPA) to be of concern with respect to health and welfare of the general public. The EPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the EPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the EPA established both primary and secondary standards for seven pollutants (called "criteria" pollutants). The seven pollutants regulated under the NAAQS are as follows: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), respirable particulate matter (or particulate matter with an aerodynamic diameter of 10 microns or less, PM_{10}), fine particulate matter (or particulate matter with an aerodynamic diameter of 2.5 microns or less, $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. Areas that do not meet the NAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. The SDAB has been designated as a moderate O_3 nonattainment area for the 8-hour O_3 standard. The SDAB is in attainment for the NAAQS for all other criteria pollutants.

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on EPA (EPA 2007) and the California Air Resources Board (ARB) (ARB 2005).

Ozone. O_3 is considered a photochemical oxidant, which is a chemical that is formed when reactive organic gases (ROG) and oxides of nitrogen (NOx), both by-products of combustion, react in the presence of ultraviolet light. O_3 is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to O_3.

Carbon Monoxide. CO is a product of combustion, and the main source of CO in the SDAB is from motor vehicle exhaust. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease, and can also affect mental alertness and vision.

Nitrogen Dioxide. NO_2 is also a by-product of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

Respirable Particulate Matter and Fine Particulate Matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations and windblown dust. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Pb in the atmosphere occurs as particulate matter. Pb has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Pb has the potential to cause gastrointestinal, central nervous system, kidney and blood diseases upon prolonged exposure. Pb is also classified as a probable human carcinogen.

2.1.2 State Regulations

California Clean Air Act. The California Clean Air Act was signed into law on September 30, 1988, and became effective on January 1, 1989. The Act requires that local air districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures. The California Clean Air Act required the SDAB to achieve a five percent annual reduction in ozone precursor emissions from 1987 until the standards are attained. If this reduction cannot be achieved, all feasible control measures must be implemented. Furthermore, the California Clean Air Act required local air districts to implement a Best Available Control Technology rule and to require emission offsets for nonattainment pollutants.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain air quality in the state. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the California Ambient Air Quality Standards (CAAQS). The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The ARB has established the more stringent CAAQS for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. The SDAB is currently classified as a nonattainment area under the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. It should be noted that the ARB does not differentiate between attainment of the 1-hour and 8-hour CAAQS for O_3; therefore, if an air basin records exceedances of either standard the area is considered a nonattainment area for the CAAQS for O_3. The SDAB has recorded exceedances of both the 1-hour and 8-hour CAAQS for O_3. The following specific descriptions of health effects for the additional California criteria air pollutants are based on the ARB (ARB 2001).

Sulfates. Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The ARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide. H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard would result in exposure to a very disagreeable odor. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance.

Vinyl Chloride. Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants and hazardous waste sites, due to microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

Visibility Reducing Particles. Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The CAAQS is intended to limit the frequency and severity of visibility impairment due to regional haze. A separate standard for visibility-reducing particles that is applicable only in the Lake Tahoe Air Basin is based on reduction in scenic quality.

Table 1 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

Table 1
Ambient Air Quality Standards

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 hour	0.09 ppm (176 μg/m^3)	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour	0.070 ppm (137 μg/m^3)		0.075 ppm (147 μg/m^3)	0.075 ppm (147 μg/m^3)	
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	--	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm (56 μg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	--	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 μg/m^3)		0.100 ppm (188 μg/m^3)	--	
Sulfur Dioxide (SO_2)	24 hours	0.04 ppm (105 μg/m^3)	Ultraviolet Fluorescence	--	--	Pararosaniline
	3 hours	--		--	0.5 ppm (1300 μg/m^3)	
	1 hour	0.25 ppm (655 μg/m^3)		0.075 ppm (196 μg/m^3)	--	
Respirable Particulate Matter (PM_{10})	24 hours	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	150 μg/m^3	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		--	--	
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	12.0 μg/m^3	15 μg/m^3	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 μg/m^3	--	
Sulfates	24 hours	25 μg/m^3	Ion Chromatography	--	--	--
Lead	30-day Average	1.5 μg/m^3	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 μg/m^3	1.5 μg/m^3	
	3-Month Rolling Average	--		0.15 μg/m^3	0.15 μg/m^3	
Hydrogen Sulfide	1 hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 μg/m^3)	Gas Chromatography	--	--	--

ppm= parts per million; μg/m^3 = micrograms per cubic meter ; mg/m^3= milligrams per cubic meter
Source: California Air Resources Board, www.arb.ca.gov, 2015, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

Toxic Air Contaminants. In 1983, the California Legislature enacted a program to identify the health effects of Toxic Air Contaminants (TACs) and to reduce exposure to these contaminants to protect the public health (AB 1807: Health and Safety Code sections 39650-39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

The State of California has identified diesel particulate matter as a TAC. Diesel particulate matter is emitted from on- and off-road vehicles that utilize diesel as fuel. Following identification of diesel particulate matter as a TAC in 1998, the ARB has worked on developing strategies and regulations aimed at reducing the emissions and associated risk from diesel particulate matter. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter from Diesel-Fueled Engines and Vehicles* (State of California 2000). A stated goal of the plan is to reduce the cancer risk statewide arising from exposure to diesel particulate matter by 75 percent by 2010 and by 85 percent by 2020. The *Risk Reduction Plan* contains the following three components:

- New regulatory standards for all new on-road, off-road and stationary diesel-fueled engines and vehicles to reduce diesel particulate matter emissions by about 90 percent overall from current levels;
- New retrofit requirements for existing on-road, off-road and stationary diesel-fueled engines and vehicles where determined to be technically feasible and cost-effective; and
- New Phase 2 diesel fuel regulations to reduce the sulfur content levels of diesel fuel to no more than 15 ppm to provide the quality of diesel fuel needed by the advanced diesel particulate matter emission controls.

A number of programs and strategies to reduce diesel particulate matter are in place or are in the process of being developed as part of the ARB's Diesel Risk Reduction Program. Some of these programs and strategies include those that would apply to construction and operation of the project, including the following:

- In 2001, the ARB adopted new particulate matter and NOx emission standards to clean up large diesel engines that power big-rig trucks, trash trucks, delivery vans and other large vehicles. The new standard for particulate matter takes effect in 2007 and reduces emissions to 0.01 gram of particulate matter per brake horsepower-hour (g/bhp-hr.) This is a 90 percent reduction from the existing particulate matter standard. New engines will meet the 0.01 g/bhp-hr particulate matter standard with the aid of diesel particulate filters that trap the particulate matter before exhaust leaves the vehicle.
- ARB has worked closely with the United States Environmental Protection Agency (U.S. EPA) on developing new particulate matter and NOx standards for engines used in offroad equipment such as backhoes, graders, and farm equipment. U.S EPA has proposed new standards that would reduce the emission from off-road engines to similar levels to the on-road engines discussed above by 2010 – 2012. These new engine standards were adopted as part of the Clean Air Nonroad Diesel Final Rule in 2004. Once approved by U.S. EPA, ARB will adopt these as the applicable state standards for new off-road engines. These standards will reduce diesel particulate matter emission by over 90 percent from new off-road engines currently sold in California.
- The ARB has adopted several regulations that will reduce diesel emissions from in-use vehicles and engines throughout California. In some cases, the particulate matter reduction strategies also reduce smog-forming emissions such as NOx.

As an ongoing process, the ARB reviews air contaminants and identifies those that are classified as TACs. The ARB also continues to establish new programs and regulations for the control of TACs, including diesel particulate matter, as appropriate.

The local air pollution control district (APCD) has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The San Diego APCD is the local agency responsible for the administration and enforcement of air quality regulations in San Diego County.

The APCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County Regional Air Quality Strategy (RAQS) was initially adopted in 1991, and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, 2004 and most recently in 2009 (APCD 2009). The RAQS outlines APCD's plans and control measures designed to attain the state air quality standards for O_3. The RAQS does not address the state air quality standards for PM_{10} or $PM_{2.5}$. The APCD has also developed the air basin's input to the State Implementation Plan (SIP), which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards. The SIP includes the APCD's plans and control measures for attaining the O_3 NAAQS. The SIP is also updated on a triennial basis. The latest SIP update is the *Eight-Hour Ozone Attainment Plan for San Diego County* (hereinafter referred to as the Attainment Plan) (APCD 2007). The Attainment Plan forms the basis for the SIP update, as it contains documentation on emission inventories and trends, the APCD's emission control strategy, and an attainment demonstration that shows that the SDAB will meet the NAAQS for O_3. Emission inventories, projections, and trends in the Attainment Plan are based on the latest O_3 SIP planning emission projections compiled and maintained by ARB. Supporting data were developed jointly by stakeholder agencies, including ARB, the APCD, the South Coast Air Quality Management District (SCAQMD), the Southern California Association of Governments (SCAG), and SANDAG. Each agency plays a role in collecting and reviewing data as necessary to generate comprehensive emission inventories. The supporting data include socio-economic projections, industrial and travel activity levels, emission factors, and emission speciation profiles. These projections are based on data submitted by stakeholder agencies including projections in municipal General Plans.

The ARB compiles annual statewide emission inventories in its emission-related information database, the California Emission Inventory Development and Reporting System (CEIDARS). Emission projections for past and future years were generated using the California Emission Forecasting System (CEFS), developed by ARB to project emission trends and track progress towards meeting emission reduction goals and mandates. CEFS utilizes the most current growth and emissions control data available and agreed upon by the stakeholder agencies to provide comprehensive projections of anthropogenic (human activity-related) emissions for any year from 1975 through 2030. Local air districts are responsible for compiling emissions data for all point sources and many stationary area-wide sources. For mobile sources, CEFS integrates emission estimates from ARB's EMFAC2007 and OFFROAD models. SANDAG incorporates data regarding highway and transit projects into their Travel Demand Models for estimating and projecting vehicle miles traveled (VMT) and speed.

Because the ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of General Plans, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS and the Attainment Plan. In the event that a project would propose development which is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS and the Attainment Plan. If a project proposes development that is greater than that anticipated in the general plan and SANDAG's growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.

2.1.3 Local Regulations

In San Diego County, the SDAPCD is the regulatory agency that is responsible for maintaining air quality, including implementation and enforcement of state and federal regulations. The project site is located in the City of San Diego. The City of San Diego has not adopted specific regulations to govern air quality. The Conservation Element of the City's General Plan (City of San Diego 2008) includes policies that encourage development in a manner that benefits San Diego's environment and economy. These policies encourage green building practices and sustainable development. The policies also promote infill development, which reduces emissions from vehicles.

2.2 Climate and Meteorology

The project site is located in the SDAB. The climate of the SDAB is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. Figure 1 provides a graphic representation of the prevailing winds in the project vicinity, as measured at MCAS Miramar, which is the closest meteorological monitoring station to the site, and provides general wind trends in the County. The high pressure cell also creates two types of temperature inversions that may act to degrade local air quality.

Subsidence inversions occur during the warmer months as descending air associated with the Pacific high pressure cell comes into contact with cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. The other type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce ozone, commonly known as smog.

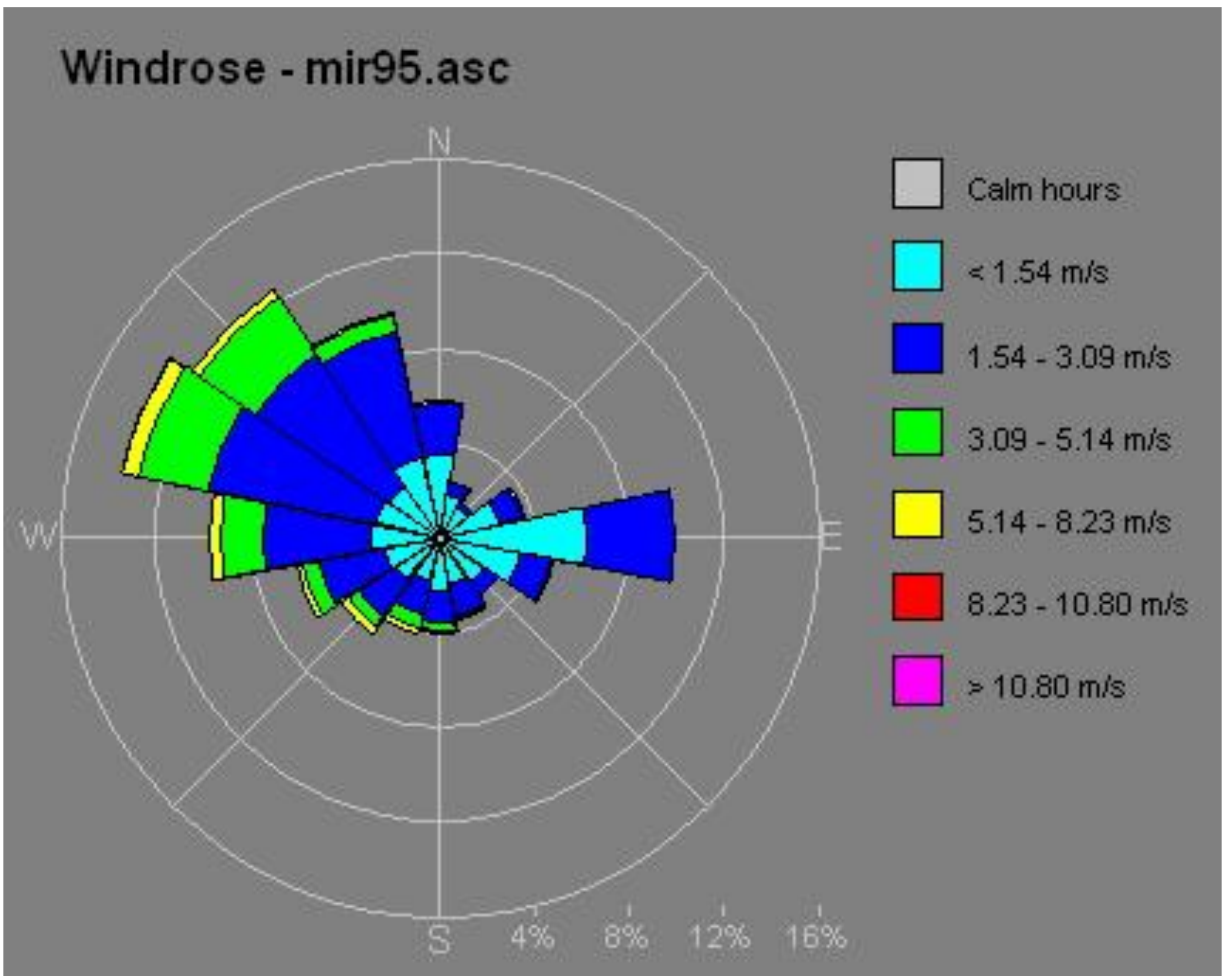

Figure 1. Wind Rose, MCAS Miramar

2.3 Background Air Quality

The APCD operates a network of ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring station to the project site is the Kearny Mesa monitoring station, which measures O_3, NO_2, PM_{10}, and $PM_{2.5}$. The closest monitoring station to the project site that measures CO and SO_2 is the downtown San Diego monitoring site; however that site ceased measuring CO in 2012, and ceased measuring SO_2 in 2011. The data from downtown San Diego provide a conservative estimate of background concentrations, because downtown San Diego is subject to higher traffic congestion and other sources not present at the Carroll Canyon site. Ambient concentrations of pollutants over the most recent three-year period for which data are available (2011-2013) are presented in Table 2.

The Kearny Mesa monitoring station measured one exceedance of the 8-hour ozone NAAQS each in 2011 and 2012. The monitoring data indicate there were no exceedances of the NAAQS in 2013. The Kearny Mesa monitoring station measured exceedances of the state 1-hour ozone standard and the state 8-hour ozone standards in the period from 2011 through 2013. The 8-hour CAAQS was exceeded twice in 2011, three times in 2012, and once in 2013. The 1-hour CAAQS was only exceeded once in 2012 during the period from 2011 through 2013. The annual CAAQS for PM_{10} was exceeded in 2011. The data from the monitoring station indicates that air quality is in attainment of all other air quality standards.

Table 2
Ambient Background Concentrations
(ppm unless otherwise indicated)

Pollutant	Averaging Time	2011	2012	2013	CAAQS	NAAQS	Monitoring Station
Ozone	8 hour	0.083	0.076	0.070	0.070	0.075	Kearny Mesa
	1 hour	0.093	0.099	0.081	0.09	--	Kearny Mesa
PM_{10}	Annual	20.3	14.7	20.0	20 $\mu g/m^3$	--	Kearny Mesa
	24 hour	47	35	39	50 $\mu g/m^3$	150 $\mu g/m^3$	Kearny Mesa
$PM_{2.5}$	Annual	8.9	NA	8.3	12 $\mu g/m^3$	15 $\mu g/m^3$	Kearny Mesa
	24 hour	29.9	20.1	22.0	--	35 $\mu g/m^3$	Kearny Mesa
NO_2	Annual	NA	NA	0.011	0.030	0.053	Kearny Mesa
	1 hour	0.073	0.057	0.067	0.18	0.100	Kearny Mesa
CO	8 hour	2.44	1.81	NA	9.0	9	San Diego
SO_2	24 hour	0.002	NA	NA	0.04	--	San Diego

NA = Data Not Available

3.0 Thresholds of Significance

The City of San Diego has adopted its Significance Determination Thresholds (City of San Diego 2011) that are based on Appendix G of the State CEQA Guidelines. According to the Significance Determination Thresholds, a project would have a significant environmental impact if the project would result in:

- A conflict with or obstruct the implementation of the applicable air quality plan;
- A violation of any air quality standard or contribute substantially to an existing or projected air quality violation;
- Exposing sensitive receptors to substantial pollutant concentrations;
- Creating objectionable odors affecting a substantial number of people;
- Exceeding 100 pounds per day of particulate matter (PM) (dust); or
- Substantial alteration of air movement in the area of the project.

In their Significance Determination Thresholds, the City of San Diego has adopted emission thresholds based on the thresholds for an Air Quality Impact Assessment in the San Diego Air Pollution Control District's Rule 20.2. These thresholds are shown in Table 3.

Table 3
Significance Criteria for Air Quality Impacts

Pollutant	Emission Rate		
	Lbs/Hr	Lbs/Day	Tons/Year
Carbon Monoxide (CO)	100	550	100
Oxides of Nitrogen (NOx)	25	250	40
Respirable Particulate Matter (PM_{10})	--	100	15
Oxides of Sulfur (SOx)	25	250	40
Lead and Lead Compounds	--	3.2	0.6
Fine Particulate Matter ($PM_{2.5}$)	--	--	--
Volatile Organic Compounds (VOCs)	--	137	15

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs) or Hazardous Air Pollutants (HAPs). If a project has the potential to result in emissions of any

TAC or HAP which may expose sensitive receptors to substantial pollutant concentrations, the project would be deemed to have a potentially significant impact. With regard to evaluating whether a project would have a significant impact on sensitive receptors, air quality regulators typically define sensitive receptors as schools (Preschool-12th Grade), hospitals, resident care facilities, or day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality.

With regard to odor impacts, a project that proposes a use which would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of offsite receptors.

The impacts associated with construction and operation of the project were evaluated for significance based on these significance criteria.

The impacts associated with construction and operation of the project were evaluated for significance based on these significance criteria.

4.0 Impacts

The Carroll Canyon Mixed Use Project would result in both construction and operational impacts. Construction impacts include emissions associated with the construction of the project. Operational impacts include emissions associated with the project, including traffic, at full buildout.

4.1 Consistency with the RAQS and SIP

The Proposed Project would have a significant impact if it conflicts with or obstructs implementation of the applicable air quality plans (the RAQS and SIP).

As discussed in Section 2.1, the SIP is the document that sets forth the state's strategies for attaining and maintaining the NAAQS. The APCD is responsible for developing the San Diego portion of the SIP, and has developed an attainment plan for attaining the 8-hour NAAQS for O_3. The RAQS sets forth the plans and programs designed to meet the state air quality standards. Through the RAQS and SIP planning processes, the APCD adopts rules, regulations, and programs designed to achieve attainment of the ambient air quality standards and maintain air quality in the SDAB.

Conformance with the RAQS and SIP determines whether a Project will conflict with or obstruct implementation of the applicable air quality plans. The basis for the RAQS and SIP is the distribution of population in the San Diego region as projected by SANDAG. Growth forecasting is based in part on the land uses established by the General Plan.

As discussed in Section 1.0, the project requires a General Plan Amendment and a Community Plan Amendment to redesignate the site from Industrial Park to Residential/Mixed Use. Accordingly, the use of the project site for a mixed use project was not specifically addressed in the General Plan. Further analysis of the project's consistency with the RAQS and SIP was therefore conducted.

The RAQS and SIP address air emissions and impacts from industrial sources, area-wide sources, and mobile sources. The programs also consider transportation control measures and indirect source review. Industrial sources are typically stationary air pollution sources that are subject to APCD rules and regulations, and over which the APCD has regulatory authority. Area-wide sources include sources such as consumer products use, small utility engines, hot water heaters, and furnaces. Both the ARB and the APCD have authority to regulate these sources and have developed plans and programs to reduce emissions from certain types of area-wide sources. Mobile sources are principally emissions from motor vehicles. The ARB establishes emission standards for motor vehicles and establishes regulations for other mobile source activities including off-road vehicles.

Both the RAQS and SIP address emissions of ozone precursors (ROG and NOx), as the SDAB is classified as a marginal nonattainment area for the NAAQS and a nonattainment area for the CAAQS. The RAQS and SIP do not address particulate matter. The California CAA requires an air quality strategy to achieve a 5% average annual ozone precursor emission reduction when implemented or, if that is not achievable, an expeditious schedule for adopting every feasible emission control measure under air district purview (California Health and Safety Code (H&SC) Section 40914). The current RAQS represents an expeditious schedule for adopting feasible control measures, since neither San Diego nor any air district in the State has demonstrated sustained 5% average annual ozone precursor reductions.

Most of the control measures adopted in the RAQS apply to industrial sources and specific source categories. There are no specific rules and regulations that apply to construction or operational sources associated with the Carroll Canyon Mixed Use Project; however, off-road equipment and on-road vehicles involved in construction would be required to comply with ARB emission standards.

In 1992 SANDAG adopted Transportation Control Measures for the Air Quality Plan which set forth 11 tactics aimed at reducing traffic congestion and motor vehicle emissions within the SDAB. For each of these tactics, the Transportation Control Measures evaluated the potential emissions reductions on a region-wide basis. The tactics include the following:

- Commute travel reduction program
- High school, college, and university travel reduction program
- Goods movement/truck operation program
- Non-commute travel reduction program
- Transit improvements and expansion
- Vanpool program
- High occupancy vehicle lanes
- Park and ride facilities
- Bicycle facilities
- Traffic flow improvements
- Indirect source control program

The tactic that is most applicable to the proposed Project is the indirect source control program. The Transportation Control Measures adopted by SANDAG identified job-housing balance, mixed use, and transit corridor development as criteria for indirect source control. As part of job-housing balance, SANDAG indicated that land use policies and programs shall be established to attract appropriate employers to residential areas and to encourage appropriate housing in and near industrial and business areas. Mixed use development should be designed to maximize walking and minimize vehicle use by providing housing, employment, education, shopping, recreation and any support facilities within convenient proximity. The Carroll Canyon Mixed Use Project meets the criteria of the RAQS, SIP, and SANDAG's Transportation Control Measures as it provides a mix of uses that would include both residential and commercial development.

The RAQS and SIP include emissions budgets for the San Diego Air Basin in their projections of whether or not the air basin will attain and maintain the ozone standard. Emissions budgets for NOx and ROG within the San Diego Air Basin include stationary sources, mobile sources, and area sources. Because the project will generate construction emissions, on-road mobile source emissions and area source emissions from electricity use, consumer products use, and architectural coatings use, the emissions calculated from the CalEEMod Model were compared with these emission sources. Further discussion of the CalEEMod Model outputs is provided in Section 4.2.

Table 4 presents a summary of the air basin's emissions, along with a summary of the emissions associated with the Carroll Canyon Mixed UseProject. As shown in the table, the emissions associated with the project would comprise a very small percentage (less than 0.2 percent for construction, and less than 0.05% for operations) of all of the emission categories. Furthermore, as discussed in Section 4.2, the emissions for all sources are below the City of San Diego's significance thresholds. Because the emissions are a very small percentage of the air basin's emissions, and because the emissions are less than the significance thresholds, the emissions attributable to the project would not obstruct or conflict with implementation of the RAQS and SIP.

Table 4
Comparison of Project Emissions with RAQS and SIP Emissions Budgets
Carroll Canyon Mixed Use Project

Emission Source	VOCs	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
Construction, lbs/day						
Construction Fugitive Dust	-	-	-	-	2.44	1.29
Emissions Budget	-	-	-	-	57,080	5,700
Percent of Emissions Budget	-	-	-	-	0.0043%	0.0226%
Paved Road Dust	-	-	-	-	2.56	1.33
Emissions Budget	-	-	-	-	83,300	12,500
Percent of Emissions Budget	-	-	-	-	0.003%	0.0106%
Off Road Diesel	14.46	143.57	98.18	0.12	8.36	7.78
Emissions Budget	24,860	52,240	257,860	80	3,160	2,800
Percent of Emissions Budget	0.058%	0.275%	0.038%	0.15%	0.26%	0.28%
Vehicle Emissions	1.62	6.83	19.47	0.02	0.10	0.09
Emissions Budget	68,780	127,180	654,880	1,000	10,820	7,540
Percent of Emissions Budget	0.0024%	0.0053%	0.0030%	0.0020%	0.0009%	0.0012%
Operations, lbs/day						
Architectural Coatings Use	2.47	-	-	-	-	-
Emissions Budget	18,860	-	-	-	-	-
Percent of Emissions Budget	0.013%					
Consumer Products Use	6.46	-	-	-	-	-
Emissions Budget	42,400	-	-	-	-	-
Percent of Emissions Budget	0.015%	-	-	-	-	-
Energy Use	0.113	0.99	0.60	0.006	0.08	0.08

Table 4 Comparison of Project Emissions with RAQS and SIP Emissions Budgets Carroll Canyon Mixed Use Project						
Emission Source	**VOCs**	**NOx**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Emissions Budget	4,500	9,800	12,080	260	2,640	2,360
Percent of Emissions Budget	0.0025%	0.010%	0.005%	0.002%	0.003%	0.003%
Paved Road Dust	-	-	-	-	12.06	3.22
Emissions Budget	-	-	-	-	83,300	12,500
Percent of Emissions Budget	-	-	-	-	0.014%	0.026%
Vehicle Emissions	10.79	18.80	93.68	0.17	12.30	3.43
Emissions Budget	68,780	127,180	654,880	1,000	10,820	7,540
Percent of Emissions Budget	0.0157%	0.015%	0.014%	0.017%	0.11%	0.045%

Accordingly the proposed Project is consistent with the applicable air quality plans, and would not result in a significant impact.

4.2 Violation of an Air Quality Standard

The Proposed Project would have a significant impact if it violates any air quality standard or contributes substantially to an existing or projected air quality violation.

To address this significance threshold, an evaluation of emissions associated with both the construction and operational phases of the Project was conducted.

4.2.1 Construction Impacts

Emissions of pollutants such as fugitive dust and heavy equipment exhaust that are generated during construction are generally highest near the construction site. Emissions from the construction of the project were estimated using the CalEEMod Model (ENVIRON 2013). It was assumed that construction would require the following phases: fine grading, utilities installation, building construction, paving, and architectural coatings application.

The CalEEMod Model provides default assumptions regarding horsepower rating, load factors for heavy equipment, and hours of operation per day. Default assumptions within the CalEEMod

Model and assumptions for similar projects were used to represent operation of heavy construction equipment.

Construction calculations within the CalEEMod Model utilize the number and type of equipment shown in Table 4 to calculate emissions from heavy construction equipment. The methodology used involves multiplication of the number of pieces of each type of equipment times the equipment horsepower rating, load factor, and OFFROAD emission factor, as shown in the equation below:

Emissions, lbs/day = (Number of pieces of equipment) x (equipment horsepower) x (load factor) x (hours of operation per day) x (OFFROAD emission factor, lbs/hp-hr)

In addition to calculating emissions from heavy construction equipment, the CalEEMod Model contains calculation modules to estimate emissions of fugitive dust, based on the amount of earthmoving or surface disturbance required; emissions from heavy-duty truck trips or vendor trips during construction activities; emissions from construction worker vehicles during daily commutes; emissions of ROG from paving using asphalt; and emissions of ROG during application of architectural coatings. As part of the project design features, it was assumed that standard dust control measures (watering three times daily; using soil stabilizers on unpaved roads) and architectural coatings that comply with SDAPCD Rule 67.0 (assumed to meet a VOC content of 150 g/l) would be used during construction.

Table 5 provides the detailed emission estimates for each phase of construction as calculated with the CalEEMod Model for each of the construction phases of the project, without mitigation. Appendix A provides CalEEMod Model outputs showing the construction calculations. As shown in Table 5, emissions of criteria pollutants during construction would be below the thresholds of significance for all project construction phases. Project criteria pollutant emissions during construction would be temporary. Impacts during construction are less than significant.

Table 5 Estimated Maximum Daily Construction Emissions Carroll Canyon Mixed Use Project										
Construction Activity/Time	**ROG**	**NOx**	**CO**	**SO_2**	**PM_{10} Dust**	**PM_{10} Exhaust**	**PM_{10} Total**	**$PM_{2.5}$ Dust**	**$PM_{2.5}$ Exhaust**	**$PM_{2.5}$ Total**
Demolition										
Fugitive Dust	-	-	-	-	0.45	0.00	0.45	0.07	0.00	0.07
Off-Road Diesel	4.51	48.36	36.07	0.04	-	2.45	2.45	-	2.29	2.29
On-Road Diesel	0.12	1.72	1.15	0.00	0.09	0.03	0.12	0.03	0.02	0.05
Worker Trips	0.06	0.07	0.74	0.00	0.12	0.001	0.12	0.03	0.00	0.03
TOTAL	**4.69**	**50.15**	**37.96**	**0.04**	**0.66**	**2.481**	**3.14**	**0.13**	**2.31**	**2.44**
Site Grading										
Fugitive Dust	-	-	-	-	2.44	0.00	2.44	1.30	0.00	1.30
Off-Road Diesel	3.83	40.42	26.67	0.03	-	2.33	2.33	-	2.14	2.14
Worker Trips	0.06	0.07	0.74	0.00	0.12	0.00	0.12	0.03	0.00	0.03
TOTAL	**3.89**	**40.49**	**27.41**	**0.03**	**2.56**	**2.33**	**4.89**	**1.33**	**2.14**	**3.47**
Building Construction										
Building Off Road Diesel	3.66	30.03	18.74	0.03	-	2.12	2.12	-	1.99	1.99
Building Vendor Trips	0.41	3.82	4.25	0.00	0.23	0.06	0.29	0.07	0.06	0.12
Building Worker Trips	0.78	0.92	10.09	0.02	1.68	0.01	1.69	0.44	0.01	0.46
TOTAL	**4.85**	**34.77**	**33.08**	**0.05**	**1.91**	**2.19**	**4.10**	**0.51**	**2.06**	**2.57**
Paving										
Paving Off-Gas	0.02	-	-	-	-	-	-	-	-	-
Paving Off Road Diesel	2.09	22.39	14.82	0.02	-	1.26	1.26	-	1.16	1.16
Paving Worker Trips	0.05	0.06	0.67	0.00	0.12	0.00	0.12	0.03	0	0.03
TOTAL	**2.16**	**22.45**	**15.49**	**0.02**	**0.12**	**1.26**	**1.38**	**0.03**	**1.16**	**1.19**
Architectural Coatings										
Architectural Coatings Off-Gas	47.12	-	-	-	-	-	-	-	-	-
Architectural Coating Off Road Diesel	0.37	2.37	1.88	0.00	-	0.20	0.20	-	0.20	0.20
Architectural Coating Worker Trips	0.14	0.17	1.83	0.00	0.34	0.00	0.34	0.09	0.00	0.09
TOTAL	**47.63**	**2.54**	**3.71**	**0.00**	**0.34**	**0.20**	**0.54**	**0.09**	**0.20**	**0.29**
MAXIMUM DAILY EMISSIONS[1]	**54.27**	**57.65**	**50.73**	**0.09**	**2.37**	**3.49**	**5.86**	**0.63**	**3.27**	**3.90**
Significance Criteria	137	250	550	250			100			55
Significant?	*No*	*No*	*No*	*No*			*No*			*No*

[1]Maximum ROG, CO, and SOx emissions during simultaneous building construction, paving, and architectural coatings application. Maximum NOx and PM emissions during grading.

4.2.2 Operational Impacts

Operational impacts associated with the Carroll Canyon Mixed Use Project would include impacts associated with vehicular traffic, as well as area sources such as energy use, landscaping, consumer products use, and architectural coatings use for maintenance purposes.

The *Carroll Canyon Mixed Use Draft Traffic Impact Analysis* (LOS Engineering 2015) calculated project trip generation rates based on the proposed development. According to the Traffic Impact Analysis, the project will generate 3,256 net cumulative ADT. The trip generation rates were accounted for within the CalEEMod Model runs for vehicular emissions.

Operational impacts associated with vehicular traffic and area sources including energy use, landscaping, consumer products use, hearth emissions, and architectural coatings use for maintenance purposes were estimated using the CalEEMod Model. The CalEEMod Model calculates vehicle emissions based on emission factors from the EMFAC2011 model. It was assumed that the first year of full occupancy would be 2017. Based on the results of the EMFAC2011 model for subsequent years, emissions would decrease on an annual basis from 2016 onward due to phase-out of higher polluting vehicles and implementation of more stringent emission standards that are taken into account in the EMFAC2011 model. Table 6 presents the results of the operational emission calculations, in lbs/day, along with a comparison with the significance criteria.

Table 6 Operational Emissions						
	ROG	**NOx**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Summer Day, Lbs/day						
Area Sources	9.61	0.25	21.67	0.001	0.12	0.12
Energy Use	0.11	0.99	0.60	0.006	0.08	0.08
Vehicular Emissions	10.02	17.73	85.33	0.18	12.30	3.43
TOTAL	**19.74**	**18.97**	**107.60**	**0.19**	**12.49**	**3.63**
Significance Screening Criteria	137	250	550	250	100	55
Above Screening Criteria?	*No*	*No*	*No*	*No*	*No*	*No*
Winter Day, Lbs/day						
Area Sources	9.61	0.25	21.67	0.001	0.12	0.12
Energy Use	0.11	0.99	0.60	0.006	0.08	0.08
Vehicular Emissions	10.79	18.80	93.68	0.17	12.30	3.43
TOTAL	**20.51**	**20.04**	**115.94**	**0.18**	**12.49**	**3.63**
Significance Screening Criteria	137	250	550	250	100	55
Above Screening Criteria?	*No*	*No*	*No*	*No*	*No*	*No*

Based on the estimates of the emissions associated with Project operations, the emissions of all criteria pollutants are below the significance thresholds.

Projects involving traffic impacts may result in the formation of locally high concentrations of CO, known as CO "hot spots." To verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO "hot spots" was conducted. The Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) were followed to determine whether a CO "hot spot" is likely to form due to project-generated traffic. In accordance with the Protocol, CO "hot spots" are typically evaluated when (a) the LOS of an intersection or roadway decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, commercial developments, schools, hospitals, etc. are located in the vicinity of the affected intersection or roadway segment.

The Traffic Impact Analysis evaluated whether or not there would be a decrease in the level of service at the intersections affected by the Project. The Traffic Impact Analysis identified a significant impact in the Near Term scenario at the intersection of Carroll Canyon Road and I-15 NB Ramps. The Traffic Impact Analysis identified significant impacts for the 2035 plus Project condition at the following three intersections:

- Carroll Canyon Road at Maya Linda Road
- Carroll Canyon Road at I-15 SB Ramps
- Carroll Canyon Road at I-15 NB Ramps

As recommended in the Protocol, CALINE4 modeling was conducted for the intersections identified above for the scenario without project traffic, and the project scenarios. Modeling was conducted based on the guidance in Appendix B of the Protocol to calculate maximum predicted 1-hour CO concentrations. Predicted 1-hour CO concentrations were then scaled to evaluate maximum predicted 8-hour CO concentrations using the recommended scaling factor of 0.7 for urban locations.

Inputs to the CALINE4 model were obtained from the Traffic Impact Analysis. As recommended in the Protocol, receptors were located at locations that were approximately 3 meters from the mixing zone, and at a height of 1.8 meters. Average approach and departure speeds were assumed to be 5 mph to account for congestion at the intersection and provide a worst case estimate of emissions. Emission factors for those speeds were estimated from the EMFAC2011 emissions model (ARB 2011).

In accordance with the Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol, it is also necessary to estimate future background CO concentrations in the project vicinity to determine the potential impact plus background and evaluate the potential for CO "hot spots" due to the project. As a conservative estimate of background CO concentrations, the existing maximum 1-hour background concentration of CO that was calculated using the persistence factor of 0.7 with the 8-hour concentration measured at the San Diego monitoring station for the period 2011 to 2013 of 3.96 ppm was used to represent future maximum background 1-hour CO concentrations. The existing maximum 8-hour background concentration of CO that was measured at the San Diego monitoring station during the period from 2009 to 2011 of 2.77 ppm was also used to provide a conservative estimate of the maximum 8-hour background concentrations in the project vicinity. CO concentrations in the future may be lower as inspection and maintenance programs and more stringent emission controls are placed on vehicles.

The CALINE4 model outputs are provided in Appendix A of this report. Table 7 presents a summary of the predicted CO concentrations (impact plus background) for the intersections evaluated. As shown in Table 7, the predicted CO concentrations would be substantially below the 1-hour and 8-hour NAAQS and CAAQS for CO shown in Table 1 of this report. Therefore, no exceedances of the CO standard are predicted, and the project would not cause or contribute to a violation of this air quality standard.

Table 7
CO "Hot Spots" Evaluation
Carroll Canyon Mixed Use Project
Predicted CO Concentrations, ppm

Intersection	**Impact**	
NEAR TERM		
Maximum 1-hour Concentration Plus Background, ppm CAAQS = 20 ppm; NAAQS = 35 ppm; Background 3.0 ppm		
	am	***pm***
Carroll Canyon Road and I-15 NB Ramps	4.5	4.4
Maximum 8-hour Concentration Plus Background, ppm CAAQS = 9.0 ppm; NAAQS = 9 ppm; Background 2.44 ppm		
Carroll Canyon Road and I-15 NB Ramps	3.49	
Intersection	**2035 Plus Project Impact**	
HORIZON YEAR		
Maximum 1-hour Concentration Plus Background, ppm CAAQS = 20 ppm; NAAQS = 35 ppm; Background 3.0 ppm		
	am	***pm***
Carroll Canyon Road and Maya Linda Road	3.4	3.4
Carroll Canyon Road and I-15 SB Ramps	3.5	3.5
Carroll Canyon Road and I-15 NB Ramps	3.5	3.5
Maximum 8-hour Concentration Plus Background, ppm CAAQS = 9.0 ppm; NAAQS = 9 ppm; Background 2.44 ppm		
Carroll Canyon Road and Maya Linda Road	2.72	
Carroll Canyon Road and I-15 SB Ramps	2.79	
Carroll Canyon Road and I-15 NB Ramps	2.79	

4.3 Cumulatively Considerable Net Increase of Nonattainment Pollutants

The Proposed Project would have a significant impact if it results in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors.

As discussed in Section 2.0, the SDAB is considered a nonattainment area for the 8-hour NAAQS for O_3, and is considered a nonattainment area for the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. An evaluation of emissions of nonattainment pollutants was conducted in Section 4.2, and it was determined that emissions of all nonattainment pollutants would be below the screening-level thresholds.

The region surrounding the Carroll Canyon Mixed Use Project is already developed; the project provides infill development. Because the project provides infill development, it would not be anticipated to increase vehicle trips in the region; rather, the project would serve the needs of providing a mix of uses, including residential uses and local retail to the community. Furthermore, the project provides a mix of uses which is consistent with the City's goals. The project would therefore not result in a cumulatively considerable increase emissions of ozone precursors (NOx and VOCs).

It is unlikely that several projects within the immediate vicinity of the Carroll Canyon Mixed Use Project; however, should construction occur simultaneously, standard dust control measures would ensure that cumulative impacts would not result. Cumulative impacts are less than significant.

4.4 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

The Proposed Project would have a significant impact if it exposes sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, parks, or day-care centers) to substantial pollutant concentrations.

The threshold concerns whether the project could expose sensitive receptors to substantial pollutant concentrations of TACs. If a project has the potential to result in emissions of any

TAC which result in a cancer risk of greater than 10 in 1 million or substantial non-cancer risk, the project would be deemed to have a potentially significant impact.

Air quality regulators typically define sensitive receptors as schools (Preschool-12th Grade), hospitals, resident care facilities, or day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Residential land uses may also be considered sensitive receptors. The nearest sensitive receptors to the site are the residents located to the east of the project site, approximately 0.1 miles from the project.

Emissions of TACs are attributable to temporary emissions from construction emissions, and minor emissions associated with diesel truck traffic used for deliveries at the site. Truck traffic may result in emissions of diesel particulate matter, which is characterized by the State of California as a toxic air contaminant (TAC). Certain types of projects are recommended to be evaluated for impacts associated with TACs. In accordance with the SCAQMD's "Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis" (SCAQMD 2003), projects that should be evaluated for diesel particulate emissions include truck stops, distribution centers, warehouses, and transit centers which diesel vehicles would utilize and which would be sources of diesel particulate matter from heavy-duty diesel trucks. Residential mixed-use projects such as the Carroll Canyon Mixed Use Project would not attract a disproportionate amount of diesel trucks and would not be considered a source of TAC emissions. Based on the CalEEMod Model, heavy-duty diesel trucks would account for only 0.9 percent of the total trips associated with the project. Impacts to sensitive receptors from TAC emissions would therefore be less than significant.

4.5 Objectionable Odors

The Proposed Project would have a significant impact if it creates objectionable odors affecting a substantial number of people.

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. These compounds would be emitted in various amounts and at various locations during construction. Sensitive receptors located in the vicinity of the construction site include the residences to the east of the site. Odors are highest near the source and would quickly dissipate offsite; any odors associated with construction would be temporary.

The Project is a residential/mixed use development and would not include land uses that would be sources of nuisance odors. Thus the potential for odor impacts associated with the project is less than significant.

5.0 Conclusions

As discussed in Section 4.0, impacts are less than significant. Standard dust control measures will be employed during construction. These standard dust control measures include the following:

- Watering active grading sites a minimum of three times daily
- Apply soil stabilizers to inactive construction sites
- Replace ground cover in disturbed areas as soon as possible
- Control dust during equipment loading/unloading (load moist material, ensure at least 12 inches of freeboard in haul trucks
- Reduce speeds on unpaved roads to 15 mph or less
- Water unpaved roads a minimum of three times daily

These dust control measures will reduce the amount of fugitive dust generated during construction. In addition to dust control measures, architectural coatings applied to interior and exterior surfaces will be required to meet the ROG limitations of SDAPCD Rule 67.0, which limits the ROG content of most coatings to 150 grams/liter. Coatings will also be applied using high volume, low pressure spray equipment to reduce overspray to the extent possible.

In summary, the proposed project would result in emissions of air pollutants for both the construction phase and operational phase of the project. The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction and operational emissions. Construction emissions would include emissions associated with fugitive dust, heavy construction equipment and construction worker commuting to and from the site. The project would employ dust control measures such as watering to control emissions during construction and use of low-ROG paints. Emissions are less than the significance thresholds for all pollutants during construction.

Operational emissions would include emissions associated with residential and retail operations, including area sources, energy use, and vehicle traffic. As discussed in Section 4.0, the impacts would be below the significance thresholds for all pollutants. Impacts from project-related traffic were evaluated to assess whether the project could result in CO "hot spots" due to project-related traffic. Impacts are less than significant.

Emissions of TACs or odors would not result in a significant impact to the project, and project emissions of TACs and odors would be less than significant.

6.0 References

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Appendix A

CalEEMod Model Output

CALINE4 Model Outputs

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

                JOB: Carroll Cyn and I15 NB NT am
                RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

          U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
        BRG= WORST CASE           VD=  0.0 CM/S
       CLAS=     7 (G)            VS=  0.0 CM/S
       MIXH= 1000. M             AMB=  0.0 PPM
      SIGTH=   10. DEGREES       TEMP= 19.0 DEGREE (C)


   II.  LINK VARIABLES

        LINK      *  LINK COORDINATES (M)   *              EF     H     W
     DESCRIPTION  *   X1     Y1     X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
  ----------------*-------------------------*-----------------------------
-
  A. CC EBLA      *  9036   580  9186   580 *  AG    227   5.0    0.0
10.0
  B. CC EBTA      *  9036   576  9186   576 *  AG    519   5.0    0.0
10.0
  C. CC EBD       *  9186   576  9336   576 *  AG   1233   5.0    0.0
10.0
  D. CC WBTA      *  9336   584  9186   584 *  AG   1068   5.0    0.0
10.0
  E. CC WBRA      *  9336   587  9186   587 *  AG    165   5.0    0.0
10.0
  F. CC WBD       *  9186   584  9036   584 *  AG   1957   5.0    0.0
10.0
  G. I15NBLA      *  9166   432  9186   580 *  AG    889   5.0    0.0
10.0
  H. I15NBTRA     *  9170   432  9190   580 *  AG    715   5.0    0.0
10.0
  I. I15NBD       *  9186   580  9166   732 *  AG    392   5.0    0.0
10.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and I15 NB NT am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	9176	595	1.8
2. Recpt 2	9156	595	1.8
3. Recpt 3	9136	595	1.8
4. Recpt 4	9170	615	1.8
5. Recpt 5	9164	635	1.8
6. Recpt 6	9176	568	1.8
7. Recpt 7	9156	568	1.8
8. Recpt 8	9136	568	1.8
9. Recpt 9	9172	548	1.8
10. Recpt 10	9168	528	1.8
11. Recpt 11	9190	528	1.8
12. Recpt 12	9194	548	1.8
13. Recpt 13	9198	568	1.8
14. Recpt 14	9218	568	1.8
15. Recpt 15	9238	568	1.8
16. Recpt 16	9198	594	1.8
17. Recpt 17	9218	594	1.8
18. Recpt 18	9238	594	1.8
19. Recpt 19	9194	614	1.8
20. Recpt 20	9190	634	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and I15 NB NT am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F	G	H
			CONC/LINK (PPM)							
1. Recpt 1	174.	1.2	0.1	0.1	0.0	0.0	0.0	0.5	0.4	0.3
2. Recpt 2	120.	1.1	0.0	0.1	0.2	0.1	0.0	0.6	0.1	0.1
3. Recpt 3	107.	1.1	0.0	0.1	0.3	0.1	0.0	0.5	0.1	0.0
4. Recpt 4	170.	0.8	0.0	0.1	0.0	0.0	0.0	0.3	0.2	0.2
5. Recpt 5	170.	0.6	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2
6. Recpt 6	78.	1.5	0.0	0.0	0.7	0.4	0.1	0.0	0.3	0.2
7. Recpt 7	80.	1.2	0.0	0.1	0.4	0.3	0.1	0.0	0.1	0.1
8. Recpt 8	80.	1.1	0.0	0.2	0.3	0.3	0.1	0.1	0.1	0.1
9. Recpt 9	68.	1.0	0.0	0.0	0.3	0.2	0.0	0.0	0.3	0.2
10. Recpt 10	35.	0.9	0.0	0.0	0.2	0.1	0.0	0.0	0.3	0.2
11. Recpt 11	350.	1.1	0.0	0.1	0.0	0.0	0.0	0.2	0.3	0.4
12. Recpt 12	344.	1.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.3
13. Recpt 13	285.	1.5	0.1	0.3	0.1	0.0	0.0	0.6	0.2	0.2
14. Recpt 14	284.	1.4	0.1	0.1	0.4	0.0	0.0	0.5	0.1	0.1
15. Recpt 15	281.	1.3	0.1	0.1	0.5	0.1	0.0	0.4	0.1	0.1
16. Recpt 16	196.	1.4	0.0	0.0	0.2	0.3	0.1	0.0	0.4	0.4
17. Recpt 17	258.	1.1	0.1	0.2	0.0	0.1	0.1	0.6	0.0	0.0
18. Recpt 18	258.	1.1	0.1	0.2	0.1	0.3	0.1	0.3	0.0	0.0
19. Recpt 19	189.	1.1	0.0	0.0	0.1	0.1	0.0	0.1	0.4	0.3
20. Recpt 20	186.	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2

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              CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                       JUNE 1989 VERSION
                       PAGE   4

                  JOB: Carroll Cyn and I15 NB NT am
                  RUN: Hour 1           (WORST CASE ANGLE)
           POLLUTANT: Carbon Monoxide


   IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

              *CONC/LINK
              * (PPM)
   RECEPTOR   *   I
 ------------*-----
  1. Recpt 1  *  0.0
  2. Recpt 2  *  0.0
  3. Recpt 3  *  0.0
  4. Recpt 4  *  0.0
  5. Recpt 5  *  0.0
  6. Recpt 6  *  0.0
  7. Recpt 7  *  0.0
  8. Recpt 8  *  0.0
  9. Recpt 9  *  0.0
 10. Recpt 10 *  0.0
 11. Recpt 11 *  0.1
 12. Recpt 12 *  0.1
 13. Recpt 13 *  0.0
 14. Recpt 14 *  0.0
 15. Recpt 15 *  0.0
 16. Recpt 16 *  0.0
 17. Recpt 17 *  0.1
 18. Recpt 18 *  0.0
 19. Recpt 19 *  0.1
 20. Recpt 20 *  0.1
```

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              CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                       JUNE 1989 VERSION
                       PAGE   1

                  JOB: Carroll Cyn and I15 NB NT pm
                  RUN: Hour 1            (WORST CASE ANGLE)
            POLLUTANT: Carbon Monoxide


     I.  SITE VARIABLES

          U=   0.5 M/S              Z0= 100. CM             ALT=     0. (M)
        BRG= WORST CASE             VD=  0.0 CM/S
       CLAS=     7 (G)              VS=  0.0 CM/S
       MIXH= 1000. M               AMB=  0.0 PPM
      SIGTH=   10. DEGREES        TEMP= 19.0 DEGREE (C)


    II.  LINK VARIABLES

        LINK       *  LINK COORDINATES (M)   *              EF     H     W
     DESCRIPTION   *  X1     Y1     X2     Y2  * TYPE  VPH  (G/MI)  (M)   (M)
   ----------------*-------------------------*-----------------------------
-
   A. CC EBLA      *  9036   580  9186   580 *  AG    419   5.0    0.0
10.0
   B. CC EBTA      *  9036   576  9186   576 *  AG    694   5.0    0.0
10.0
   C. CC EBD       *  9186   576  9336   576 *  AG   1332   5.0    0.0
10.0
   D. CC WBTA      *  9336   584  9186   584 *  AG    759   5.0    0.0
10.0
   E. CC WBRA      *  9336   587  9186   587 *  AG    304   5.0    0.0
10.0
   F. CC WBD       *  9186   584  9036   584 *  AG   1194   5.0    0.0
10.0
   G. I15NBLA      *  9166   432  9186   580 *  AG    435   5.0    0.0
10.0
   H. I15NBTRA     *  9170   432  9190   580 *  AG    642   5.0    0.0
10.0
   I. I15NBD       *  9186   580  9166   732 *  AG   1453   5.0    0.0
10.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and I15 NB NT pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	9176	595	1.8
2. Recpt 2	9156	595	1.8
3. Recpt 3	9136	595	1.8
4. Recpt 4	9170	615	1.8
5. Recpt 5	9164	635	1.8
6. Recpt 6	9176	568	1.8
7. Recpt 7	9156	568	1.8
8. Recpt 8	9136	568	1.8
9. Recpt 9	9172	548	1.8
10. Recpt 10	9168	528	1.8
11. Recpt 11	9190	528	1.8
12. Recpt 12	9194	548	1.8
13. Recpt 13	9198	568	1.8
14. Recpt 14	9218	568	1.8
15. Recpt 15	9238	568	1.8
16. Recpt 16	9198	594	1.8
17. Recpt 17	9218	594	1.8
18. Recpt 18	9238	594	1.8
19. Recpt 19	9194	614	1.8
20. Recpt 20	9190	634	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and I15 NB NT pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	104.	1.3	0.0	0.0	0.4	0.3	0.2	0.0	0.0	0.0
2. Recpt 2	103.	1.1	0.0	0.0	0.4	0.3	0.1	0.1	0.0	0.0
3. Recpt 3	103.	1.1	0.0	0.0	0.3	0.2	0.1	0.3	0.0	0.0
4. Recpt 4	113.	0.9	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0
5. Recpt 5	146.	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
6. Recpt 6	78.	1.4	0.0	0.0	0.7	0.3	0.1	0.0	0.1	0.2
7. Recpt 7	79.	1.2	0.0	0.2	0.4	0.3	0.1	0.0	0.1	0.1
8. Recpt 8	78.	1.2	0.1	0.3	0.2	0.2	0.1	0.1	0.0	0.0
9. Recpt 9	68.	0.8	0.0	0.0	0.3	0.2	0.1	0.0	0.1	0.2
10. Recpt 10	60.	0.7	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.2
11. Recpt 11	353.	1.2	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.4
12. Recpt 12	347.	1.2	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2
13. Recpt 13	284.	1.3	0.2	0.4	0.1	0.0	0.0	0.4	0.1	0.2
14. Recpt 14	284.	1.4	0.1	0.2	0.4	0.0	0.0	0.4	0.1	0.1
15. Recpt 15	282.	1.3	0.1	0.1	0.6	0.1	0.0	0.3	0.0	0.0
16. Recpt 16	257.	1.3	0.2	0.2	0.0	0.0	0.0	0.5	0.0	0.0
17. Recpt 17	257.	1.2	0.2	0.2	0.0	0.1	0.1	0.4	0.0	0.0
18. Recpt 18	259.	1.2	0.1	0.2	0.1	0.2	0.2	0.3	0.0	0.0
19. Recpt 19	191.	1.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.2
20. Recpt 20	187.	1.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2

```
              CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                       JUNE 1989 VERSION
                       PAGE   4

                  JOB: Carroll Cyn and I15 NB NT pm
                  RUN: Hour 1            (WORST CASE ANGLE)
           POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)      (CONT.)

              *CONC/LINK
              * (PPM)
  RECEPTOR    *   I
 ------------*-----
  1. Recpt 1  *  0.4
  2. Recpt 2  *  0.2
  3. Recpt 3  *  0.1
  4. Recpt 4  *  0.4
  5. Recpt 5  *  0.4
  6. Recpt 6  *  0.0
  7. Recpt 7  *  0.0
  8. Recpt 8  *  0.1
  9. Recpt 9  *  0.0
 10. Recpt 10 *  0.0
 11. Recpt 11 *  0.4
 12. Recpt 12 *  0.5
 13. Recpt 13 *  0.0
 14. Recpt 14 *  0.0
 15. Recpt 15 *  0.1
 16. Recpt 16 *  0.3
 17. Recpt 17 *  0.2
 18. Recpt 18 *  0.1
 19. Recpt 19 *  0.2
 20. Recpt 20 *  0.4
```

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: Carroll Cyn and Maya Linda 2035 am
               RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S             Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE            VD=  0.0 CM/S
     CLAS=     7 (G)             VS=  0.0 CM/S
     MIXH= 1000. M              AMB=  0.0 PPM
    SIGTH=   10. DEGREES       TEMP= 19.0 DEGREE (C)


  II.  LINK VARIABLES

       LINK       *  LINK COORDINATES (M)    *               EF     H     W
    DESCRIPTION   *   X1     Y1     X2     Y2   * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*------------------------*-----------------------------
-
  A. CC EBLA      *   814    571    963    580 *  AG     20    1.5    0.0
10.0
  B. CC EBTA      *   814    568    963    577 *  AG    840    1.5    0.0
10.0
  C. CC EBRA      *   814    565    963    574 *  AG     40    1.5    0.0
10.0
  D. CC EBD       *   963    577   1113    581 *  AG   1218    1.5    0.0
10.0
  E. CC WBLA      *  1113    584    963    580 *  AG    150    1.5    0.0
10.0
  F. CC WBTA      *  1113    587    963    583 *  AG   2032    1.5    0.0
10.0
  G. CC WBRA      *  1113    590    963    586 *  AG    278    1.5    0.0
10.0
  H. CC WBD       *   963    583    814    574 *  AG   2092    1.5    0.0
10.0
  I. ML NBLA      *   922    438    963    580 *  AG     40    1.5    0.0
10.0
  J. ML NBTA      *   925    438    966    580 *  AG     40    1.5    0.0
10.0
  K. ML NBRA      *   928    438    969    580 *  AG    114    1.5    0.0
10.0
  L. ML NBD1      *   966    580    969    652 *  AG   1030    1.5    0.0
10.0
  M. ML NBD2      *   969    652   1003    724 *  AG    338    1.5    0.0
10.0
  N. ML SBLA1     *  1000    724    966    652 *  AG    264    1.5    0.0
10.0
```

```
  O. ML SBLA2      *   966   652   963   580 *  AG    264   1.5    0.0
10.0
  P. ML SBTA1      *   997   724   963   652 *  AG     30   1.5    0.0
10.0
  Q. ML SBTA2      *   963   652   960   580 *  AG     30   0.0    0.0
10.0
  R. ML SBRA1      *   994   724   960   652 *  AG     20   0.0    0.0
10.0
  S. ML SBRA2      *   960   652   957   580 *  AG     20   0.0    0.0
10.0
  T. ML SBD        *   960   580   919   438 *  AG    220   0.0    0.0
10.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and Maya Linda 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	947	596	1.8
2. Recpt 2	927	595	1.8
3. Recpt 3	907	594	1.8
4. Recpt 4	948	616	1.8
5. Recpt 5	949	636	1.8
6. Recpt 6	942	565	1.8
7. Recpt 7	922	563	1.8
8. Recpt 8	902	561	1.8
9. Recpt 9	940	547	1.8
10. Recpt 10	933	527	1.8
11. Recpt 11	976	568	1.8
12. Recpt 12	996	569	1.8
13. Recpt 13	1016	570	1.8
14. Recpt 14	968	552	1.8
15. Recpt 15	963	534	1.8
16. Recpt 16	976	598	1.8
17. Recpt 17	996	599	1.8
18. Recpt 18	1016	600	1.8
19. Recpt 19	977	618	1.8
20. Recpt 20	978	638	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and Maya Linda 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	103.	0.4	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0
2. Recpt 2	101.	0.4	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0
3. Recpt 3	99.	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
4. Recpt 4	111.	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
5. Recpt 5	119.	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
6. Recpt 6	74.	0.4	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0
7. Recpt 7	74.	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
8. Recpt 8	75.	0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0
9. Recpt 9	22.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10. Recpt 10	22.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11. Recpt 11	346.	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
12. Recpt 12	72.	0.4	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0
13. Recpt 13	288.	0.4	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0
14. Recpt 14	360.	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
15. Recpt 15	3.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. Recpt 16	250.	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
17. Recpt 17	252.	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
18. Recpt 18	253.	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
19. Recpt 19	202.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20. Recpt 20	200.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Carroll Cyn and Maya Linda 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

		CONC/LINK (PPM)											
RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
1. Recpt 1	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Recpt 5	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. Recpt 6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. Recpt 7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Recpt 8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. Recpt 9	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. Recpt 10	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. Recpt 11	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. Recpt 12	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. Recpt 13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14. Recpt 14	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. Recpt 15	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. Recpt 16	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17. Recpt 17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. Recpt 18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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 19. Recpt 19 *  0.0  0.0  0.0  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
0.0
 20. Recpt 20 *  0.0  0.0  0.0  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0
0.0
```

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

                JOB: Carroll Cyn and Maya Linda 2035 pm
                RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

          U=   0.5 M/S              Z0= 100. CM             ALT=     0. (M)
        BRG= WORST CASE             VD=  0.0 CM/S
       CLAS=     7 (G)              VS=  0.0 CM/S
       MIXH= 1000. M               AMB=  0.0 PPM
      SIGTH=   10. DEGREES        TEMP= 19.0 DEGREE (C)


   II.  LINK VARIABLES

        LINK       *  LINK COORDINATES (M)   *              EF     H     W
     DESCRIPTION   *  X1    Y1    X2    Y2   * TYPE  VPH  (G/MI)  (M)   (M)
  ----------------*------------------------*-----------------------------
-
  A. CC EBLA      *   814   571   963   580 *  AG     20   1.5    0.0
10.0
  B. CC EBTA      *   814   568   963   577 *  AG   1462   1.5    0.0
10.0
  C. CC EBRA      *   814   565   963   574 *  AG     30   1.5    0.0
10.0
  D. CC EBD       *   963   577  1113   581 *  AG   1816   1.5    0.0
10.0
  E. CC WBLA      *  1113   584   963   580 *  AG     88   1.5    0.0
10.0
  F. CC WBTA      *  1113   587   963   583 *  AG   1038   1.5    0.0
10.0
  G. CC WBRA      *  1113   590   963   586 *  AG    297   1.5    0.0
10.0
  H. CC WBD       *   963   583   814   574 *  AG   1108   1.5    0.0
10.0
  I. ML NBLA      *   922   438   963   580 *  AG     40   1.5    0.0
10.0
  J. ML NBTA      *   925   438   966   580 *  AG     60   1.5    0.0
10.0
  K. ML NBRA      *   928   438   969   580 *  AG    354   1.5    0.0
10.0
  L. ML NBD1      *   966   580   969   652 *  AG    377   1.5    0.0
10.0
  M. ML NBD2      *   969   652  1003   724 *  AG    377   1.5    0.0
10.0
  N. ML SBLA1     *  1000   724   966   652 *  AG    192   1.5    0.0
10.0
```

```
  O. ML SBLA2     *   966   652   963   580 *  AG    192   1.5    0.0
10.0
  P. ML SBTA1     *   997   724   963   652 *  AG     30   1.5    0.0
10.0
  Q. ML SBTA2     *   963   652   960   580 *  AG     30   0.0    0.0
10.0
  R. ML SBRA1     *   994   724   960   652 *  AG     30   0.0    0.0
10.0
  S. ML SBRA2     *   960   652   957   580 *  AG     30   0.0    0.0
10.0
  T. ML SBD       *   960   580   919   438 *  AG    148   0.0    0.0
10.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and Maya Linda 2035 pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	947	596	1.8
2. Recpt 2	927	595	1.8
3. Recpt 3	907	594	1.8
4. Recpt 4	948	616	1.8
5. Recpt 5	949	636	1.8
6. Recpt 6	942	565	1.8
7. Recpt 7	922	563	1.8
8. Recpt 8	902	561	1.8
9. Recpt 9	940	547	1.8
10. Recpt 10	933	527	1.8
11. Recpt 11	976	568	1.8
12. Recpt 12	996	569	1.8
13. Recpt 13	1016	570	1.8
14. Recpt 14	968	552	1.8
15. Recpt 15	963	534	1.8
16. Recpt 16	976	598	1.8
17. Recpt 17	996	599	1.8
18. Recpt 18	1016	600	1.8
19. Recpt 19	977	618	1.8
20. Recpt 20	978	638	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and Maya Linda 2035 pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	104.	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
2. Recpt 2	101.	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
3. Recpt 3	99.	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
4. Recpt 4	111.	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
5. Recpt 5	119.	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
6. Recpt 6	75.	0.4	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0
7. Recpt 7	75.	0.4	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0
8. Recpt 8	76.	0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0
9. Recpt 9	67.	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
10. Recpt 10	59.	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
11. Recpt 11	73.	0.4	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0
12. Recpt 12	73.	0.4	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0
13. Recpt 13	283.	0.4	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.1
14. Recpt 14	360.	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
15. Recpt 15	3.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. Recpt 16	200.	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
17. Recpt 17	250.	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
18. Recpt 18	251.	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
19. Recpt 19	197.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20. Recpt 20	195.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Carroll Cyn and Maya Linda 2035 pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

CONC/LINK (PPM)

RECEPTOR	I	J	K	L	M	N	O	P	Q	R	S	T
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Recpt 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. Recpt 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. Recpt 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Recpt 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. Recpt 9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. Recpt 10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. Recpt 11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. Recpt 12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. Recpt 13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14. Recpt 14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. Recpt 15	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. Recpt 16	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17. Recpt 17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. Recpt 18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

19. Recpt 19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0
20. Recpt 20 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Carroll Cyn and I15 SB 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S	Z0= 100. CM	ALT= 0. (M)
BRG= WORST CASE	VD= 0.0 CM/S	
CLAS= 7 (G)	VS= 0.0 CM/S	
MIXH= 1000. M	AMB= 0.0 PPM	
SIGTH= 10. DEGREES	TEMP= 19.0 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CC EBTA	8904	576	9054	576	AG	598	1.5	0.0	10.0
B. CC EBRA	8904	572	9054	572	AG	620	1.5	0.0	10.0
C. CC EBD	9054	576	9204	576	AG	1036	1.5	0.0	10.0
D. CC WBLA	9204	580	9054	580	AG	629	1.5	0.0	10.0
E. CC WBTA	9204	584	9054	584	AG	1700	1.5	0.0	10.0
F. CC WBD	9054	584	8904	584	AG	2460	1.5	0.0	10.0
G. I15SBLA	9067	737	9054	580	AG	438	1.5	0.0	10.0
H. I15SBTRA	9069	737	9057	580	AG	770	1.5	0.0	10.0
I. I15SBD	9054	580	9067	427	AG	1249	1.5	0.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and I15 SB 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	9046	593	1.8
2. Recpt 2	9026	593	1.8
3. Recpt 3	9006	593	1.8
4. Recpt 4	9048	613	1.8
5. Recpt 5	9050	633	1.8
6. Recpt 6	9068	633	1.8
7. Recpt 7	9066	613	1.8
8. Recpt 8	9064	593	1.8
9. Recpt 9	9084	593	1.8
10. Recpt 10	9104	593	1.8
11. Recpt 11	9046	562	1.8
12. Recpt 12	9026	562	1.8
13. Recpt 13	9006	562	1.8
14. Recpt 14	9048	542	1.8
15. Recpt 15	9050	522	1.8
16. Recpt 16	9068	522	1.8
17. Recpt 17	9066	542	1.8
18. Recpt 18	9064	562	1.8
19. Recpt 19	9084	562	1.8
20. Recpt 20	9104	562	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and I15 SB 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	104.	0.5	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.1
2. Recpt 2	104.	0.5	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.0
3. Recpt 3	102.	0.5	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.0
4. Recpt 4	170.	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
5. Recpt 5	173.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
6. Recpt 6	197.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
7. Recpt 7	198.	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
8. Recpt 8	255.	0.5	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.1
9. Recpt 9	257.	0.5	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.0
10. Recpt 10	258.	0.5	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0
11. Recpt 11	16.	0.4	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1
12. Recpt 12	72.	0.4	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
13. Recpt 13	76.	0.4	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
14. Recpt 14	11.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
15. Recpt 15	7.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
16. Recpt 16	337.	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
17. Recpt 17	295.	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
18. Recpt 18	287.	0.4	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0
19. Recpt 19	283.	0.4	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0
20. Recpt 20	283.	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   4

              JOB: Carroll Cyn and I15 SB 2035 am
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

            *CONC/LINK
            * (PPM)
 RECEPTOR   *   I
------------*-----
 1. Recpt 1  *  0.0
 2. Recpt 2  *  0.0
 3. Recpt 3  *  0.0
 4. Recpt 4  *  0.1
 5. Recpt 5  *  0.1
 6. Recpt 6  *  0.0
 7. Recpt 7  *  0.1
 8. Recpt 8  *  0.0
 9. Recpt 9  *  0.0
10. Recpt 10 *  0.0
11. Recpt 11 *  0.1
12. Recpt 12 *  0.1
13. Recpt 13 *  0.0
14. Recpt 14 *  0.1
15. Recpt 15 *  0.1
16. Recpt 16 *  0.2
17. Recpt 17 *  0.1
18. Recpt 18 *  0.1
19. Recpt 19 *  0.1
20. Recpt 20 *  0.0
```

```
             CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                      JUNE 1989 VERSION
                      PAGE   1

                 JOB: Carroll Cyn and I15 SB 2035 pm
                 RUN: Hour 1           (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


     I.  SITE VARIABLES

           U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
         BRG= WORST CASE           VD=  0.0 CM/S
        CLAS=     7 (G)            VS=  0.0 CM/S
        MIXH= 1000. M             AMB=  0.0 PPM
       SIGTH=   10. DEGREES      TEMP= 19.0 DEGREE (C)


    II.  LINK VARIABLES

         LINK       *  LINK COORDINATES (M)    *              EF     H     W
      DESCRIPTION   *   X1     Y1    X2     Y2  * TYPE  VPH  (G/MI)  (M)   (M)
   ----------------*-------------------------*-----------------------------
-
   A. CC EBTA      *  8904   576  9054   576 *  AG   1228   1.5    0.0
10.0
   B. CC EBRA      *  8904   572  9054   572 *  AG    790   1.5    0.0
10.0
   C. CC EBD       *  9054   576  9204   576 *  AG   1522   1.5    0.0
10.0
   D. CC WBLA      *  9204   580  9054   580 *  AG    624   1.5    0.0
10.0
   E. CC WBTA      *  9204   584  9054   584 *  AG    963   1.5    0.0
10.0
   F. CC WBD       *  9054   584  8904   584 *  AG   1423   1.5    0.0
10.0
   G. I15SBLA      *  9067   737  9054   580 *  AG    294   1.5    0.0
10.0
   H. I15SBTRA     *  9069   737  9057   580 *  AG    470   1.5    0.0
10.0
   I. I15SBD       *  9054   580  9067   427 *  AG   1414   1.5    0.0
10.0
```

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   2

                JOB: Carroll Cyn and I15 SB 2035 pm
                RUN: Hour 1           (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

              *    COORDINATES (M)
   RECEPTOR   *    X       Y      Z
 -------------*---------------------
  1. Recpt 1  *   9046    593    1.8
  2. Recpt 2  *   9026    593    1.8
  3. Recpt 3  *   9006    593    1.8
  4. Recpt 4  *   9048    613    1.8
  5. Recpt 5  *   9050    633    1.8
  6. Recpt 6  *   9068    633    1.8
  7. Recpt 7  *   9066    613    1.8
  8. Recpt 8  *   9064    593    1.8
  9. Recpt 9  *   9084    593    1.8
 10. Recpt 10 *   9104    593    1.8
 11. Recpt 11 *   9046    562    1.8
 12. Recpt 12 *   9026    562    1.8
 13. Recpt 13 *   9006    562    1.8
 14. Recpt 14 *   9048    542    1.8
 15. Recpt 15 *   9050    522    1.8
 16. Recpt 16 *   9068    522    1.8
 17. Recpt 17 *   9066    542    1.8
 18. Recpt 18 *   9064    562    1.8
 19. Recpt 19 *   9084    562    1.8
 20. Recpt 20 *   9104    562    1.8
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and I15 SB 2035 pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	167.	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	104.	0.4	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
3. Recpt 3	102.	0.4	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
4. Recpt 4	172.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Recpt 5	174.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. Recpt 6	193.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
7. Recpt 7	195.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
8. Recpt 8	255.	0.5	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.1
9. Recpt 9	255.	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0
10. Recpt 10	256.	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0
11. Recpt 11	22.	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
12. Recpt 12	72.	0.4	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
13. Recpt 13	76.	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
14. Recpt 14	11.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
15. Recpt 15	9.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. Recpt 16	335.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17. Recpt 17	293.	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
18. Recpt 18	285.	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
19. Recpt 19	283.	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
20. Recpt 20	282.	0.4	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   4

                JOB: Carroll Cyn and I15 SB 2035 pm
                RUN: Hour 1           (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

            *CONC/LINK
            * (PPM)
 RECEPTOR   *   I
------------*-----
 1. Recpt 1  *  0.2
 2. Recpt 2  *  0.0
 3. Recpt 3  *  0.0
 4. Recpt 4  *  0.2
 5. Recpt 5  *  0.1
 6. Recpt 6  *  0.1
 7. Recpt 7  *  0.1
 8. Recpt 8  *  0.0
 9. Recpt 9  *  0.0
10. Recpt 10 *  0.0
11. Recpt 11 *  0.1
12. Recpt 12 *  0.1
13. Recpt 13 *  0.0
14. Recpt 14 *  0.1
15. Recpt 15 *  0.2
16. Recpt 16 *  0.2
17. Recpt 17 *  0.1
18. Recpt 18 *  0.1
19. Recpt 19 *  0.1
20. Recpt 20 *  0.0
```

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: Carroll Cyn and I15 NB 2035 am
     RUN: Hour 1           (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide


I.  SITE VARIABLES

     U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
   BRG= WORST CASE           VD=  0.0 CM/S
  CLAS=     7 (G)            VS=  0.0 CM/S
  MIXH= 1000. M             AMB=  0.0 PPM
 SIGTH=   10. DEGREES      TEMP= 19.0 DEGREE (C)


II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)    *              EF     H     W
   DESCRIPTION   *  X1     Y1     X2     Y2  * TYPE  VPH  (G/MI)  (M)   (M)
  ----------------*-------------------------*-----------------------------
-
  A. CC EBLA      *  9036   580  9186   580 *  AG    370   1.5    0.0
10.0
  B. CC EBTA      *  9036   576  9186   576 *  AG    666   1.5    0.0
10.0
  C. CC EBD       *  9186   576  9336   576 *  AG   1399   1.5    0.0
10.0
  D. CC WBTA      *  9336   584  9186   584 *  AG   1199   1.5    0.0
10.0
  E. CC WBRA      *  9336   587  9186   587 *  AG    217   1.5    0.0
10.0
  F. CC WBD       *  9186   584  9036   584 *  AG   2329   1.5    0.0
10.0
  G. I15NBLA      *  9166   432  9186   580 *  AG   1130   1.5    0.0
10.0
  H. I15NBTRA     *  9170   432  9190   580 *  AG    743   1.5    0.0
10.0
  I. I15NBD       *  9186   580  9166   732 *  AG    587   1.5    0.0
10.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and I15 NB 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	9176	595	1.8
2. Recpt 2	9156	595	1.8
3. Recpt 3	9136	595	1.8
4. Recpt 4	9170	615	1.8
5. Recpt 5	9164	635	1.8
6. Recpt 6	9176	568	1.8
7. Recpt 7	9156	568	1.8
8. Recpt 8	9136	568	1.8
9. Recpt 9	9172	548	1.8
10. Recpt 10	9168	528	1.8
11. Recpt 11	9190	528	1.8
12. Recpt 12	9194	548	1.8
13. Recpt 13	9198	568	1.8
14. Recpt 14	9218	568	1.8
15. Recpt 15	9238	568	1.8
16. Recpt 16	9198	594	1.8
17. Recpt 17	9218	594	1.8
18. Recpt 18	9238	594	1.8
19. Recpt 19	9194	614	1.8
20. Recpt 20	9190	634	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and I15 NB 2035 am
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	174.	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1
2. Recpt 2	120.	0.4	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0
3. Recpt 3	110.	0.4	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0
4. Recpt 4	170.	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
5. Recpt 5	170.	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
6. Recpt 6	77.	0.5	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1
7. Recpt 7	79.	0.4	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
8. Recpt 8	79.	0.4	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
9. Recpt 9	68.	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
10. Recpt 10	35.	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
11. Recpt 11	350.	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
12. Recpt 12	345.	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
13. Recpt 13	285.	0.5	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.1
14. Recpt 14	283.	0.5	0.0	0.1	0.1	0.0	0.0	0.2	0.0	0.0
15. Recpt 15	281.	0.5	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
16. Recpt 16	197.	0.5	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1
17. Recpt 17	258.	0.4	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
18. Recpt 18	258.	0.4	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0
19. Recpt 19	190.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
20. Recpt 20	186.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1

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            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   4

                JOB: Carroll Cyn and I15 NB 2035 am
                RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

             *CONC/LINK
             * (PPM)
 RECEPTOR    *   I
------------*-----
 1. Recpt 1  *  0.0
 2. Recpt 2  *  0.0
 3. Recpt 3  *  0.0
 4. Recpt 4  *  0.0
 5. Recpt 5  *  0.0
 6. Recpt 6  *  0.0
 7. Recpt 7  *  0.0
 8. Recpt 8  *  0.0
 9. Recpt 9  *  0.0
10. Recpt 10 *  0.0
11. Recpt 11 *  0.0
12. Recpt 12 *  0.1
13. Recpt 13 *  0.0
14. Recpt 14 *  0.0
15. Recpt 15 *  0.0
16. Recpt 16 *  0.0
17. Recpt 17 *  0.0
18. Recpt 18 *  0.0
19. Recpt 19 *  0.0
20. Recpt 20 *  0.1
```

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

                JOB: Carroll Cyn and I15 NB 2035 pm
                RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
        U=   0.5 M/S            Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   10. DEGREES      TEMP= 19.0 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CC EBLA	9036	580	9186	580	AG	630	1.5	0.0	10.0
B. CC EBTA	9036	576	9186	576	AG	882	1.5	0.0	10.0
C. CC EBD	9186	576	9336	576	AG	1574	1.5	0.0	10.0
D. CC WBTA	9336	584	9186	584	AG	957	1.5	0.0	10.0
E. CC WBRA	9336	587	9186	587	AG	334	1.5	0.0	10.0
F. CC WBD	9186	584	9036	584	AG	1587	1.5	0.0	10.0
G. I15NBLA	9166	432	9186	580	AG	630	1.5	0.0	10.0
H. I15NBTRA	9170	432	9190	580	AG	702	1.5	0.0	10.0
I. I15NBD	9186	580	9166	732	AG	964	1.5	0.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Carroll Cyn and I15 NB 2035 pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	9176	595	1.8
2. Recpt 2	9156	595	1.8
3. Recpt 3	9136	595	1.8
4. Recpt 4	9170	615	1.8
5. Recpt 5	9164	635	1.8
6. Recpt 6	9176	568	1.8
7. Recpt 7	9156	568	1.8
8. Recpt 8	9136	568	1.8
9. Recpt 9	9172	548	1.8
10. Recpt 10	9168	528	1.8
11. Recpt 11	9190	528	1.8
12. Recpt 12	9194	548	1.8
13. Recpt 13	9198	568	1.8
14. Recpt 14	9218	568	1.8
15. Recpt 15	9238	568	1.8
16. Recpt 16	9198	594	1.8
17. Recpt 17	9218	594	1.8
18. Recpt 18	9238	594	1.8
19. Recpt 19	9194	614	1.8
20. Recpt 20	9190	634	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Carroll Cyn and I15 NB 2035 pm
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	104.	0.4	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
2. Recpt 2	106.	0.4	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0
3. Recpt 3	107.	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
4. Recpt 4	162.	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
5. Recpt 5	159.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. Recpt 6	77.	0.5	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1
7. Recpt 7	78.	0.4	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
8. Recpt 8	78.	0.4	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
9. Recpt 9	68.	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
10. Recpt 10	35.	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
11. Recpt 11	352.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
12. Recpt 12	347.	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
13. Recpt 13	284.	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1
14. Recpt 14	283.	0.5	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
15. Recpt 15	281.	0.5	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0
16. Recpt 16	255.	0.4	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0
17. Recpt 17	257.	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
18. Recpt 18	259.	0.4	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0
19. Recpt 19	190.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
20. Recpt 20	186.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1

```
             CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                      JUNE 1989 VERSION
                      PAGE   4

                 JOB: Carroll Cyn and I15 NB 2035 pm
                 RUN: Hour 1           (WORST CASE ANGLE)
           POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

              *CONC/LINK
              * (PPM)
  RECEPTOR    *   I
 ------------*-----
  1. Recpt 1  *  0.1
  2. Recpt 2  *  0.0
  3. Recpt 3  *  0.0
  4. Recpt 4  *  0.0
  5. Recpt 5  *  0.1
  6. Recpt 6  *  0.0
  7. Recpt 7  *  0.0
  8. Recpt 8  *  0.0
  9. Recpt 9  *  0.0
 10. Recpt 10 *  0.0
 11. Recpt 11 *  0.1
 12. Recpt 12 *  0.1
 13. Recpt 13 *  0.0
 14. Recpt 14 *  0.0
 15. Recpt 15 *  0.0
 16. Recpt 16 *  0.1
 17. Recpt 17 *  0.0
 18. Recpt 18 *  0.0
 19. Recpt 19 *  0.0
 20. Recpt 20 *  0.1
```

Carroll Canyon Mixed Use Project

San Diego Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	260.00	Dwelling Unit	6.30	260,000.00	744
General Office Building	4.90	1000sqft	0.50	4,900.00	0
Health Club	3.20	1000sqft	0.50	3,200.00	0
Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.50	2,400.00	0
Quality Restaurant	6.20	1000sqft	0.50	6,200.00	0
Strip Mall	3.60	1000sqft	0.50	3,600.00	0
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2017
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site information in Traffic Impact Report, estimating acreage

Construction Phase - Based on assumed 18-month construction schedule

Grading - Assume balanced on site

Demolition -

Architectural Coating - Rule 67.0 coatings

Vehicle Trips - Office is the leasing office for apartments. Health club is for the gym. Trip generation rates are cumulative trips for the overall project

Woodstoves - Assuming no fireplaces in units

Area Coating - Assuming Rule 67.0 coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	250
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	NumDays	230.00	284.00
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	PhaseEndDate	5/2/2017	12/31/2016

tblConstructionPhase	PhaseEndDate	12/30/2016	12/31/2016
tblConstructionPhase	PhaseEndDate	5/2/2017	12/31/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	9/1/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	9/1/2016
tblFireplaces	NumberGas	143.00	0.00
tblFireplaces	NumberNoFireplace	26.00	260.00
tblFireplaces	NumberWood	91.00	0.00
tblGrading	AcresOfGrading	21.50	9.52
tblLandUse	LotAcreage	16.25	6.30
tblLandUse	LotAcreage	0.11	0.50
tblLandUse	LotAcreage	0.07	0.50
tblLandUse	LotAcreage	0.06	0.50
tblLandUse	LotAcreage	0.14	0.50
tblLandUse	LotAcreage	0.08	0.50
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	7.16	6.00
tblVehicleTrips	ST_TR	722.03	420.00
tblVehicleTrips	ST_TR	2.37	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	94.36	90.00
tblVehicleTrips	ST_TR	42.04	36.00
tblVehicleTrips	SU_TR	6.07	6.00
tblVehicleTrips	SU_TR	542.72	420.00
tblVehicleTrips	SU_TR	0.98	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	72.16	90.00
tblVehicleTrips	SU_TR	20.43	36.00
tblVehicleTrips	WD_TR	6.59	6.00

tblVehicleTrips	WD_TR	496.12	420.00
tblVehicleTrips	WD_TR	11.01	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	89.95	90.00
tblVehicleTrips	WD_TR	44.32	36.00
tblWoodstoves	NumberCatalytic	13.00	0.00
tblWoodstoves	NumberNoncatalytic	13.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	4.8543	50.1480	37.9679	0.0564	6.3801	2.4784	8.7094	3.3683	2.3112	5.5112	0.0000	5,370.5976	5,370.5976	1.1291	0.0000	5,394.3097
2016	54.2722	57.6481	50.7335	0.0875	2.3682	3.4912	5.8593	0.6328	3.2660	3.8988	0.0000	8,360.3539	8,360.3539	1.5135	0.0000	8,392.1375
Total	**59.1265**	**107.7960**	**88.7014**	**0.1439**	**8.7483**	**5.9696**	**14.5687**	**4.0011**	**5.5772**	**9.4101**	**0.0000**	**13,730.9515**	**13,730.9515**	**2.6427**	**0.0000**	**13,786.4472**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	4.8543	50.1480	37.9679	0.0564	2.5634	2.4784	4.8927	1.3336	2.3112	3.4765	0.0000	5,370.5976	5,370.5976	1.1291	0.0000	5,394.3097
2016	54.2722	57.6481	50.7335	0.0875	2.3682	3.4912	5.8593	0.6328	3.2660	3.8988	0.0000	8,360.3539	8,360.3539	1.5135	0.0000	8,392.1375
Total	**59.1265**	**107.7960**	**88.7014**	**0.1439**	**4.9316**	**5.9696**	**10.7520**	**1.9664**	**5.5772**	**7.3754**	**0.0000**	**13,730.9515**	**13,730.9515**	**2.6427**	**0.0000**	**13,786.4472**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.63**	**0.00**	**26.20**	**50.85**	**0.00**	**21.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425
Energy	0.1320	1.1551	0.6769	7.2000e-003		0.0912	0.0912		0.0912	0.0912		1,440.3027	1,440.3027	0.0276	0.0264	1,449.0681
Mobile	10.2611	19.0490	90.8752	0.1991	13.2406	0.2464	13.4869	3.5346	0.2268	3.7614		16,787.2521	16,787.2521	0.6956		16,801.8592
Total	**20.0015**	**20.4566**	**113.2207**	**0.2074**	**13.2406**	**0.4552**	**13.6958**	**3.5346**	**0.4356**	**3.9702**	**0.0000**	**18,266.1829**	**18,266.1829**	**0.7620**	**0.0264**	**18,290.3698**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425
Energy	0.1130	0.9905	0.5950	6.1600e-003		0.0781	0.0781		0.0781	0.0781		1,232.3575	1,232.3575	0.0236	0.0226	1,239.8575
Mobile	10.0160	17.7288	85.3323	0.1822	12.0692	0.2268	12.2960	3.2219	0.2088	3.4306		15,361.8622	15,361.8622	0.6430		15,375.3658
Total	**19.7374**	**18.9718**	**107.5958**	**0.1895**	**12.0692**	**0.4225**	**12.4917**	**3.2219**	**0.4045**	**3.6263**	**0.0000**	**16,632.8479**	**16,632.8479**	**0.7054**	**0.0226**	**16,654.6657**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	1.32	7.26	4.97	8.64	8.85	7.19	8.79	8.85	7.16	8.66	0.00	8.94	8.94	7.42	14.46	8.94

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2015	9/30/2015	5	66	
2	Grading	Grading	10/1/2015	11/30/2015	5	43	
3	Building Construction	Building Construction	12/1/2015	12/31/2016	5	284	
4	Paving	Paving	9/1/2016	12/31/2016	5	87	
5	Architectural Coating	Architectural Coating	9/1/2016	12/31/2016	5	87	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 9.52

Acres of Paving: 0

Residential Indoor: 526,500; Residential Outdoor: 175,500; Non-Residential Indoor: 63,120; Non-Residential Outdoor: 21,040 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	347.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	204.00	35.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1513	0.0000	1.1513	0.1743	0.0000	0.1743			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858		4,127.193 4	4,127.193 4	1.1188		4,150.688 6
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**1.1513**	**2.4508**	**3.6021**	**0.1743**	**2.2858**	**2.4601**		**4,127.193 4**	**4,127.193 4**	**1.1188**		**4,150.688 6**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1182	1.7172	1.1524	3.9400e-003	0.0916	0.0267	0.1183	0.0251	0.0245	0.0496		401.0163	401.0163	3.2500e-003		401.0846
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0575	0.0678	0.7416	1.5600e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		135.0013	135.0013	7.0800e-003		135.1499
Total	**0.1757**	**1.7850**	**1.8941**	**5.5000e-003**	**0.2148**	**0.0276**	**0.2425**	**0.0578**	**0.0254**	**0.0832**		**536.0176**	**536.0176**	**0.0103**		**536.2344**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4490	0.0000	0.4490	0.0680	0.0000	0.0680			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858	0.0000	4,127.1934	4,127.1934	1.1188		4,150.6886
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**0.4490**	**2.4508**	**2.8998**	**0.0680**	**2.2858**	**2.3538**	**0.0000**	**4,127.1934**	**4,127.1934**	**1.1188**		**4,150.6886**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1182	1.7172	1.1524	3.9400e-003	0.0916	0.0267	0.1183	0.0251	0.0245	0.0496		401.0163	401.0163	3.2500e-003		401.0846
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0575	0.0678	0.7416	1.5600e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		135.0013	135.0013	7.0800e-003		135.1499
Total	**0.1757**	**1.7850**	**1.8941**	**5.5000e-003**	**0.2148**	**0.0276**	**0.2425**	**0.0578**	**0.0254**	**0.0832**		**536.0176**	**536.0176**	**0.0103**		**536.2344**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2569	0.0000	6.2569	3.3356	0.0000	3.3356			0.0000			0.0000
Off-Road	3.8327	40.4161	26.6731	0.0298		2.3284	2.3284		2.1421	2.1421		3,129.0158	3,129.0158	0.9341		3,148.6328
Total	**3.8327**	**40.4161**	**26.6731**	**0.0298**	**6.2569**	**2.3284**	**8.5852**	**3.3356**	**2.1421**	**5.4777**		**3,129.0158**	**3,129.0158**	**0.9341**		**3,148.6328**

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0575	0.0678	0.7416	1.5600e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		135.0013	135.0013	7.0800e-003		135.1499
Total	**0.0575**	**0.0678**	**0.7416**	**1.5600e-003**	**0.1232**	**9.7000e-004**	**0.1242**	**0.0327**	**8.9000e-004**	**0.0336**		**135.0013**	**135.0013**	**7.0800e-003**		**135.1499**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.4402	0.0000	2.4402	1.3009	0.0000	1.3009			0.0000			0.0000
Off-Road	3.8327	40.4161	26.6731	0.0298		2.3284	2.3284		2.1421	2.1421	0.0000	3,129.0158	3,129.0158	0.9341		3,148.6328
Total	**3.8327**	**40.4161**	**26.6731**	**0.0298**	**2.4402**	**2.3284**	**4.7685**	**1.3009**	**2.1421**	**3.4430**	**0.0000**	**3,129.0158**	**3,129.0158**	**0.9341**		**3,148.6328**

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0575	0.0678	0.7416	1.5600e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		135.0013	135.0013	7.0800e-003		135.1499
Total	**0.0575**	**0.0678**	**0.7416**	**1.5600e-003**	**0.1232**	**9.7000e-004**	**0.1242**	**0.0327**	**8.9000e-004**	**0.0336**		**135.0013**	**135.0013**	**7.0800e-003**		**135.1499**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6591	30.0299	18.7446	0.0268		2.1167	2.1167		1.9904	1.9904		2,689.5771	2,689.5771	0.6748		2,703.7483
Total	**3.6591**	**30.0299**	**18.7446**	**0.0268**		**2.1167**	**2.1167**		**1.9904**	**1.9904**		**2,689.5771**	**2,689.5771**	**0.6748**		**2,703.7483**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4132	3.8176	4.2521	8.3500e-003	0.2323	0.0626	0.2949	0.0663	0.0575	0.1238		845.0033	845.0033	7.3200e-003		845.1570
Worker	0.7820	0.9223	10.0861	0.0212	1.6758	0.0132	1.6890	0.4445	0.0121	0.4566		1,836.0172	1,836.0172	0.0962		1,838.0381
Total	**1.1952**	**4.7399**	**14.3382**	**0.0296**	**1.9081**	**0.0757**	**1.9838**	**0.5108**	**0.0696**	**0.5804**		**2,681.0205**	**2,681.0205**	**0.1036**		**2,683.1951**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6591	30.0299	18.7446	0.0268		2.1167	2.1167		1.9904	1.9904	0.0000	2,689.5771	2,689.5771	0.6748		2,703.7483
Total	**3.6591**	**30.0299**	**18.7446**	**0.0268**		**2.1167**	**2.1167**		**1.9904**	**1.9904**	**0.0000**	**2,689.5771**	**2,689.5771**	**0.6748**		**2,703.7483**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4132	3.8176	4.2521	8.3500e-003	0.2323	0.0626	0.2949	0.0663	0.0575	0.1238		845.0033	845.0033	7.3200e-003		845.1570
Worker	0.7820	0.9223	10.0861	0.0212	1.6758	0.0132	1.6890	0.4445	0.0121	0.4566		1,836.0172	1,836.0172	0.0962		1,838.0381
Total	**1.1952**	**4.7399**	**14.3382**	**0.0296**	**1.9081**	**0.0757**	**1.9838**	**0.5108**	**0.0696**	**0.5804**		**2,681.0205**	**2,681.0205**	**0.1036**		**2,683.1951**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3651	3.3170	3.8934	8.3300e-003	0.2323	0.0502	0.2825	0.0663	0.0461	0.1124		835.0596	835.0596	6.4500e-003		835.1951
Worker	0.7131	0.8368	9.1266	0.0212	1.6758	0.0126	1.6884	0.4445	0.0116	0.4561		1,771.8052	1,771.8052	0.0888		1,773.6694
Total	**1.0782**	**4.1539**	**13.0200**	**0.0296**	**1.9081**	**0.0627**	**1.9709**	**0.5108**	**0.0577**	**0.5685**		**2,606.8648**	**2,606.8648**	**0.0952**		**2,608.8645**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485	0.0000	2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**	**0.0000**	**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3651	3.3170	3.8934	8.3300e-003	0.2323	0.0502	0.2825	0.0663	0.0461	0.1124		835.0596	835.0596	6.4500e-003		835.1951
Worker	0.7131	0.8368	9.1266	0.0212	1.6758	0.0126	1.6884	0.4445	0.0116	0.4561		1,771.805 2	1,771.805 2	0.0888		1,773.669 4
Total	**1.0782**	**4.1539**	**13.0200**	**0.0296**	**1.9081**	**0.0627**	**1.9709**	**0.5108**	**0.0577**	**0.5685**		**2,606.864 8**	**2,606.864 8**	**0.0952**		**2,608.864 5**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601		2,316.376 7	2,316.376 7	0.6987		2,331.049 5
Paving	0.0151					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1048**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**		**2,316.376 7**	**2,316.376 7**	**0.6987**		**2,331.049 5**

3.5 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0615	0.6711	1.5600e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		130.2798	130.2798	6.5300e-003		130.4169
Total	**0.0524**	**0.0615**	**0.6711**	**1.5600e-003**	**0.1232**	**9.2000e-004**	**0.1242**	**0.0327**	**8.5000e-004**	**0.0335**		**130.2798**	**130.2798**	**6.5300e-003**		**130.4169**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601	0.0000	2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.0151					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1048**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**	**0.0000**	**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

3.5 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0615	0.6711	1.5600e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		130.2798	130.2798	6.5300e-003		130.4169
Total	**0.0524**	**0.0615**	**0.6711**	**1.5600e-003**	**0.1232**	**9.2000e-004**	**0.1242**	**0.0327**	**8.5000e-004**	**0.0335**		**130.2798**	**130.2798**	**6.5300e-003**		**130.4169**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	47.1188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**47.4872**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1433	0.1682	1.8343	4.2700e-003	0.3368	2.5300e-003	0.3393	0.0893	2.3200e-003	0.0917		356.0981	356.0981	0.0178		356.4728
Total	**0.1433**	**0.1682**	**1.8343**	**4.2700e-003**	**0.3368**	**2.5300e-003**	**0.3393**	**0.0893**	**2.3200e-003**	**0.0917**		**356.0981**	**356.0981**	**0.0178**		**356.4728**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	47.1188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	**47.4872**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**	**0.0000**	**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1433	0.1682	1.8343	4.2700e-003	0.3368	2.5300e-003	0.3393	0.0893	2.3200e-003	0.0917		356.0981	356.0981	0.0178		356.4728
Total	**0.1433**	**0.1682**	**1.8343**	**4.2700e-003**	**0.3368**	**2.5300e-003**	**0.3393**	**0.0893**	**2.3200e-003**	**0.0917**		**356.0981**	**356.0981**	**0.0178**		**356.4728**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	10.2611	19.0490	90.8752	0.1991	13.2406	0.2464	13.4869	3.5346	0.2268	3.7614		16,787.2521	16,787.2521	0.6956		16,801.8592
Mitigated	10.0160	17.7288	85.3323	0.1822	12.0692	0.2268	12.2960	3.2219	0.2088	3.4306		15,361.8622	15,361.8622	0.6430		15,375.3658

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,560.00	1,560.00	1560.00	4,454,273	4,060,210
Fast Food Restaurant with Drive Thru	1,008.00	1,008.00	1008.00	941,800	858,480
General Office Building	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Quality Restaurant	558.00	558.00	558.00	661,881	603,325
Strip Mall	129.60	129.60	129.60	199,588	181,931
Total	3,255.60	3,255.60	3,255.60	6,257,542	5,703,946

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	41.60	18.80	39.60	86	11	3
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510423	0.073380	0.192408	0.132453	0.036550	0.005219	0.012745	0.022253	0.001862	0.002079	0.006550	0.000609	0.003468

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1130	0.9905	0.5950	6.1600e-003		0.0781	0.0781		0.0781	0.0781		1,232.3575	1,232.3575	0.0236	0.0226	1,239.8575
NaturalGas Unmitigated	0.1320	1.1551	0.6769	7.2000e-003		0.0912	0.0912		0.0912	0.0912		1,440.3027	1,440.3027	0.0276	0.0264	1,449.0681

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	282.321	3.0400e-003	0.0277	0.0233	1.7000e-004		2.1000e-003	2.1000e-003		2.1000e-003	2.1000e-003		33.2142	33.2142	6.4000e-004	6.1000e-004	33.4163
Health Club	103.364	1.1100e-003	0.0101	8.5100e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.1605	12.1605	2.3000e-004	2.2000e-004	12.2345
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2994.01	0.0323	0.2935	0.2466	1.7600e-003		0.0223	0.0223		0.0223	0.0223		352.2359	352.2359	6.7500e-003	6.4600e-003	354.3796
Strip Mall	22.5863	2.4000e-004	2.2100e-003	1.8600e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		2.6572	2.6572	5.0000e-005	5.0000e-005	2.6734
Apartments Low Rise	7681.33	0.0828	0.7079	0.3012	4.5200e-003		0.0572	0.0572		0.0572	0.0572		903.6854	903.6854	0.0173	0.0166	909.1851
Fast Food Restaurant with Drive Thru	1158.97	0.0125	0.1136	0.0954	6.8000e-004		8.6400e-003	8.6400e-003		8.6400e-003	8.6400e-003		136.3494	136.3494	2.6100e-003	2.5000e-003	137.1792
Total		**0.1320**	**1.1551**	**0.6769**	**7.2000e-003**		**0.0912**	**0.0912**		**0.0912**	**0.0912**		**1,440.3027**	**1,440.3027**	**0.0276**	**0.0264**	**1,449.0681**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	0.225836	2.4400e-003	0.0221	0.0186	1.3000e-004		1.6800e-003	1.6800e-003		1.6800e-003	1.6800e-003		26.5690	26.5690	5.1000e-004	4.9000e-004	26.7307
Health Club	0.0934137	1.0100e-003	9.1600e-003	7.6900e-003	5.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004		10.9899	10.9899	2.1000e-004	2.0000e-004	11.0567
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.83348	0.0306	0.2778	0.2334	1.6700e-003		0.0211	0.0211		0.0211	0.0211		333.3512	333.3512	6.3900e-003	6.1100e-003	335.3799
Strip Mall	0.0196274	2.1000e-004	1.9200e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3091	2.3091	4.0000e-005	4.0000e-005	2.3232
Apartments Low Rise	6.20584	0.0669	0.5719	0.2434	3.6500e-003		0.0462	0.0462		0.0462	0.0462		730.0993	730.0993	0.0140	0.0134	734.5425
Fast Food Restaurant with Drive Thru	1.09683	0.0118	0.1075	0.0903	6.5000e-004		8.1700e-003	8.1700e-003		8.1700e-003	8.1700e-003		129.0392	129.0392	2.4700e-003	2.3700e-003	129.8245
Total		**0.1130**	**0.9905**	**0.5950**	**6.1600e-003**		**0.0781**	**0.0781**		**0.0781**	**0.0781**		**1,232.3575**	**1,232.3575**	**0.0236**	**0.0226**	**1,239.8575**

6.0 Area Detail

6.1 Mitigation Measures Area

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Unmitigated	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425
Mitigated	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425

6.2 Area by SubCategory

Unmitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	2.4691					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.4645					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6748	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177		38.6282	38.6282	0.0388		39.4425
Total	**9.6084**	**0.2526**	**21.6686**	**1.1300e-003**		**0.1177**	**0.1177**		**0.1177**	**0.1177**	**0.0000**	**38.6282**	**38.6282**	**0.0388**	**0.0000**	**39.4425**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.4691					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.4645					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6748	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177		38.6282	38.6282	0.0388		39.4425
Total	**9.6084**	**0.2526**	**21.6686**	**1.1300e-003**		**0.1177**	**0.1177**		**0.1177**	**0.1177**	**0.0000**	**38.6282**	**38.6282**	**0.0388**	**0.0000**	**39.4425**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Carroll Canyon Mixed Use Project

San Diego Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	260.00	Dwelling Unit	6.30	260,000.00	744
General Office Building	4.90	1000sqft	0.50	4,900.00	0
Health Club	3.20	1000sqft	0.50	3,200.00	0
Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.50	2,400.00	0
Quality Restaurant	6.20	1000sqft	0.50	6,200.00	0
Strip Mall	3.60	1000sqft	0.50	3,600.00	0
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2017
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site information in Traffic Impact Report, estimating acreage

Construction Phase - Based on assumed 18-month construction schedule

Grading - Assume balanced on site

Demolition -

Architectural Coating - Rule 67.0 coatings

Vehicle Trips - Office is the leasing office for apartments. Health club is for the gym. Trip generation rates are cumulative trips for the overall project

Woodstoves - Assuming no fireplaces in units

Area Coating - Assuming Rule 67.0 coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	250
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	NumDays	230.00	284.00
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	PhaseEndDate	5/2/2017	12/31/2016

tblConstructionPhase	PhaseEndDate	12/30/2016	12/31/2016
tblConstructionPhase	PhaseEndDate	5/2/2017	12/31/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	9/1/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	9/1/2016
tblFireplaces	NumberGas	143.00	0.00
tblFireplaces	NumberNoFireplace	26.00	260.00
tblFireplaces	NumberWood	91.00	0.00
tblGrading	AcresOfGrading	21.50	9.52
tblLandUse	LotAcreage	16.25	6.30
tblLandUse	LotAcreage	0.11	0.50
tblLandUse	LotAcreage	0.07	0.50
tblLandUse	LotAcreage	0.06	0.50
tblLandUse	LotAcreage	0.14	0.50
tblLandUse	LotAcreage	0.08	0.50
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	7.16	6.00
tblVehicleTrips	ST_TR	722.03	420.00
tblVehicleTrips	ST_TR	2.37	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	94.36	90.00
tblVehicleTrips	ST_TR	42.04	36.00
tblVehicleTrips	SU_TR	6.07	6.00
tblVehicleTrips	SU_TR	542.72	420.00
tblVehicleTrips	SU_TR	0.98	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	72.16	90.00
tblVehicleTrips	SU_TR	20.43	36.00
tblVehicleTrips	WD_TR	6.59	6.00

tblVehicleTrips	WD_TR	496.12	420.00
tblVehicleTrips	WD_TR	11.01	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	89.95	90.00
tblVehicleTrips	WD_TR	44.32	36.00
tblWoodstoves	NumberCatalytic	13.00	0.00
tblWoodstoves	NumberNoncatalytic	13.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	4.9691	50.2117	38.2641	0.0551	6.3801	2.4785	8.7094	3.3683	2.3113	5.5112	0.0000	5,252.4878	5,252.4878	1.1292	0.0000	5,276.2006
2016	54.3841	57.8587	51.7483	0.0858	2.3682	3.4917	5.8598	0.6328	3.2665	3.8993	0.0000	8,216.5141	8,216.5141	1.5137	0.0000	8,248.3012
Total	**59.3531**	**108.0703**	**90.0125**	**0.1408**	**8.7483**	**5.9702**	**14.5692**	**4.0011**	**5.5778**	**9.4105**	**0.0000**	**13,469.0019**	**13,469.0019**	**2.6429**	**0.0000**	**13,524.5018**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	4.9691	50.2117	38.2641	0.0551	2.5634	2.4785	4.8927	1.3336	2.3113	3.4765	0.0000	5,252.4878	5,252.4878	1.1292	0.0000	5,276.2006
2016	54.3841	57.8587	51.7483	0.0858	2.3682	3.4917	5.8598	0.6328	3.2665	3.8993	0.0000	8,216.5141	8,216.5141	1.5137	0.0000	8,248.3012
Total	**59.3531**	**108.0703**	**90.0125**	**0.1408**	**4.9316**	**5.9702**	**10.7525**	**1.9664**	**5.5778**	**7.3758**	**0.0000**	**13,469.0019**	**13,469.0019**	**2.6429**	**0.0000**	**13,524.5018**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.63**	**0.00**	**26.20**	**50.85**	**0.00**	**21.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425
Energy	0.1320	1.1551	0.6769	7.2000e-003		0.0912	0.0912		0.0912	0.0912		1,440.3027	1,440.3027	0.0276	0.0264	1,449.0681
Mobile	11.0310	20.2093	98.8039	0.1893	13.2406	0.2478	13.4884	3.5346	0.2281	3.7627		15,980.8745	15,980.8745	0.6962		15,995.4953
Total	**20.7714**	**21.6169**	**121.1494**	**0.1976**	**13.2406**	**0.4567**	**13.6972**	**3.5346**	**0.4370**	**3.9715**	**0.0000**	**17,459.8053**	**17,459.8053**	**0.7626**	**0.0264**	**17,484.0059**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425
Energy	0.1130	0.9905	0.5950	6.1600e-003		0.0781	0.0781		0.0781	0.0781		1,232.3575	1,232.3575	0.0236	0.0226	1,239.8575
Mobile	10.7901	18.8010	93.6755	0.1733	12.0692	0.2282	12.2974	3.2219	0.2101	3.4319		14,624.8977	14,624.8977	0.6437		14,638.4149
Total	**20.5114**	**20.0441**	**115.9390**	**0.1806**	**12.0692**	**0.4239**	**12.4931**	**3.2219**	**0.4058**	**3.6276**	**0.0000**	**15,895.8834**	**15,895.8834**	**0.7061**	**0.0226**	**15,917.7149**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	1.25	7.28	4.30	8.63	8.85	7.17	8.79	8.85	7.14	8.66	0.00	8.96	8.96	7.41	14.46	8.96

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2015	9/30/2015	5	66	
2	Grading	Grading	10/1/2015	11/30/2015	5	43	
3	Building Construction	Building Construction	12/1/2015	12/31/2016	5	284	
4	Paving	Paving	9/1/2016	12/31/2016	5	87	
5	Architectural Coating	Architectural Coating	9/1/2016	12/31/2016	5	87	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 9.52

Acres of Paving: 0

Residential Indoor: 526,500; Residential Outdoor: 175,500; Non-Residential Indoor: 63,120; Non-Residential Outdoor: 21,040 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	347.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	204.00	35.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1513	0.0000	1.1513	0.1743	0.0000	0.1743			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858		4,127.193 4	4,127.193 4	1.1188		4,150.688 6
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**1.1513**	**2.4508**	**3.6021**	**0.1743**	**2.2858**	**2.4601**		**4,127.193 4**	**4,127.193 4**	**1.1188**		**4,150.688 6**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1317	1.7727	1.4668	3.9400e-003	0.0916	0.0268	0.1184	0.0251	0.0246	0.0497		400.0795	400.0795	3.2900e-003		400.1485
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0611	0.0761	0.7235	1.4700e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		126.7906	126.7906	7.0800e-003		126.9392
Total	**0.1928**	**1.8488**	**2.1903**	**5.4100e-003**	**0.2148**	**0.0277**	**0.2426**	**0.0578**	**0.0255**	**0.0833**		**526.8700**	**526.8700**	**0.0104**		**527.0876**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4490	0.0000	0.4490	0.0680	0.0000	0.0680			0.0000			0.0000
Off-Road	4.5083	48.3629	36.0738	0.0399		2.4508	2.4508		2.2858	2.2858	0.0000	4,127.1934	4,127.1934	1.1188		4,150.6886
Total	**4.5083**	**48.3629**	**36.0738**	**0.0399**	**0.4490**	**2.4508**	**2.8998**	**0.0680**	**2.2858**	**2.3538**	**0.0000**	**4,127.1934**	**4,127.1934**	**1.1188**		**4,150.6886**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1317	1.7727	1.4668	3.9400e-003	0.0916	0.0268	0.1184	0.0251	0.0246	0.0497		400.0795	400.0795	3.2900e-003		400.1485
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0611	0.0761	0.7235	1.4700e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		126.7906	126.7906	7.0800e-003		126.9392
Total	**0.1928**	**1.8488**	**2.1903**	**5.4100e-003**	**0.2148**	**0.0277**	**0.2426**	**0.0578**	**0.0255**	**0.0833**		**526.8700**	**526.8700**	**0.0104**		**527.0876**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2569	0.0000	6.2569	3.3356	0.0000	3.3356			0.0000			0.0000
Off-Road	3.8327	40.4161	26.6731	0.0298		2.3284	2.3284		2.1421	2.1421		3,129.0158	3,129.0158	0.9341		3,148.6328
Total	**3.8327**	**40.4161**	**26.6731**	**0.0298**	**6.2569**	**2.3284**	**8.5852**	**3.3356**	**2.1421**	**5.4777**		**3,129.0158**	**3,129.0158**	**0.9341**		**3,148.6328**

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0611	0.0761	0.7235	1.4700e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		126.7906	126.7906	7.0800e-003		126.9392
Total	**0.0611**	**0.0761**	**0.7235**	**1.4700e-003**	**0.1232**	**9.7000e-004**	**0.1242**	**0.0327**	**8.9000e-004**	**0.0336**		**126.7906**	**126.7906**	**7.0800e-003**		**126.9392**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.4402	0.0000	2.4402	1.3009	0.0000	1.3009			0.0000			0.0000
Off-Road	3.8327	40.4161	26.6731	0.0298		2.3284	2.3284		2.1421	2.1421	0.0000	3,129.0158	3,129.0158	0.9341		3,148.6328
Total	**3.8327**	**40.4161**	**26.6731**	**0.0298**	**2.4402**	**2.3284**	**4.7685**	**1.3009**	**2.1421**	**3.4430**	**0.0000**	**3,129.0158**	**3,129.0158**	**0.9341**		**3,148.6328**

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0611	0.0761	0.7235	1.4700e-003	0.1232	9.7000e-004	0.1242	0.0327	8.9000e-004	0.0336		126.7906	126.7906	7.0800e-003		126.9392
Total	**0.0611**	**0.0761**	**0.7235**	**1.4700e-003**	**0.1232**	**9.7000e-004**	**0.1242**	**0.0327**	**8.9000e-004**	**0.0336**		**126.7906**	**126.7906**	**7.0800e-003**		**126.9392**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6591	30.0299	18.7446	0.0268		2.1167	2.1167		1.9904	1.9904		2,689.5771	2,689.5771	0.6748		2,703.7483
Total	**3.6591**	**30.0299**	**18.7446**	**0.0268**		**2.1167**	**2.1167**		**1.9904**	**1.9904**		**2,689.5771**	**2,689.5771**	**0.6748**		**2,703.7483**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4786	3.9123	5.6412	8.3100e-003	0.2323	0.0633	0.2956	0.0663	0.0582	0.1245		838.5592	838.5592	7.4900e-003		838.7164
Worker	0.8314	1.0350	9.8398	0.0199	1.6758	0.0132	1.6890	0.4445	0.0121	0.4566		1,724.3515	1,724.3515	0.0962		1,726.3724
Total	**1.3100**	**4.9473**	**15.4810**	**0.0283**	**1.9081**	**0.0765**	**1.9846**	**0.5108**	**0.0703**	**0.5810**		**2,562.9107**	**2,562.9107**	**0.1037**		**2,565.0888**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6591	30.0299	18.7446	0.0268		2.1167	2.1167		1.9904	1.9904	0.0000	2,689.5771	2,689.5771	0.6748		2,703.7483
Total	**3.6591**	**30.0299**	**18.7446**	**0.0268**		**2.1167**	**2.1167**		**1.9904**	**1.9904**	**0.0000**	**2,689.5771**	**2,689.5771**	**0.6748**		**2,703.7483**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4786	3.9123	5.6412	8.3100e-003	0.2323	0.0633	0.2956	0.0663	0.0582	0.1245		838.5592	838.5592	7.4900e-003		838.7164
Worker	0.8314	1.0350	9.8398	0.0199	1.6758	0.0132	1.6890	0.4445	0.0121	0.4566		1,724.3515	1,724.3515	0.0962		1,726.3724
Total	**1.3100**	**4.9473**	**15.4810**	**0.0283**	**1.9081**	**0.0765**	**1.9846**	**0.5108**	**0.0703**	**0.5810**		**2,562.9107**	**2,562.9107**	**0.1037**		**2,565.0888**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4224	3.3974	5.2399	8.2900e-003	0.2323	0.0507	0.2830	0.0663	0.0466	0.1129		828.6572	828.6572	6.6200e-003		828.7962
Worker	0.7559	0.9390	8.8663	0.0199	1.6758	0.0126	1.6884	0.4445	0.0116	0.4561		1,663.9697	1,663.9697	0.0888		1,665.8339
Total	**1.1783**	**4.3364**	**14.1062**	**0.0282**	**1.9081**	**0.0633**	**1.9714**	**0.5108**	**0.0582**	**0.5689**		**2,492.6269**	**2,492.6269**	**0.0954**		**2,494.6301**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485	0.0000	2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**	**0.0000**	**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4224	3.3974	5.2399	8.2900e-003	0.2323	0.0507	0.2830	0.0663	0.0466	0.1129		828.6572	828.6572	6.6200e-003		828.7962
Worker	0.7559	0.9390	8.8663	0.0199	1.6758	0.0126	1.6884	0.4445	0.0116	0.4561		1,663.969 7	1,663.969 7	0.0888		1,665.833 9
Total	**1.1783**	**4.3364**	**14.1062**	**0.0282**	**1.9081**	**0.0633**	**1.9714**	**0.5108**	**0.0582**	**0.5689**		**2,492.626 9**	**2,492.626 9**	**0.0954**		**2,494.630 1**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601		2,316.376 7	2,316.376 7	0.6987		2,331.049 5
Paving	0.0151					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1048**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**		**2,316.376 7**	**2,316.376 7**	**0.6987**		**2,331.049 5**

3.5 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0556	0.0690	0.6519	1.4700e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		122.3507	122.3507	6.5300e-003		122.4878
Total	**0.0556**	**0.0690**	**0.6519**	**1.4700e-003**	**0.1232**	**9.2000e-004**	**0.1242**	**0.0327**	**8.5000e-004**	**0.0335**		**122.3507**	**122.3507**	**6.5300e-003**		**122.4878**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601	0.0000	2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.0151					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1048**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**	**0.0000**	**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

3.5 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0556	0.0690	0.6519	1.4700e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		122.3507	122.3507	6.5300e-003		122.4878
Total	**0.0556**	**0.0690**	**0.6519**	**1.4700e-003**	**0.1232**	**9.2000e-004**	**0.1242**	**0.0327**	**8.5000e-004**	**0.0335**		**122.3507**	**122.3507**	**6.5300e-003**		**122.4878**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	47.1188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**47.4872**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1519	0.1887	1.7820	4.0100e-003	0.3368	2.5300e-003	0.3393	0.0893	2.3200e-003	0.0917		334.4253	334.4253	0.0178		334.8000
Total	**0.1519**	**0.1887**	**1.7820**	**4.0100e-003**	**0.3368**	**2.5300e-003**	**0.3393**	**0.0893**	**2.3200e-003**	**0.0917**		**334.4253**	**334.4253**	**0.0178**		**334.8000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	47.1188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	**47.4872**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**	**0.0000**	**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1519	0.1887	1.7820	4.0100e-003	0.3368	2.5300e-003	0.3393	0.0893	2.3200e-003	0.0917		334.4253	334.4253	0.0178		334.8000
Total	**0.1519**	**0.1887**	**1.7820**	**4.0100e-003**	**0.3368**	**2.5300e-003**	**0.3393**	**0.0893**	**2.3200e-003**	**0.0917**		**334.4253**	**334.4253**	**0.0178**		**334.8000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	11.0310	20.2093	98.8039	0.1893	13.2406	0.2478	13.4884	3.5346	0.2281	3.7627		15,980.8745	15,980.8745	0.6962		15,995.4953
Mitigated	10.7901	18.8010	93.6755	0.1733	12.0692	0.2282	12.2974	3.2219	0.2101	3.4319		14,624.8977	14,624.8977	0.6437		14,638.4149

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,560.00	1,560.00	1560.00	4,454,273	4,060,210
Fast Food Restaurant with Drive Thru	1,008.00	1,008.00	1008.00	941,800	858,480
General Office Building	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Quality Restaurant	558.00	558.00	558.00	661,881	603,325
Strip Mall	129.60	129.60	129.60	199,588	181,931
Total	3,255.60	3,255.60	3,255.60	6,257,542	5,703,946

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	41.60	18.80	39.60	86	11	3
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510423	0.073380	0.192408	0.132453	0.036550	0.005219	0.012745	0.022253	0.001862	0.002079	0.006550	0.000609	0.003468

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1130	0.9905	0.5950	6.1600e-003		0.0781	0.0781		0.0781	0.0781		1,232.3575	1,232.3575	0.0236	0.0226	1,239.8575
NaturalGas Unmitigated	0.1320	1.1551	0.6769	7.2000e-003		0.0912	0.0912		0.0912	0.0912		1,440.3027	1,440.3027	0.0276	0.0264	1,449.0681

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	282.321	3.0400e-003	0.0277	0.0233	1.7000e-004		2.1000e-003	2.1000e-003		2.1000e-003	2.1000e-003		33.2142	33.2142	6.4000e-004	6.1000e-004	33.4163
Health Club	103.364	1.1100e-003	0.0101	8.5100e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004		12.1605	12.1605	2.3000e-004	2.2000e-004	12.2345
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2994.01	0.0323	0.2935	0.2466	1.7600e-003		0.0223	0.0223		0.0223	0.0223		352.2359	352.2359	6.7500e-003	6.4600e-003	354.3796
Strip Mall	22.5863	2.4000e-004	2.2100e-003	1.8600e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		2.6572	2.6572	5.0000e-005	5.0000e-005	2.6734
Apartments Low Rise	7681.33	0.0828	0.7079	0.3012	4.5200e-003		0.0572	0.0572		0.0572	0.0572		903.6854	903.6854	0.0173	0.0166	909.1851
Fast Food Restaurant with Drive Thru	1158.97	0.0125	0.1136	0.0954	6.8000e-004		8.6400e-003	8.6400e-003		8.6400e-003	8.6400e-003		136.3494	136.3494	2.6100e-003	2.5000e-003	137.1792
Total		**0.1320**	**1.1551**	**0.6769**	**7.2000e-003**		**0.0912**	**0.0912**		**0.0912**	**0.0912**		**1,440.3027**	**1,440.3027**	**0.0276**	**0.0264**	**1,449.0681**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	0.225836	2.4400e-003	0.0221	0.0186	1.3000e-004		1.6800e-003	1.6800e-003		1.6800e-003	1.6800e-003		26.5690	26.5690	5.1000e-004	4.9000e-004	26.7307
Health Club	0.0934137	1.0100e-003	9.1600e-003	7.6900e-003	5.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004		10.9899	10.9899	2.1000e-004	2.0000e-004	11.0567
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.83348	0.0306	0.2778	0.2334	1.6700e-003		0.0211	0.0211		0.0211	0.0211		333.3512	333.3512	6.3900e-003	6.1100e-003	335.3799
Strip Mall	0.0196274	2.1000e-004	1.9200e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3091	2.3091	4.0000e-005	4.0000e-005	2.3232
Apartments Low Rise	6.20584	0.0669	0.5719	0.2434	3.6500e-003		0.0462	0.0462		0.0462	0.0462		730.0993	730.0993	0.0140	0.0134	734.5425
Fast Food Restaurant with Drive Thru	1.09683	0.0118	0.1075	0.0903	6.5000e-004		8.1700e-003	8.1700e-003		8.1700e-003	8.1700e-003		129.0392	129.0392	2.4700e-003	2.3700e-003	129.8245
Total		**0.1130**	**0.9905**	**0.5950**	**6.1600e-003**		**0.0781**	**0.0781**		**0.0781**	**0.0781**		**1,232.3575**	**1,232.3575**	**0.0236**	**0.0226**	**1,239.8575**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425
Mitigated	9.6084	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177	0.0000	38.6282	38.6282	0.0388	0.0000	39.4425

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.4691					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.4645					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6748	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177		38.6282	38.6282	0.0388		39.4425
Total	**9.6084**	**0.2526**	**21.6686**	**1.1300e-003**		**0.1177**	**0.1177**		**0.1177**	**0.1177**	**0.0000**	**38.6282**	**38.6282**	**0.0388**	**0.0000**	**39.4425**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.4691					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.4645					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6748	0.2526	21.6686	1.1300e-003		0.1177	0.1177		0.1177	0.1177		38.6282	38.6282	0.0388		39.4425
Total	**9.6084**	**0.2526**	**21.6686**	**1.1300e-003**		**0.1177**	**0.1177**		**0.1177**	**0.1177**	**0.0000**	**38.6282**	**38.6282**	**0.0388**	**0.0000**	**39.4425**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Carroll Canyon Mixed Use Project

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	260.00	Dwelling Unit	6.30	260,000.00	744
General Office Building	4.90	1000sqft	0.50	4,900.00	0
Health Club	3.20	1000sqft	0.50	3,200.00	0
Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.50	2,400.00	0
Quality Restaurant	6.20	1000sqft	0.50	6,200.00	0
Strip Mall	3.60	1000sqft	0.50	3,600.00	0
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2017
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site information in Traffic Impact Report, estimating acreage

Construction Phase - Based on assumed 18-month construction schedule

Grading - Assume balanced on site

Demolition -

Architectural Coating - Rule 67.0 coatings

Vehicle Trips - Office is the leasing office for apartments. Health club is for the gym. Trip generation rates are cumulative trips for the overall project

Woodstoves - Assuming no fireplaces in units

Area Coating - Assuming Rule 67.0 coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	250
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	NumDays	230.00	284.00
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	PhaseEndDate	5/2/2017	12/31/2016

tblConstructionPhase	PhaseEndDate	12/30/2016	12/31/2016
tblConstructionPhase	PhaseEndDate	5/2/2017	12/31/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	9/1/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	9/1/2016
tblFireplaces	NumberGas	143.00	0.00
tblFireplaces	NumberNoFireplace	26.00	260.00
tblFireplaces	NumberWood	91.00	0.00
tblGrading	AcresOfGrading	21.50	9.52
tblLandUse	LotAcreage	16.25	6.30
tblLandUse	LotAcreage	0.11	0.50
tblLandUse	LotAcreage	0.07	0.50
tblLandUse	LotAcreage	0.06	0.50
tblLandUse	LotAcreage	0.14	0.50
tblLandUse	LotAcreage	0.08	0.50
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	7.16	6.00
tblVehicleTrips	ST_TR	722.03	420.00
tblVehicleTrips	ST_TR	2.37	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	94.36	90.00
tblVehicleTrips	ST_TR	42.04	36.00
tblVehicleTrips	SU_TR	6.07	6.00
tblVehicleTrips	SU_TR	542.72	420.00
tblVehicleTrips	SU_TR	0.98	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	72.16	90.00
tblVehicleTrips	SU_TR	20.43	36.00
tblVehicleTrips	WD_TR	6.59	6.00

tblVehicleTrips	WD_TR	496.12	420.00
tblVehicleTrips	WD_TR	11.01	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	89.95	90.00
tblVehicleTrips	WD_TR	44.32	36.00
tblWoodstoves	NumberCatalytic	13.00	0.00
tblWoodstoves	NumberNoncatalytic	13.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2945	2.9301	2.2354	2.8000e-003	0.2035	0.1571	0.3606	0.0858	0.1460	0.2318	0.0000	257.9251	257.9251	0.0603	0.0000	259.1910
2016	2.7534	5.3750	5.0218	8.5500e-003	0.2627	0.3285	0.5913	0.0704	0.3079	0.3784	0.0000	734.2230	734.2230	0.1195	0.0000	736.7326
Total	**3.0479**	**8.3050**	**7.2573**	**0.0114**	**0.4662**	**0.4856**	**0.9518**	**0.1562**	**0.4540**	**0.6102**	**0.0000**	**992.1481**	**992.1481**	**0.1798**	**0.0000**	**995.9236**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2945	2.9301	2.2354	2.8000e-003	0.0982	0.1571	0.2553	0.0385	0.1460	0.1846	0.0000	257.9248	257.9248	0.0603	0.0000	259.1908
2016	2.7534	5.3750	5.0218	8.5500e-003	0.2627	0.3285	0.5913	0.0704	0.3079	0.3784	0.0000	734.2225	734.2225	0.1195	0.0000	736.7321
Total	**3.0479**	**8.3050**	**7.2572**	**0.0114**	**0.3610**	**0.4856**	**0.8466**	**0.1089**	**0.4540**	**0.5629**	**0.0000**	**992.1473**	**992.1473**	**0.1798**	**0.0000**	**995.9228**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**22.57**	**0.00**	**11.06**	**30.25**	**0.00**	**7.75**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6911	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Energy	0.0241	0.2108	0.1235	1.3100e-003		0.0167	0.0167		0.0167	0.0167	0.0000	713.1672	713.1672	0.0237	8.3200e-003	716.2452
Mobile	1.8704	3.6624	17.3453	0.0347	2.3531	0.0449	2.3980	0.6294	0.0413	0.6707	0.0000	2,657.3281	2,657.3281	0.1148	0.0000	2,659.7379
Waste						0.0000	0.0000		0.0000	0.0000	36.4349	0.0000	36.4349	2.1532	0.0000	81.6528
Water						0.0000	0.0000		0.0000	0.0000	6.6234	131.1741	137.7975	0.6856	0.0172	157.5126
Total	**3.5856**	**3.8959**	**19.4190**	**0.0361**	**2.3531**	**0.0721**	**2.4253**	**0.6294**	**0.0686**	**0.6980**	**43.0582**	**3,504.8233**	**3,547.8815**	**2.9804**	**0.0255**	**3,618.3688**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6911	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Energy	0.0206	0.1808	0.1086	1.1200e-003		0.0142	0.0142		0.0142	0.0142	0.0000	653.7779	653.7779	0.0220	7.4900e-003	656.5609
Mobile	1.8266	3.4071	16.4069	0.0318	2.1449	0.0413	2.1863	0.5737	0.0381	0.6118	0.0000	2,431.958 8	2,431.958 8	0.1061	0.0000	2,434.186 6
Waste						0.0000	0.0000		0.0000	0.0000	18.2174	0.0000	18.2174	1.0766	0.0000	40.8264
Water						0.0000	0.0000		0.0000	0.0000	5.2987	110.8237	116.1224	0.5486	0.0138	131.9061
Total	**3.5383**	**3.6106**	**18.4656**	**0.0330**	**2.1449**	**0.0662**	**2.2111**	**0.5737**	**0.0629**	**0.6366**	**23.5161**	**3,199.714 3**	**3,223.230 4**	**1.7565**	**0.0212**	**3,266.700 4**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.32**	**7.32**	**4.91**	**8.67**	**8.85**	**8.26**	**8.83**	**8.85**	**8.28**	**8.79**	**45.39**	**8.71**	**9.15**	**41.07**	**16.64**	**9.72**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2015	9/30/2015	5	66	
2	Grading	Grading	10/1/2015	11/30/2015	5	43	
3	Building Construction	Building Construction	12/1/2015	12/31/2016	5	284	
4	Paving	Paving	9/1/2016	12/31/2016	5	87	
5	Architectural Coating	Architectural Coating	9/1/2016	12/31/2016	5	87	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 9.52

Acres of Paving: 0

Residential Indoor: 526,500; Residential Outdoor: 175,500; Non-Residential Indoor: 63,120; Non-Residential Outdoor: 21,040 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	347.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	204.00	35.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0380	0.0000	0.0380	5.7500e-003	0.0000	5.7500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1488	1.5960	1.1904	1.3200e-003		0.0809	0.0809		0.0754	0.0754	0.0000	123.5562	123.5562	0.0335	0.0000	124.2596
Total	**0.1488**	**1.5960**	**1.1904**	**1.3200e-003**	**0.0380**	**0.0809**	**0.1189**	**5.7500e-003**	**0.0754**	**0.0812**	**0.0000**	**123.5562**	**123.5562**	**0.0335**	**0.0000**	**124.2596**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1700e-003	0.0587	0.0450	1.3000e-004	2.9600e-003	8.8000e-004	3.8400e-003	8.1000e-004	8.1000e-004	1.6200e-003	0.0000	11.9935	11.9935	1.0000e-004	0.0000	11.9955
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8700e-003	2.4700e-003	0.0237	5.0000e-005	3.9700e-003	3.0000e-005	4.0000e-003	1.0500e-003	3.0000e-005	1.0800e-003	0.0000	3.8334	3.8334	2.1000e-004	0.0000	3.8378
Total	**6.0400e-003**	**0.0612**	**0.0687**	**1.8000e-004**	**6.9300e-003**	**9.1000e-004**	**7.8400e-003**	**1.8600e-003**	**8.4000e-004**	**2.7000e-003**	**0.0000**	**15.8269**	**15.8269**	**3.1000e-004**	**0.0000**	**15.8334**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0148	0.0000	0.0148	2.2400e-003	0.0000	2.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1488	1.5960	1.1904	1.3200e-003		0.0809	0.0809		0.0754	0.0754	0.0000	123.5560	123.5560	0.0335	0.0000	124.2594
Total	**0.1488**	**1.5960**	**1.1904**	**1.3200e-003**	**0.0148**	**0.0809**	**0.0957**	**2.2400e-003**	**0.0754**	**0.0777**	**0.0000**	**123.5560**	**123.5560**	**0.0335**	**0.0000**	**124.2594**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1700e-003	0.0587	0.0450	1.3000e-004	2.9600e-003	8.8000e-004	3.8400e-003	8.1000e-004	8.1000e-004	1.6200e-003	0.0000	11.9935	11.9935	1.0000e-004	0.0000	11.9955
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8700e-003	2.4700e-003	0.0237	5.0000e-005	3.9700e-003	3.0000e-005	4.0000e-003	1.0500e-003	3.0000e-005	1.0800e-003	0.0000	3.8334	3.8334	2.1000e-004	0.0000	3.8378
Total	**6.0400e-003**	**0.0612**	**0.0687**	**1.8000e-004**	**6.9300e-003**	**9.1000e-004**	**7.8400e-003**	**1.8600e-003**	**8.4000e-004**	**2.7000e-003**	**0.0000**	**15.8269**	**15.8269**	**3.1000e-004**	**0.0000**	**15.8334**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1345	0.0000	0.1345	0.0717	0.0000	0.0717	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0824	0.8690	0.5735	6.4000e-004		0.0501	0.0501		0.0461	0.0461	0.0000	61.0298	61.0298	0.0182	0.0000	61.4124
Total	**0.0824**	**0.8690**	**0.5735**	**6.4000e-004**	**0.1345**	**0.0501**	**0.1846**	**0.0717**	**0.0461**	**0.1178**	**0.0000**	**61.0298**	**61.0298**	**0.0182**	**0.0000**	**61.4124**

3.3 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	1.6100e-003	0.0154	3.0000e-005	2.5900e-003	2.0000e-005	2.6100e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.4975	2.4975	1.4000e-004	0.0000	2.5004
Total	**1.2200e-003**	**1.6100e-003**	**0.0154**	**3.0000e-005**	**2.5900e-003**	**2.0000e-005**	**2.6100e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.4975**	**2.4975**	**1.4000e-004**	**0.0000**	**2.5004**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0525	0.0000	0.0525	0.0280	0.0000	0.0280	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0824	0.8689	0.5735	6.4000e-004		0.0501	0.0501		0.0461	0.0461	0.0000	61.0297	61.0297	0.0182	0.0000	61.4124
Total	**0.0824**	**0.8689**	**0.5735**	**6.4000e-004**	**0.0525**	**0.0501**	**0.1025**	**0.0280**	**0.0461**	**0.0740**	**0.0000**	**61.0297**	**61.0297**	**0.0182**	**0.0000**	**61.4124**

3.3 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	1.6100e-003	0.0154	3.0000e-005	2.5900e-003	2.0000e-005	2.6100e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.4975	2.4975	1.4000e-004	0.0000	2.5004
Total	**1.2200e-003**	**1.6100e-003**	**0.0154**	**3.0000e-005**	**2.5900e-003**	**2.0000e-005**	**2.6100e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.4975**	**2.4975**	**1.4000e-004**	**0.0000**	**2.5004**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0421	0.3453	0.2156	3.1000e-004		0.0243	0.0243		0.0229	0.0229	0.0000	28.0594	28.0594	7.0400e-003	0.0000	28.2072
Total	**0.0421**	**0.3453**	**0.2156**	**3.1000e-004**		**0.0243**	**0.0243**		**0.0229**	**0.0229**	**0.0000**	**28.0594**	**28.0594**	**7.0400e-003**	**0.0000**	**28.2072**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1800e-003	0.0453	0.0595	1.0000e-004	2.6200e-003	7.2000e-004	3.3400e-003	7.5000e-004	6.6000e-004	1.4100e-003	0.0000	8.7874	8.7874	8.0000e-005	0.0000	8.7890
Worker	8.8500e-003	0.0117	0.1123	2.3000e-004	0.0188	1.5000e-004	0.0190	5.0000e-003	1.4000e-004	5.1400e-003	0.0000	18.1680	18.1680	1.0000e-003	0.0000	18.1891
Total	**0.0140**	**0.0570**	**0.1718**	**3.3000e-004**	**0.0214**	**8.7000e-004**	**0.0223**	**5.7500e-003**	**8.0000e-004**	**6.5500e-003**	**0.0000**	**26.9553**	**26.9553**	**1.0800e-003**	**0.0000**	**26.9780**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0421	0.3453	0.2156	3.1000e-004		0.0243	0.0243		0.0229	0.0229	0.0000	28.0593	28.0593	7.0400e-003	0.0000	28.2072
Total	**0.0421**	**0.3453**	**0.2156**	**3.1000e-004**		**0.0243**	**0.0243**		**0.0229**	**0.0229**	**0.0000**	**28.0593**	**28.0593**	**7.0400e-003**	**0.0000**	**28.2072**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1800e-003	0.0453	0.0595	1.0000e-004	2.6200e-003	7.2000e-004	3.3400e-003	7.5000e-004	6.6000e-004	1.4100e-003	0.0000	8.7874	8.7874	8.0000e-005	0.0000	8.7890
Worker	8.8500e-003	0.0117	0.1123	2.3000e-004	0.0188	1.5000e-004	0.0190	5.0000e-003	1.4000e-004	5.1400e-003	0.0000	18.1680	18.1680	1.0000e-003	0.0000	18.1891
Total	**0.0140**	**0.0570**	**0.1718**	**3.3000e-004**	**0.0214**	**8.7000e-004**	**0.0223**	**5.7500e-003**	**8.0000e-004**	**6.5500e-003**	**0.0000**	**26.9553**	**26.9553**	**1.0800e-003**	**0.0000**	**26.9780**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4445	3.7201	2.4151	3.5000e-003		0.2567	0.2567		0.2412	0.2412	0.0000	316.0104	316.0104	0.0784	0.0000	317.6563
Total	**0.4445**	**3.7201**	**2.4151**	**3.5000e-003**		**0.2567**	**0.2567**		**0.2412**	**0.2412**	**0.0000**	**316.0104**	**316.0104**	**0.0784**	**0.0000**	**317.6563**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0520	0.4463	0.6252	1.0900e-003	0.0297	6.5700e-003	0.0363	8.5000e-003	6.0500e-003	0.0146	0.0000	98.5424	98.5424	7.7000e-004	0.0000	98.5586
Worker	0.0913	0.1206	1.1498	2.6300e-003	0.2135	1.6400e-003	0.2151	0.0567	1.5100e-003	0.0582	0.0000	198.9490	198.9490	0.0105	0.0000	199.1697
Total	**0.1433**	**0.5669**	**1.7750**	**3.7200e-003**	**0.2432**	**8.2100e-003**	**0.2514**	**0.0652**	**7.5600e-003**	**0.0728**	**0.0000**	**297.4913**	**297.4913**	**0.0113**	**0.0000**	**297.7283**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4445	3.7201	2.4151	3.5000e-003		0.2567	0.2567		0.2412	0.2412	0.0000	316.0101	316.0101	0.0784	0.0000	317.6560
Total	**0.4445**	**3.7201**	**2.4151**	**3.5000e-003**		**0.2567**	**0.2567**		**0.2412**	**0.2412**	**0.0000**	**316.0101**	**316.0101**	**0.0784**	**0.0000**	**317.6560**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0520	0.4463	0.6252	1.0900e-003	0.0297	6.5700e-003	0.0363	8.5000e-003	6.0500e-003	0.0146	0.0000	98.5424	98.5424	7.7000e-004	0.0000	98.5586
Worker	0.0913	0.1206	1.1498	2.6300e-003	0.2135	1.6400e-003	0.2151	0.0567	1.5100e-003	0.0582	0.0000	198.9490	198.9490	0.0105	0.0000	199.1697
Total	**0.1433**	**0.5669**	**1.7750**	**3.7200e-003**	**0.2432**	**8.2100e-003**	**0.2514**	**0.0652**	**7.5600e-003**	**0.0728**	**0.0000**	**297.4913**	**297.4913**	**0.0113**	**0.0000**	**297.7283**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0909	0.9738	0.6446	9.7000e-004		0.0549	0.0549		0.0505	0.0505	0.0000	91.4101	91.4101	0.0276	0.0000	91.9891
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0916**	**0.9738**	**0.6446**	**9.7000e-004**		**0.0549**	**0.0549**		**0.0505**	**0.0505**	**0.0000**	**91.4101**	**91.4101**	**0.0276**	**0.0000**	**91.9891**

3.5 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2400e-003	2.9600e-003	0.0282	6.0000e-005	5.2300e-003	4.0000e-005	5.2700e-003	1.3900e-003	4.0000e-005	1.4300e-003	0.0000	4.8762	4.8762	2.6000e-004	0.0000	4.8816
Total	**2.2400e-003**	**2.9600e-003**	**0.0282**	**6.0000e-005**	**5.2300e-003**	**4.0000e-005**	**5.2700e-003**	**1.3900e-003**	**4.0000e-005**	**1.4300e-003**	**0.0000**	**4.8762**	**4.8762**	**2.6000e-004**	**0.0000**	**4.8816**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0909	0.9738	0.6446	9.7000e-004		0.0549	0.0549		0.0505	0.0505	0.0000	91.4100	91.4100	0.0276	0.0000	91.9890
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0916**	**0.9738**	**0.6446**	**9.7000e-004**		**0.0549**	**0.0549**		**0.0505**	**0.0505**	**0.0000**	**91.4100**	**91.4100**	**0.0276**	**0.0000**	**91.9890**

3.5 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2400e-003	2.9600e-003	0.0282	6.0000e-005	5.2300e-003	4.0000e-005	5.2700e-003	1.3900e-003	4.0000e-005	1.4300e-003	0.0000	4.8762	4.8762	2.6000e-004	0.0000	4.8816
Total	**2.2400e-003**	**2.9600e-003**	**0.0282**	**6.0000e-005**	**5.2300e-003**	**4.0000e-005**	**5.2700e-003**	**1.3900e-003**	**4.0000e-005**	**1.4300e-003**	**0.0000**	**4.8762**	**4.8762**	**2.6000e-004**	**0.0000**	**4.8816**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.0497					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0160	0.1032	0.0820	1.3000e-004		8.5500e-003	8.5500e-003		8.5500e-003	8.5500e-003	0.0000	11.1067	11.1067	1.3100e-003	0.0000	11.1342
Total	**2.0657**	**0.1032**	**0.0820**	**1.3000e-004**		**8.5500e-003**	**8.5500e-003**		**8.5500e-003**	**8.5500e-003**	**0.0000**	**11.1067**	**11.1067**	**1.3100e-003**	**0.0000**	**11.1342**

3.6 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1200e-003	8.0800e-003	0.0770	1.8000e-004	0.0143	1.1000e-004	0.0144	3.8000e-003	1.0000e-004	3.9000e-003	0.0000	13.3283	13.3283	7.0000e-004	0.0000	13.3431
Total	**6.1200e-003**	**8.0800e-003**	**0.0770**	**1.8000e-004**	**0.0143**	**1.1000e-004**	**0.0144**	**3.8000e-003**	**1.0000e-004**	**3.9000e-003**	**0.0000**	**13.3283**	**13.3283**	**7.0000e-004**	**0.0000**	**13.3431**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.0497					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0160	0.1032	0.0820	1.3000e-004		8.5500e-003	8.5500e-003		8.5500e-003	8.5500e-003	0.0000	11.1066	11.1066	1.3100e-003	0.0000	11.1341
Total	**2.0657**	**0.1032**	**0.0820**	**1.3000e-004**		**8.5500e-003**	**8.5500e-003**		**8.5500e-003**	**8.5500e-003**	**0.0000**	**11.1066**	**11.1066**	**1.3100e-003**	**0.0000**	**11.1341**

3.6 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1200e-003	8.0800e-003	0.0770	1.8000e-004	0.0143	1.1000e-004	0.0144	3.8000e-003	1.0000e-004	3.9000e-003	0.0000	13.3283	13.3283	7.0000e-004	0.0000	13.3431
Total	**6.1200e-003**	**8.0800e-003**	**0.0770**	**1.8000e-004**	**0.0143**	**1.1000e-004**	**0.0144**	**3.8000e-003**	**1.0000e-004**	**3.9000e-003**	**0.0000**	**13.3283**	**13.3283**	**7.0000e-004**	**0.0000**	**13.3431**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	1.8704	3.6624	17.3453	0.0347	2.3531	0.0449	2.3980	0.6294	0.0413	0.6707	0.0000	2,657.328 1	2,657.328 1	0.1148	0.0000	2,659.737 9
Mitigated	1.8266	3.4071	16.4069	0.0318	2.1449	0.0413	2.1863	0.5737	0.0381	0.6118	0.0000	2,431.958 8	2,431.958 8	0.1061	0.0000	2,434.186 6

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,560.00	1,560.00	1560.00	4,454,273	4,060,210
Fast Food Restaurant with Drive Thru	1,008.00	1,008.00	1008.00	941,800	858,480
General Office Building	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Quality Restaurant	558.00	558.00	558.00	661,881	603,325
Strip Mall	129.60	129.60	129.60	199,588	181,931
Total	3,255.60	3,255.60	3,255.60	6,257,542	5,703,946

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	41.60	18.80	39.60	86	11	3
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510423	0.073380	0.192408	0.132453	0.036550	0.005219	0.012745	0.022253	0.001862	0.002079	0.006550	0.000609	0.003468

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated	0.0206	0.1808	0.1086	1.1200e-003		0.0142	0.0142		0.0142	0.0142	0.0000	204.0306	204.0306	3.9100e-003	3.7400e-003	205.2723
NaturalGas Unmitigated	0.0241	0.2108	0.1235	1.3100e-003		0.0167	0.0167		0.0167	0.0167	0.0000	238.4583	238.4583	4.5700e-003	4.3700e-003	239.9095
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	449.7473	449.7473	0.0181	3.7500e-003	451.2885
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	474.7090	474.7090	0.0191	3.9500e-003	476.3357

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	103047	5.6000e-004	5.0500e-003	4.2400e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	5.4990	5.4990	1.1000e-004	1.0000e-004	5.5325
Health Club	37728	2.0000e-004	1.8500e-003	1.5500e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0133	2.0133	4.0000e-005	4.0000e-005	2.0256
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.09281e+006	5.8900e-003	0.0536	0.0450	3.2000e-004		4.0700e-003	4.0700e-003		4.0700e-003	4.0700e-003	0.0000	58.3166	58.3166	1.1200e-003	1.0700e-003	58.6715
Strip Mall	8244	4.0000e-005	4.0000e-004	3.4000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4399	0.4399	1.0000e-005	1.0000e-005	0.4426
Apartments Low Rise	2.80368e+006	0.0151	0.1292	0.0550	8.2000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	149.6153	149.6153	2.8700e-003	2.7400e-003	150.5258
Fast Food Restaurant with Drive Thru	423024	2.2800e-003	0.0207	0.0174	1.2000e-004		1.5800e-003	1.5800e-003		1.5800e-003	1.5800e-003	0.0000	22.5742	22.5742	4.3000e-004	4.1000e-004	22.7116
Total		**0.0241**	**0.2108**	**0.1235**	**1.3000e-003**		**0.0167**	**0.0167**		**0.0167**	**0.0167**	**0.0000**	**238.4583**	**238.4583**	**4.5800e-003**	**4.3700e-003**	**239.9095**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	82430.2	4.4000e-004	4.0400e-003	3.3900e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.3988	4.3988	8.0000e-005	8.0000e-005	4.4256
Health Club	34096	1.8000e-004	1.6700e-003	1.4000e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.8195	1.8195	3.0000e-005	3.0000e-005	1.8306
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.03422e+006	5.5800e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003	0.0000	55.1900	55.1900	1.0600e-003	1.0100e-003	55.5259
Strip Mall	7164	4.0000e-005	3.5000e-004	2.9000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3823	0.3823	1.0000e-005	1.0000e-005	0.3846
Apartments Low Rise	2.26513e+006	0.0122	0.1044	0.0444	6.7000e-004		8.4400e-003	8.4400e-003		8.4400e-003	8.4400e-003	0.0000	120.8761	120.8761	2.3200e-003	2.2200e-003	121.6118
Fast Food Restaurant with Drive Thru	400344	2.1600e-003	0.0196	0.0165	1.2000e-004		1.4900e-003	1.4900e-003		1.4900e-003	1.4900e-003	0.0000	21.3639	21.3639	4.1000e-004	3.9000e-004	21.4939
Total		**0.0206**	**0.1808**	**0.1086**	**1.1200e-003**		**0.0143**	**0.0143**		**0.0143**	**0.0143**	**0.0000**	**204.0306**	**204.0306**	**3.9100e-003**	**3.7400e-003**	**205.2723**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	944068	308.5296	0.0124	2.5700e-003	309.5869
Fast Food Restaurant with Drive Thru	99264	32.4404	1.3100e-003	2.7000e-004	32.5515
General Office Building	73451	24.0044	9.7000e-004	2.0000e-004	24.0867
Health Club	28800	9.4121	3.8000e-004	8.0000e-005	9.4444
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	256432	83.8042	3.3700e-003	7.0000e-004	84.0914
Strip Mall	50544	16.5182	6.6000e-004	1.4000e-004	16.5748
Total		**474.7090**	**0.0191**	**3.9600e-003**	**476.3357**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	900972	294.4456	0.0119	2.4500e-003	295.4546
Fast Food Restaurant with Drive Thru	93228	30.4677	1.2300e-003	2.5000e-004	30.5721
General Office Building	66480.8	21.7265	8.7000e-004	1.8000e-004	21.8010
Health Club	27616	9.0252	3.6000e-004	8.0000e-005	9.0561
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	240839	78.7083	3.1700e-003	6.6000e-004	78.9780
Strip Mall	47043	15.3741	6.2000e-004	1.3000e-004	15.4268
Total		**449.7473**	**0.0181**	**3.7500e-003**	**451.2886**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	1.6911	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Mitigated	1.6911	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4506					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1798					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0607	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Total	**1.6911**	**0.0227**	**1.9502**	**1.0000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**3.1539**	**3.1539**	**3.1700e-003**	**0.0000**	**3.2204**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4506					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1798					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0607	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Total	**1.6911**	**0.0227**	**1.9502**	**1.0000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**3.1539**	**3.1539**	**3.1700e-003**	**0.0000**	**3.2204**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	137.7975	0.6856	0.0172	157.5126
Mitigated	116.1224	0.5486	0.0138	131.9061

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	16.94 / 10.6796	116.2365	0.5565	0.0140	132.2487
Fast Food Restaurant with Drive Thru	0.728481 / 0.0464988	3.4999	0.0239	5.9000e-004	4.1834
General Office Building	0.870895 / 0.533775	5.9203	0.0286	7.2000e-004	6.7433
Health Club	0.189258 / 0.115997	1.2866	6.2200e-003	1.6000e-004	1.4654
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.88191 / 0.120122	9.0414	0.0617	1.5200e-003	10.8070
Strip Mall	0.266661 / 0.163437	1.8128	8.7600e-003	2.2000e-004	2.0648
Total		**137.7975**	**0.6856**	**0.0172**	**157.5126**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	13.552 / 10.0281	98.3791	0.4453	0.0112	111.2005
Fast Food Restaurant with Drive Thru	0.582785 / 0.0436624	2.8234	0.0191	4.7000e-004	3.3699
General Office Building	0.696716 / 0.501214	5.0057	0.0229	5.8000e-004	5.6646
Health Club	0.151406 / 0.108921	1.0878	4.9700e-003	1.2000e-004	1.2310
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.50553 / 0.112794	7.2938	0.0493	1.2100e-003	8.7057
Strip Mall	0.213329 / 0.153468	1.5327	7.0100e-003	1.8000e-004	1.7345
Total		**116.1224**	**0.5486**	**0.0138**	**131.9061**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.2174	1.0766	0.0000	40.8264
Unmitigated	36.4349	2.1532	0.0000	81.6528

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	119.6	24.2777	1.4348	0.0000	54.4079
Fast Food Restaurant with Drive Thru	27.65	5.6127	0.3317	0.0000	12.5784
General Office Building	4.56	0.9256	0.0547	0.0000	2.0744
Health Club	18.24	3.7026	0.2188	0.0000	8.2977
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	5.66	1.1489	0.0679	0.0000	2.5748
Strip Mall	3.78	0.7673	0.0454	0.0000	1.7196
Total		**36.4349**	**2.1532**	**0.0000**	**81.6528**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	59.8	12.1389	0.7174	0.0000	27.2040
Fast Food Restaurant with Drive Thru	13.825	2.8064	0.1659	0.0000	6.2892
General Office Building	2.28	0.4628	0.0274	0.0000	1.0372
Health Club	9.12	1.8513	0.1094	0.0000	4.1488
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.83	0.5745	0.0340	0.0000	1.2874
Strip Mall	1.89	0.3837	0.0227	0.0000	0.8598
Total		**18.2174**	**1.0766**	**0.0000**	**40.8264**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Global Climate Change Evaluation

for the

Carroll Canyon Mixed Use Project

Submitted To:

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November 23, 2016

Table of Contents

1.0 INTRODUCTION **1**

1.1 General Principles and Existing Conditions **2**

1.2 Sources and Global Warming Potentials of GHG **3**

1.3 Regulatory Framework **6**

1.3.1 National and International Efforts 6

1.3.2 State Regulations and Standards 8

1.3.3 Local Regulations and Standards 13

2.0 POTENTIAL CLIMATE CHANGE IMPACTS TO PROJECT SITE **17**

2.1 Existing Conditions **17**

2.2 Typical Adverse Effects **17**

3.0 CLIMATE CHANGE SIGNIFICANCE CRITERIA **20**

4.0 GREENHOUSE GAS INVENTORY **22**

4.1 Office Building Use **22**

4.2 Construction Greenhouse Gas Emissions **24**

4.3 Operational Greenhouse Gas Emissions **25**

5.0 CONSISTENCY WITH CAP CHECKLIST **28**

5.1 Step One **28**

5.2 Step Two **32**

5.3 Consistency Determination **33**

6.0 CONCLUSIONS **34**

7.0 REFERENCES **35**

Appendix A Greenhouse Gas Emission Calculations

List of Acronyms

APCD	Air Pollution Control District
AB	Assembly Bill
AB 32	Assembly Bill 32, Global Warming Solutions Act of 2006
ARB	Air Resources Board
CAPCOA	California Air Pollution Control Officers Association
CCAP	Center for Clean Air Policy
CCAR	California Climate Action Registry
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DWR	Department of Water Resources
EPA	U.S. Environmental Protection Agency
GCC	Global Climate Change
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Energy and Environmental Design
MMT	Million Metric Tons
MW	Megawatts
N_2O	Nitrous Oxide
OPR	State Office of Planning and Research
PFCs	Perfluorocarbons
RPS	Renewable Portfolio Standards
SB	Senate Bill
SDCGHGI	San Diego County Greenhouse Gas Inventory
UNFCCC	United Nations Framework Convention on Climate Change
URBEMIS	Urban Emissions Model
USBGC	U.S. Green Building Council
VMT	Vehicle Miles Traveled

1.0 INTRODUCTION

This report presents an assessment of potential greenhouse gas (GHG) impacts associated with the Carroll Canyon Mixed Use Project in the City of San Diego, California. The evaluation addresses the potential for greenhouse gas emissions during construction and after full buildout of the project.

The proposed Carroll Canyon Mixed Use Project is a redevelopment project of approximately 9.3 net acres located on the northeast corner of Carroll Canyon Road and I-15 in the Scripps Ranch community of San Diego, California. The redevelopment project with 260 apartments and 12,200 square feet of commercial/retail space will replace an existing mostly vacant office complex of approximately 76,241 square feet. The site is currently zoned as an Industrial Park (IP-2-1) and is proposed to be zoned as Residential (RM-3-7). The project involves a rezone of the project site from IP-2-1 to RM-3-7, a Community Plan Amendment to change the designation of the project site from Industrial Park to Residential/Commercial. The project actions would allow for the proposed redevelopment of the existing, 76,241-square foot office complex.

As discussed in the Traffic Impact Analysis (LOS Engineering 2015), the Near Term conditions were modeled without accounting for traffic from the existing office complex. However, the Horizon Year conditions were analyzed based on the San Diego Association of Governments SANDAG's Series 12 Year 2035 forecasted ADTs for the study area roadway segments. The SANDAG Series 12 year 2035 model has the project site coded with the current zoning of industrial/office and not the proposed project with a commercial use. This analysis is consistent with the Traffic Impact Analysis in that it evaluates emissions from the existing office building as it would operate under Horizon Year conditions (i.e., with the office building in use). In addition, because the office building has historically been in use since the 1970s, GHG emissions were calculated to account for its historical contribution to global GHGs.

This Global Climate Change analysis includes an evaluation of existing conditions in the project vicinity, an assessment of potential greenhouse gas emissions associated with project construction and operations, and accounts for project design features along with other regulatory actions that will reduce greenhouse gas emissions.

1.1 General Principles and Existing Conditions

Global Climate Change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. GCC may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land. Historical records indicate that global climate changes have occurred in the past due to natural phenomena (such as during previous ice ages). Some data indicate that the current global conditions differ from past climate changes in rate and magnitude.

Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere, much like a greenhouse. GHGs are emitted by both natural processes and human activities. Without these natural GHGs, the Earth's temperature would be about 61º Fahrenheit cooler (California Environmental Protection Agency 2006). Emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere. For example, data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years; however, concentrations of CO_2 have increased in the atmosphere since the industrial revolution.

GCC and GHGs have been at the center of a widely contested political, economic, and scientific debate. Although the conceptual existence of GCC is generally accepted, the extent to which GHGs generally and anthropogenic-induced GHGs (mainly CO_2, CH_4 and N_2O) contribute to it remains a source of debate. The State of California has been at the forefront of developing solutions to address GCC.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts.

The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm CO_2 equivalent concentration is required to keep global mean warming below 3.6º Fahrenheit (2º Celsius), which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3) (California Health and Safety Code Section 38505(g).) CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity.

1.2 Sources and Global Warming Potentials of GHG

Anthropogenic sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Accordingly, anthropogenic sources of CH_4 include landfills, fermentation of manure and cattle farming. Anthropogenic sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid. Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a GWP of 28, and N_2O, which has a GWP of 265. Table 1 presents the GWP and atmospheric lifetimes of common GHGs. In order to account for each GHG's respective GWP, all types of GHG emissions are expressed in terms of CO_2 equivalents (CO_2e) and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

Table 1

Global Warming Potentials and Atmospheric Lifetimes of GHGs			
GHG	**Formula**	**100-Year Global Warming Potential**	**Atmospheric Lifetime (Years)**
Carbon Dioxide	CO_2	1	Variable
Methane	CH_4	28	12
Nitrous Oxide	N_2O	265	121
Sulfur Hexafluoride	SF_6	23,500	3,200
Hydrofluorocarbons	HFCs	100 to 12,000	1 to 100
Perfluorocarbons	PFCs	7,000 to 11,000	3.000 to 50,000
Nitrogen Trifluoride	NF_3	16,100	500
Source:First Update to the Climate Change Scoping Plan, ARB 2014			

The California Air Resources Board (ARB) compiled a statewide inventory of anthropogenic GHG emissions and sinks that includes estimates for CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs. The current inventory covers the years 1990 to 2012, and is summarized in Table 2. Data sources used to calculate this GHG inventory include California and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 1990 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include: Agriculture; Commercial; Electricity Generation; Forestry; Industrial; Residential; and Transportation.

Table 2 State of California GHG Emissions by Sector				
Sector	**Total 1990 Emissions ($MMTCO_2e$)**	**Percent of Total 1990 Emissions**	**Total 2012 Emissions ($MMTCO_2e$)**	**Percent of Total 2012 Emissions**
Agriculture	23.4	5%	37.86	8%
Commercial	14.4	3%	14.20	3%
Electricity Generation	110.6	26%	95.09	21%
Forestry (excluding sinks)	0.2	<1%		
Industrial	103.0	24%	89.16	19%
Residential	29.7	7%	28.09	6%
Transportation	150.7	35%	167.38	36%
Recycling and Waste			8.49	2%
High GWP Gases			18.41	4%
Forestry Sinks	(6.7)			

In addition to the statewide GHG inventory prepared by the ARB, a GHG inventory was prepared by the University of San Diego School of Law Energy Policy Initiative Center (EPIC) for the San Diego region (University of San Diego 2008). The San Diego County Greenhouse Gas Inventory (SDCGHGI) takes into account the unique characteristics of the region when estimating emissions, and estimated emissions for years 1990, 2006, and 2020.

Areas where feasible reductions could occur and the strategies for achieving those reductions are outlined in the SDCGHGI. A summary of the various sectors that contribute GHG emissions in San Diego County for year 2006 is provided in Table 3. Total GHGs in San Diego County are estimated at 34 $MMTCO_2e$.

Table 3
San Diego County 2006 GHG Emissions by Category

Sector	Total Emissions ($MMTCO_2e$)	Percent of Total Emissions
On-Road Transportation	16	46%
Electricity	9	25%
Natural Gas Consumption	3	9%
Civil Aviation	1.7	5%
Industrial Processes & Products	1.6	5%
Other Fuels/Other	1.1	4%
Off-Road Equipment & Vehicles	1.3	4%
Waste	0.7	2%
Agriculture/Forestry/Land Use	0.7	2%
Rail	0.3	1%
Water-Born Navigation	0.13	0.4%

Source: EPIC's SDCGHGI, 2008.

According to the SDCGHGI, a majority of the region's emissions are attributable to on-road transportation, with the next largest source of GHG emissions attributable to electricity generation. The SDCGHGI states that emission reductions from on-road transportation will be achieved in a variety of ways, including through regulations aimed at increasing fuel efficiency standards and decreasing vehicle emissions. These regulations are outside the control of project applicants for land use development. The SDCGHGI also indicates that emission reductions from electricity generation will be achieved in a variety of ways, including through a 10 percent reduction in electricity consumption, implementation of the renewable portfolio standard (RPS), cleaner electricity purchases by San Diego Gas & Electric, replacement of the Boardman Contract (which allows the purchase of electricity from coal-fired power plants), and implementation of 400 MW of photovoltaics. Many of these measures are also outside the control of project applicants.

In its Draft Climate Action Plan (City of San Diego 2014), the City identified the 2010 baseline for GHG emissions of 12,851,000 MT CO2e. Based on the community-wide emissions inventory, 55% of the baseline emissions are attributable to transportation, 23% are attributable to electricity use, 17% are attributable to natural gas use, and 5% are attributable to solid waste and wastewater handling and treatment.

1.3 Regulatory Framework

All levels of government have some responsibility for the protection of air quality, and each level (Federal, State, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of this air quality regulatory framework.

1.3.1 National and International Efforts

In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments agreed to gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of global climate change. The U.S.

Supreme Court rules in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007), that USEPA has the ability to regulate GHG emissions. In addition to the national and international efforts described above, many local jurisdictions have adopted climate change policies and programs.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the federal CAA:

> **<u>Endangerment Finding:</u>** USEPA found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.
>
> **<u>Cause or Contribute Finding:</u>** USEPA found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009 and adopted on April 1, 2010. As finalized in April 2010, the emissions standards rule for vehicles will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of carbon dioxide per mile.

Mandatory GHG Reporting Rule. On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), the EPA proposed a rule that requires mandatory reporting of greenhouse gas (GHG) emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed, and was published in the Federal Register on October 30, 2009. The rule became effective on

December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

The EPA is requiring suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), and other fluorinated gases, including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

1.3.2 State Regulations and Standards

The following subsections describe regulations and standards that have been adopted by the State of California to address GCC issues.

Assembly Bill 32, the California Global Warming Solutions Act of 2006. In September 2006, Governor Schwarzenegger signed AB 32 into law. AB 32 directed the ARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit.
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG

emissions from any sources or categories of sources that ARB finds necessary to achieve the statewide GHG emissions limit.

- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

AB 32 required that, by January 1, 2008, the ARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. The ARB adopted its Scoping Plan in December 2008 (ARB 2008), which provided estimates of the 1990 GHG emissions level and identified sectors for the reduction of GHG emissions. The ARB estimated that the 1990 GHG emissions level was 427 MMT net CO_2e, and the projection for "business as usual" emissions for 2020 was 596 MMT net CO_2e (ARB 2008). The ARB therefore estimated that a reduction of 169 MMT net CO_2e emissions below "business as usual" levels would be required by 2020 to meet the 1990 level. This amounted to roughly a 28.35 percent reduction from projected business-as-usual levels in 2020. In 2011, the ARB developed a supplement to the AB 32 Scoping Plan (ARB 2011). The Supplement updated the emissions inventory based on current projections for "business as usual" emissions for 2020 to 506.8 metric tons of CO_2e. The updated projection included adopted measures (Pavley 1 fuel efficiency standards, 20% Renewable Portfolio Standard requirement), and estimated that an additional 16 percent reduction below the estimated "business as usual" levels would be necessary to return to 1990 levels by 2020.

In 2014, the ARB published its First Update to the Climate Change Scoping Plan (ARB 2014). The Update indicates that the State is on target to meet the goal of reducing GHG emissions to 1990 level by 2020. The First Update tracks progress in achieving the goals of AB 32, and lays out a new set of actions that will move the State further along the path to achieving the 2050 goal of reducing emissions to 80% below 1990 levels. While the Update discusses setting a mid-term target, the plan does not yet set a quantifiable target toward meeting the 2050 goal.

Senate Bill 97. Senate Bill (SB) 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directed the Governor's Office of Planning and Research (OPR) to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directed the California Natural Resources Agency (CNRA) to certify and adopt the CEQA guidelines by January 1, 2010.

OPR published a technical advisory on CEQA and climate change on June 19, 2008. The guidance did not include a suggested threshold, but stated that the OPR had asked the ARB to "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The OPR technical advisory does recommend that CEQA analyses include the following components:

- Identification of greenhouse gas emissions;
- Determination of significance; and
- Mitigation of impacts, as needed and as feasible.

On December 31, 2009, the CNRA adopted the proposed amendments to the State CEQA Guidelines. These amendments became effective on March 18, 2010.

Executive Order S-3-05. Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. Executive Order S-3-05 also calls for the California EPA (CalEPA) to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California", and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006.

Executive Order B-30-15. Executive Order B-30-15 was enacted by the Governor on April 29, 2015. Executive Order B-30-15 establishes an interim GHG emission reduction goal for the state of California to reduce GHG emissions to 40 percent below 1990 levels by the year 2030. This Executive Order directs all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in Executive Order S-3-05 to reduce GHG emissions to 80 percent below 1990 levels by the year 2050. The Executive Order directs ARB to update its Scoping Plan to address the 2030 goal. It is anticipated that ARB will develop statewide inventory projection data for 2030 and commence efforts to identify reduction strategies capable of securing emission reductions that allow for achievement of the new interim goal for 2030.

Executive Order S-21-09. Executive Order S-21-09 was enacted by the Governor on September 15, 2009. Executive Order S-21-09 requires that the ARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target. Under Executive Order S-21-09, the ARB will work with the Public Utilities Commission and California Energy Commission to encourage the creation and use of renewable energy sources, and will regulate all California utilities. The ARB will also consult with the Independent System Operator and other load balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the ARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health.

California Code of Regulations Title 24. Although not originally intended to reduce greenhouse gas emissions, Title 24 of the California Code of Regulations, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

The GHG emission inventory was based on Title 24 standards as of October 2005; however, Title 24 has been updated as of 2008 and 2013. The 2013 standards require buildings to be 15% more energy-efficient than 2008 standards.

Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08. SB 1078 initially set a target of 20% of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the RPS was accelerated in 2006 with the Governor's signing of SB 107, which accelerated the 20% RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor signed Executive Order S-21-09 on September 15, 2009, which directed ARB to implement a regulation consistent with the 2020 33% renewable energy target by July 31, 2010. The 33% RPS was adopted in 2010.

State Standards Addressing Vehicular Emissions. California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by ARB would apply to 2009 and later model year vehicles. ARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030 (AEP 2007). Once implemented, emissions from new light-duty vehicles are expected to be reduced in San Diego County by up to 21 percent by 2020[1].

The ARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments, approved by the ARB Board on September 24, 2009, are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016, and prepare California to harmonize its rules with the federal rules for passenger vehicles.

Executive Order S-01-07. Executive Order S-01-07 was enacted by the Governor on January 18, 2007, and mandates that: 1) a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California. According to the SDCGHGI, the effects of the LCFS would be a 10% reduction in GHG emissions from fuel use by 2020[2]. On

[1] SDCGHGI, An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets, On-Road Transportation Report. Sean Tanaka, Tanaka Research and Consulting, September 2008, Page 7.
[2] SDCGHGI, An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets, On-Road Transportation Report. Sean Tanaka, Tanaka Research and Consulting, September 2008, Page 7.

April 23, 2009, the ARB adopted regulations to implement the LCFS.

Senate Bill 375. SB 375 finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so "it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." Therefore, SB 375 requires that regions with metropolitan planning organizations adopt sustainable communities strategies, as part of their regional transportation plans, which are designed to achieve certain goals for the reduction of GHG emissions from mobile sources.

SB 375 also includes CEQA streamlining provisions for "transit priority projects" that are consistent with an adopted sustainable communities strategy. As defined in SB 375, a "transit priority project" shall: (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a maximum net density of at least 20 dwelling units per acre; and (3) be within 0.5 mile of a major transit stop or high quality transit corridor.

1.3.3 Local Regulations and Standards

The City of San Diego adopted a Climate Protection Action Plan (City of San Diego 2005) that identified early goals for the reduction of GHG emissions for City facilities. The plan did not address City development, but rather focused on how the City itself could reduce emissions through implementing policies such as recycling, energy efficiency and alternative energy programs, and transportation programs.

In February 2014 the City of San Diego released its Draft Climate Action Plan (CAP) to the public for review and comment. The CAP established a baseline for 2010, sets goals for GHG reductions for the milestone years 2020 and 2035, and details the implementation actions and phasing for achieving the goals. To implement the state's goals of reducing emissions to 15% below 2010 levels by 2020, and 49% below 2010 levels by 2035, the City would be required to implement strategies that would reduce emissions to approximately 10.6 MMT CO_2e by 2020 and to 6.4

MMT CO2e by 2035. The CAP determined that, with implementation of the measures identified therein, the City would exceed the state's targets for 2020 and 2035.

The City of San Diego has adopted policies in their Conservation Element (City of San Diego 2008) that address state and federal efforts to reduce GHG emissions. The policies that are applicable to the project include the following:

Policy CE-A.5 Employ sustainable or "green" building techniques for the construction and operation of buildings.

(a) Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and2030 for new commercial buildings. This can be accomplished through factors including, but not limited to:

- Designing mechanical and electrical systems that achieve greater energy efficiency with currently available technology;
- Minimizing energy use through innovative site design and building orientation that addresses factors such as sun-shade patterns, prevailing winds, landscape, and sun-screens;
- Employing self generation of energy using renewable technologies;
- Combining energy efficient measures that have longer payback periods with measures that have shorter payback periods;
- Reducing levels of non-essential lighting, heating and cooling; and
- Using energy efficient appliances and lighting.

(b) Provide technical services for "green" buildings in partnership with other agencies and organizations.

Policy CE-A-7 Construct and operate buildings using materials, methods, and mechanical and electrical systems that ensure a healthful indoor air quality. Avoid contamination by carcinogens, volatile organic compounds, fungi, molds, bacteria, and other known toxins.

(a) Eliminate the use of chlorofluorocarbon-based refrigerants in newly constructed facilities and major building renovations and retrofits for all heating, ventilation, air conditioning, and refrigerant-based building systems.

(b) Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to protect installers and occupants' health and comfort. Where feasible, select low-emitting adhesives, paints, coatings, carpet systems, composite wood, agri-fiber products, and others.

Policy CE-A.8 Reduce construction and demolition waste in accordance with Public Facilities Element, Policy PF-I.2, or be renovating or adding on to existing buildings, rather than constructing new buildings.

Policy CE-A.9 Reuse building materials, use materials that have recycled content, or use materials that are derived from sustainable or rapidly renewable sources to the extent possible, through factors including:

- Scheduling time for deconstruction and recycling activities to take place during project demolition and construction phases;
- Using life cycle costing in decision making for materials and construction techniques. Life cycle costing analyzes the costs and benefits over the life of a particular product, technology, or system;
- Removing code obstacles to using recycled materials and for construction; and
- Implementing effective economic incentives to recycle construction and demolition debris.

Policy CE-A.10 Include features in buildings to facilitate recycling of waste generated by building occupants and associated refuse storage areas.

- Provide permanent, adequate, and convenient space for individual building occupants to collect refuse and recyclable material.
- Provide a recyclables collection area that serves the entire building or project. The space should allow for the separation, collection and storage of paper, glass, plastic, metals, yard waste, and other materials as needed.

Policy CE-A.11 Implement sustainable landscape design and maintenance.

(a) Use integrated pest management techniques, where feasible, to delay, reduce, or eliminate dependence on the use of pesticides, herbicides, and synthetic fertilizers.

(b) Encourage composting efforts through education, incentives, and other activities.

(c) Decrease the amount of impervious surfaces in developments, especially where public places, plazas and amenities are proposed to serve as recreation opportunities.

(d) Strategically plant deciduous shade trees, evergreen trees, and drought tolerant native vegetation, as appropriate, to contribute to sustainable development goals.

(e) Reduce use of lawn types that require high levels of irrigation.

(f) Strive to incorporate existing mature trees and native vegetation into site designs.

(g) Minimize the use of landscape equipment powered by fossil fuels.

(h) Implement water conservation measures in site/building design and landscaping.

(i) Encourage the use of high efficiency irrigation technology, and recycled site water to reduce the use of potable water for irrigation. Use recycled water to meet the needs of development projects to the maximum extent feasible.

2.0 POTENTIAL CLIMATE CHANGE IMPACTS TO PROJECT SITE

2.1 Existing Conditions

The existing 76,241 square foot office building and associated facilities would be demolished and replaced with 260 apartments and 12,200 square feet of commercial/retail space. The site as it exists is a source of GHG emissions.

2.2 Typical Adverse Effects

The Climate Scenarios Report (CCCC 2006), uses a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5 degrees Fahrenheit (ºF)); medium warming range (5.5 to 8.0 ºF); and higher warming range (8.0 to 10.5 ºF). The Climate Scenarios Report then presents an analysis of the future projected climate changes in California under each warming range scenario.

According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to O_3 formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O_3 levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including $PM_{2.5}$ could further compromise air quality. The Climate Scenarios Report indicates that large wildfires could become up to 55 percent more frequent of GHG emissions are not significantly reduced.

Potential health effects from GCC may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State.

Rising Sea Levels. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasing threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats.

Sea levels rose approximately 7 inches during the last century (IPCC 2007) and the State of California predicts an additional rise of 10 to 17 inches by 2050 and a rise of 31–69 inches by 2100, depending on the future levels of GHG emissions (State of California 2010). If this occurs, resultant effects could include increased coastal flooding. Sea level rise adaptation strategies include strategies that involve construction of hard structures as barriers, such as seawalls and levees; soft structure strategies such as wetland enhancement, detention basins, and other natural strategies; accommodation strategies that include grade elevations, elevated structures, and other building design options; and withdrawal strategies that limit development to areas unaffected by sea level rise.

Compliance with IBMC Section 15.50.160, Flood Hazard Reduction Standards, would require development within coastal high hazard areas to be elevated above the base flood level and be adequately anchored to resist flotation, collapse, and lateral movement as detailed in the regulatory setting section. The Carroll Canyon Project is not within the coastal high hazard area, and is therefore not subject to the standards. It is not anticipated that the levels of sea level rise predicted for the area would affect the project.

3.0 CLIMATE CHANGE SIGNIFICANCE CRITERIA

According to the California Natural Resources Agency[3], "due to the global nature of GHG emissions and their potential effects, GHG emissions will typically be addressed in a cumulative impacts analysis." According to Appendix G of the CEQA Guidelines, the following criteria may be considered to establish the significance of GCC emissions:

Would the project:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As discussed in Section 15064.4 of the CEQA Guidelines, the determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency, consistent with the provisions in Section 15064. Section 15064.4 further provides that a lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

(1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or

(2) Rely on a qualitative analysis or performance based standards.

Section 15064.4 also advises a lead agency to consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

[3] California Natural Resources Agency, Initial Statement of Reasons for Regulatory Action, Proposed Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gases Pursuant to SB 97. July 2009.

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.

The California Air Pollution Control Officers Association proposed a screening threshold of 900 metric tons of CO_2e to evaluate whether a project requires further analysis. Projects with emissions above the 900 metric ton threshold are required to evaluate whether emissions can be reduced below "business as usual" levels. As stated in Section 1.3.3, the City of San Diego has not adopted GHG significance thresholds; therefore, the analysis is based on recommendations of the California Air Pollution Control Officers Association (CAPCOA 2008) and the ARB's Scoping Plan (ARB 2008). The 900 metric ton level is a screening threshold to determine if further analysis is required.

4.0 GREENHOUSE GAS INVENTORY

GHG emissions associated with the Carroll Canyon Mixed Use Project were estimated separately for five categories of emissions: (1) construction; (2) energy use, including electricity and natural gas usage; (3) water consumption; (4) solid waste handling; and (5) transportation. The analysis also includes minor area source emissions from such activities as landscaping. The analysis includes a baseline estimate assuming Title 24-compliant buildings. Emissions were estimated based on the CalEEMod Model (ENVIRON 2013).

4.1 Office Building Use

The site is currently occupied by a 76,241 square foot office building and associated uses. As discussed in Section 1.0, the *Carroll Canyon Mixed Use Project Draft Traffic Impact Analysis* (LOS Engineering 2016) did not account for existing trips in the Near Term Scenario, but accounted for trips that would be generated by the office building if the project did not replace it in the Horizon Year Scenario. This is consistent with SANDAG Series 12 forecasts. For the purpose of addressing historical GHG emissions from the office building as it was previously used, and for consistency with the Traffic Impact Analysis in its treatment of the Horizon Year Scenario, this section presents an analysis of the GHG emissions from the office building if it were to be occupied and used as in the Horizon Year Scenario.

It should be noted that the GHG emissions calculated for the office building were not used to demonstrate compliance with GHG reduction goals.

Based on the City of San Diego's *Trip Generation Manual* (City of San Diego 2003), the office would generate a total of 1,375 average daily trips (ADT) (LOS Engineering 2016). Vehicles are a source of existing GHG emissions. In addition to GHGs generated by vehicles, indirect GHG emissions are generated from area sources, electricity, natural gas, water use, and solid waste handling.

Emissions were estimated using default assumptions regarding energy use and vehicle trips for the existing building. The default energy use in the CalEEMod Model represents buildings that are compliant with 2008 Title 24 standards. The energy use assumptions in the model, which were adjusted to reflect compliance with 2005 Title 24 standards based on information from the California Energy Commission (CEC 2007). Because the existing buildings were constructed prior to adoption of these energy efficiency standards, it is likely that energy efficiency is lower and that average energy use figures underestimate energy use for these buildings. Thus the baseline energy use provides a conservative estimate of current energy requirements relative to future energy requirements.

Water use and energy use are often closely linked. The provision of potable water to commercial consumers requires large amounts of energy associated with five stages: (1) source and conveyance, (2) treatment, (3) distribution, (4) end use and (5) wastewater treatment. Existing water use was estimated based on the CalEEMod Model (ENVIRON 2013).

Solid waste generation will also contribute to emissions of GHGs, through waste collection and management activities and emissions of GHGs from landfilling. Solid waste generation rates and GHG emissions from solid waste handling were estimated using the CalEEMod Model.

Emissions from vehicles were estimated based on data from the CalEEMod model, assuming an average trip length of 5.8 miles based on data for average trip lengths within San Diego County estimated by the San Diego Association of Governments (SANDAG).

Estimated GHG emissions associated with existing uses are presented in Table 4.

Table 4 SUMMARY OF ESTIMATED EXISTING OPERATIONAL GREENHOUSE GAS EMISSIONS				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Operational Emissions				
Area Sources	0.0014	0.0000	0.0000	0.0014
Electricity Use	381	0.0153	0.0032	382
Natural Gas Use	91	0.0017	0.0017	91
Water Use	92	0.4451	0.0112	107
Solid Waste Management	14	0.8506	0.0000	38
Vehicle Emissions	774	0.0353	0.0000	775
Total	**1,352**	**1.3480**	**0.0161**	**1,394**
Global Warming Potential Factor	**1**	**28**	**265**	
CO_2 Equivalent Emissions	1,352	38	4	1,394
TOTAL Existing CO_2 Equivalent Emissions	**1,394**			

4.2 Construction Greenhouse Gas Emissions

Construction GHG emissions include emissions from heavy construction equipment, truck traffic, and worker trips. Emissions were calculated using the CalEEMod Model, which is the land use emissions model developed by ENVIRON and the SCAQMD (ENVIRON 2013), for completed and proposed construction. Table 5 presents the construction-related emissions associated with construction of the project.

Table 5 Construction GHG Emissions Metric tons/year	
Construction Phase	**CO_2 Emissions, metric tons**
Construction	996

Lead agencies, including the South Coast Air Quality Management District, the City of San Diego, and the County of San Diego, recommend that construction emissions be amortized over a 30-year period to account for the contribution of construction emissions over the lifetime of the project. Amortizing the emissions from construction of the Proposed Project over a 30-year period would result in an annual contribution of 33 metric tons of CO_2e. These emissions are added to operational emissions to account for the contribution of construction to GHG emissions for the lifetime of the project.

4.3 Operational Greenhouse Gas Emissions

The proposed Carroll Canyon Mixed Use Project includes 260 multi-family units, along with 12,200 square feet of retail/commercial uses. Based on the Traffic Analysis, it is assumed that the retail uses would include approximately 2,400 square feet of fast-food restaurant use, 6,200 square feet of quality restaurant use, and 3,600 square feet of retail use.

As for the existing development, GHG emissions for the project were estimated for five categories of emissions: (1) construction; (2) energy use, including electricity and natural gas usage; (3) water consumption; (4) solid waste management, and (5) transportation. GHG emissions were calculated with the CalEEMod Model, accounting for the following GHG reduction measures:

- The 33% Renewable Portfolio Standard would be achieved with the City of San Diego, resulting in a reduction in GHG emissions of 27% from the default values within the CalEEMod Model.
- Buildings would meet the energy efficiency requirements of Title 24 as of 2013, which results in a 21.8% decrease in electricity use over Title 24 as of 2008 and a 16.8% decrease in natural gas use over Title 24 as of 2008 (CEC 2013) for commercial uses; and a 23.3% decrease in electricity use over Title 24 as of 2008 and a 3.8% decrease in natural gas use over Title 24 as of 2008 for residential uses. The decreases in energy use were accounted for in the model.
- Vehicles would meet the Pavley I, Low Carbon Fuel Standard, and Advanced Clean Cars standards. The default emission factors within the CalEEMod model were adjusted by 3% downward to account for the Advanced Clean Cars program (ARB 2011).
- The project would include low-flow plumbing fixtures, including hybrid waterless urinals, low-flow toilets, low-flow sinks, and low-flow showers.
- The project would reduce outdoor water use for irrigation by 6%.

- The project would meet the City's goal of 50% solid waste diversion through recycling and waste reduction programs.

It was assumed that the average trip length would be 5.8 miles based on SANDAG averages for the region. Total vehicle miles traveled were based on estimates from the CalEEMod Model.

The results of the inventory for operational emissions for business as usual are presented in Table 6. These include GHG emissions associated with buildings (natural gas, purchased electricity), water consumption (energy embodied in potable water), solid waste management (including transport and landfill gas generation), and vehicles. Table 6 summarizes projected emissions using the methodologies noted above.

Table 6
SUMMARY OF ESTIMATED OPERATIONAL GREENHOUSE GAS EMISSIONS PROPOSED PROJECT

Emission Source	Annual Emissions (Metric tons/year)			
	CO_2	CH_4	N_2O	CO_2e
Operational Emissions				
Area Sources	3	0.0032	0.0000	3
Electricity Use	451	0.0182	0.0038	453
Natural Gas Use	230	0.0044	0.0042	231
Water Use	116	0.5486	0.0138	135
Solid Waste Management	18	1.0766	0.0000	48
Vehicle Emissions	1,269	0.0629	0.0000	1,271
Amortized Construction Emissions	33	0.0000	0.0000	33
Total	**2,120**	**1.7139**	**0.0218**	**2,174**
Global Warming Potential Factor	**1**	**28**	**265**	
CO_2 Equivalent Emissions	2,120	48	6	2,174
TOTAL CO_2 Equivalent Emissions	**2,174**			
Existing CO_2 Equivalent Emissions	**(1,394)**			
Net CO_2 Equivalent Emissions	**780**			

As shown in Table 6, the net emissions increase associated with the Carroll Canyon Mixed Use Project is 780 metric tons of CO2e, which is below the 900 metric ton screening threshold proposed by CAPCOA. Accordingly, the Carroll Canyon Mixed Use Project will meet the goals of AB 32 and would not result in cumulatively considerable significant global climate impacts.

5.0 CONSISTENCY WITH CAP CHECKLIST

This Section provides an analysis of the Project's compliance with the City of San Diego's Climate Action Plan (CAP) Consistency Checklist, and supporting documentation demonstrating compliance, approved on July 12, 2016. The CAP Consistency Checklist includes three steps to evaluate consistency of a project with the City's CAP.

5.1 Step One

Step One involves determining whether the project it (a) consistent with the existing General Plan and Community Plan land use designations; or (b) includes a land use plan and/or zoning amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations. If the project cannot demonstrate that it meets criterion (a) or (b), the project's GHG impact is determined to be significant.

The project is not consistent with the existing land use plan and zoning designations. Therefore, under Item 2 of Step One, the project includes a land use plan and zoning designation amendment that would result in less a GHG-intensive project when compared with the existing designations.

In order to determine if a proposed project would result in less GHG emissions than what could occur under existing land use designation(s), City Development Services Department staff has determined that the existing IP-2-1 zone should be used to evaluate the project's consistency with the GHG emissions idenficied in the City's Climate Action Plan.

According to the Scripps Miramar Ranch Community Plan, the project site is designated as Industrial Park. The project site is zoned IP-2-1 (Industrial Park), which allows for development in accordance with the Community Plan at a maximum floor area ratio (FAR) of 2.0. Thus, development of the project site under the Industrial Park land use designation can support an allowed development intensity of approximately 800,000 square feet light industrial/business park uses. This development intensity would result in approximately 14,338,517 VMT annually and generation of approximately 11,835 CO_2 equivalent GHG emissions. The project proposes to rezone the project site from IP-2-1 to RM-3-7 (Multifamily Residential) and CC-2-3 (Community

Commercial). The project would develop with 260 multi-family residential units and 10,700 square feet of commercial use. This development would result in approximately 3,949,372 VMT annually and approximately 2,174 CO_2 equivalent GHG emissions. The proposed project would generate less GHG emission than would occur if the project site were to develop in accordance with the existing zoning and land use designation. Table 7 provides a summary of the comparison.

Table 7
Comparison of VMT and GHG Emissions for Existing Zoning and Land Use Designation

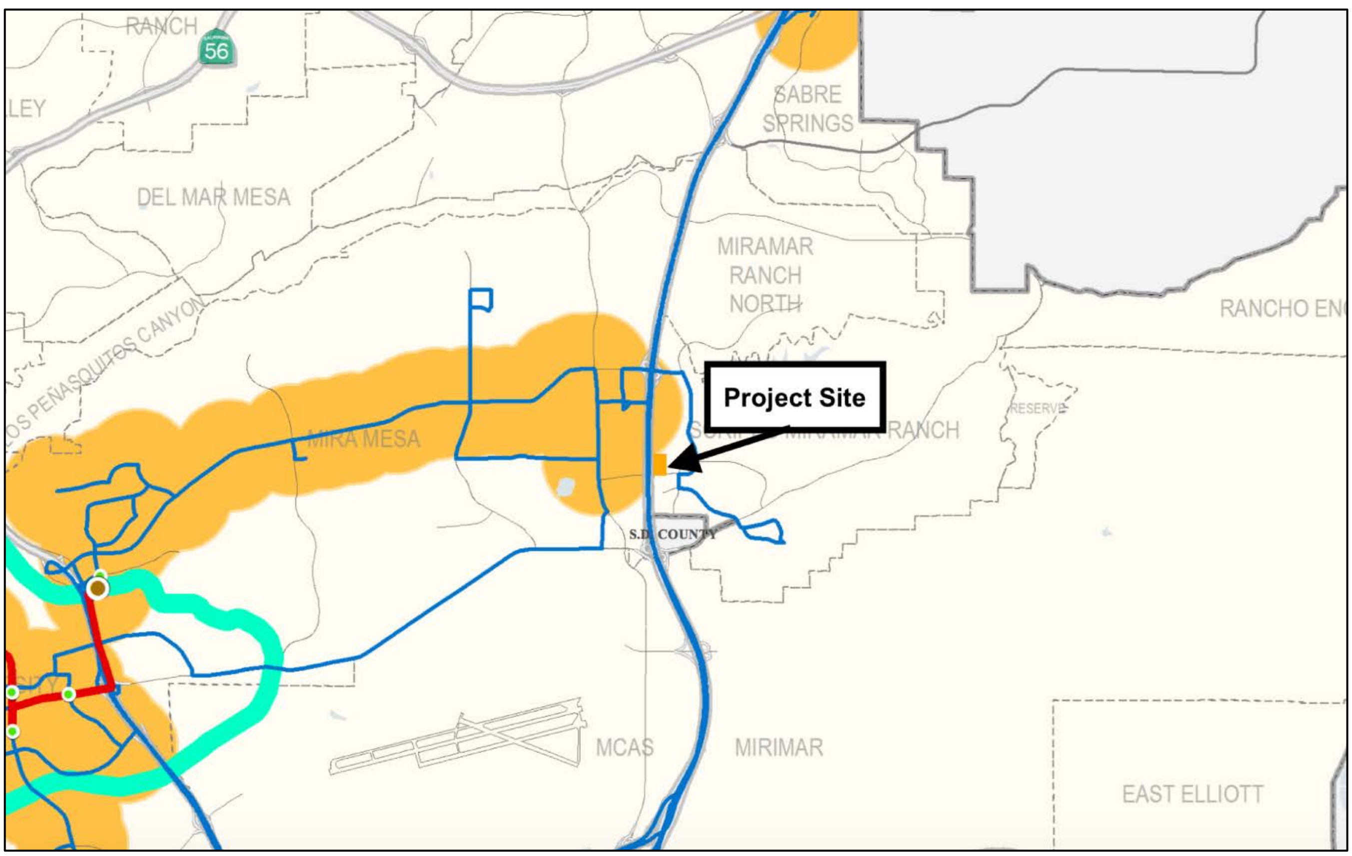
Development	Vehicle Miles Traveled (VMT)	GHG Emissions (CO_2 equivalent GHG emissions)
Development under Existing Land Use and Zoning	14,338,517	11,835
Proposed Project	3,949,372	2,174

Additionally, development of the project site in accordance with the existing zoning and land use designation would occur as a single, employment-intensive use and would not provide the inherent trip-reducing benefits of a mixed-use project. Industrial park development of the project site would result in greater peak hour trips in both the morning and the afternoon, as employees of the site would arrive at the site during the morning peak-hour commute and leave the project site during the afternoon peak-hour commute. Furthermore, the proposed project would provide housing proximate to transit and nearby services and amenities. The commercial uses proposed by the project are within walking distance to employment uses in adjacent industrial and business parks, thereby reducing mid-day travel to access restaurants and neighborhood-serving retail uses.

As described above, the proposed project requires rezones and amendment to the Scripps Miramar Ranch Community Plan that would result in a less GHG-intensive project than what is allowed by the existing zoning and land use designations.

The City's Climate Action Plan includes a Transit Priority Area (TPA) Map as Appendix B. Review of the TPA Map shows that the project site lies partially within two TPAs – one located immediately north and one located immediately west on the west side of Interstate 15. (See Figure 1, *Transit Priority Areas Proximate to Project Site*.) Additionally, the project site is served by bus route 964 (Alliant University – Camino Ruiz & Capricorn), which has 30-minute peak-hour service connecting to Gold Coast Drive and Black Mountain Road. The bus stop at Gold Coast Drive and Black Mountain Road is the location of the nearest TPA bus stop that serves bus route 20 (Rancho Bernardo Station – Downtown San Diego), with a 15-minute peak-hour service, and bus route 31 (Miramar College Transit Station – UTC Transit Station), with a 30-minute peak-hour service. Residential density at the project location supports surrounding TPAs and the goals of TPAs by providing residents and employees that may utilize area transit. The project site's location, mix of uses, access to transit, and its immediate adjacency to and partially within two TPAs further supports the City's Climate Action Plan.

Figure 1. Transit Priority Areas in Relationship to the Project Site



5.2 Step Two

Step Two of the CAP Consistency Checklist requires all projects to demonstrate that they are consistent with the measures in the CAP through a review of project features designed to meet the measures. Consistency with each strategy in the CAP is discussed below.

STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

1. **Cool/Green Roofs** – The proposed project includes roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under the California Green Building Standards Code.

2. **Plumbing fixtures and fittings** –The proposed project shall include the following plumbing fixtures and fittings:

   - Residential buildings shall include the following plumbing fixtures and fittings:
     - Kitchen faucets will not exceed maximum flow rate of 1.5 gallons per minute at 60 psi;
     - Standard dishwashers will not exceed maximum flow rate of 4.25 gallons per cycle;
     - Compact dishwashers will not exceed 3.5 gallons per cycle; and
     - Clothes washers will not exceed a water factor of 6 gallons per cubic feet drum capacity.

   - Nonresidential buildings shall include the following plumbing fixtures and fittings:
     - Plumbing fixtures and fittings will not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code.
     - Appliances and fixtures will meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards.

STRATEGY 2: CLEAN & RENEWABLE ENERGY

3. **Clean & Renewable Energy** – The project shall comply with the following energy performance standards:

   - Low-rise residential use: 15 percent improvement when compared to Title 24 (2013), Part 6 Energy Budget for Proposed Design Building as calculated by Compliance Software certified by the California Energy Commission.
   - Non-residential with indoor lighting and mechanical systems use: Ten percent improvement when compared to Title 24 (2013), Part 6 Energy Budget for Proposed Design Building as calculated by Compliance Software certified by the California Energy Commission.

STRATEGY 3: BICYCLE, WALKING, TRANSIT & LAND USE

4. **Electric Vehicle Charging** –The proposed project includes a shared parking arrangement between project residential and commercial uses, in the form of 419 gated residential parking spaces and 109 open shared parking spaces. Because the commercial component does not meet the requirements of Attachment A, Table 4, of the City of San Diego CAP Consistency Checklist, the electric vehicle charging component only applies to the residential parking, here determined to be the gated parking of 419 parking spaces, and does not apply to the commercial portions of the project.

    - The project shall provide three percent of the total parking spaces required for residential use (13 spaces) with a listed cabinet, box, or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official. Of the total listed cabinets, boxes, or enclosures provided, 50 percent (eight spaces) are to have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents.

5. **Bicycle Parking Spaces** – The project shall provide short-term and long-term bicycle parking spaces in excess of those required in the City's Municipal Code (Chapter 14, Article 2, Division 5). The project proposes 68 bicycle parking spaces where 67 are required.

6. **Shower Facilities** – Commercial components of the project that accommodate over ten tenant-occupants (employees) shall include changing/shower facilities in accordance with the voluntary measures in the California Green Building Standards Code.

7. **Designated Parking Spaces** – Ten percent of the total required parking spaces (53 parking spaces) would be designated for use by a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles would be provided. These parking spaces would be provided within the gated and open parking areas, commiserate with the ratio of parking spaces within these areas.

8. **Transportation Demand Management Program** – Not applicable. The proposed project would not generate over 50 tenant-occupants (employees).

5.3 Consistency Determination

Based on the requirements of Step One and Step Two of the CAP Consistency Checklist, the Carroll Canyon Mixed Use Project is consistent with the City of San Diego CAP and less than significant GHG impacts would occur.

6.0 CONCLUSIONS

Emissions of GHGs were quantified for both construction and operation of the Carroll Canyon Mixed Use Project. Operational emissions were calculated using the CalEEMod Model. Based on the analysis, the net emissions increase attributable to the project is below the CAPCOA-recommended screening threshold of 900 metric tons. The project would therefore not:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The Carroll Canyon Mixed Use Project will be consistent with the goals of AB 32, and would not result in a significant global climate change impact.

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Appendix A

Greenhouse Gas Emission Calculations

Carroll Canyon Existing

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	76.24	1000sqft	9.30	76,241.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	114362	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	250	0
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	230.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	20.00	0.00

tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	12/30/2016	12/31/2010
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2017	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblEnergyUse	T24E	5.69	5.98
tblEnergyUse	T24NG	16.83	18.14
tblLandUse	LandUseSquareFeet	76,240.00	76,241.00
tblLandUse	LotAcreage	1.75	9.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	5.00

tblTripsAndVMT	WorkerTripNumber	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	24.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	18.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	WD_TR	11.01	18.03

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3199	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3600e-003	1.3600e-003	0.0000	0.0000	1.4400e-003
Energy	9.1800e-003	0.0835	0.0701	5.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003	0.0000	471.6105	471.6105	0.0171	4.8400e-003	473.4683
Mobile	0.6110	1.1405	5.4987	9.7900e-003	0.6614	0.0137	0.6751	0.1769	0.0126	0.1895	0.0000	774.3859	774.3859	0.0353	0.0000	775.1273
Waste						0.0000	0.0000		0.0000	0.0000	14.3921	0.0000	14.3921	0.8506	0.0000	32.2535
Water						0.0000	0.0000		0.0000	0.0000	4.2989	87.8167	92.1156	0.4451	0.0112	104.9209
Total	**0.9401**	**1.2240**	**5.5695**	**0.0103**	**0.6614**	**0.0200**	**0.6814**	**0.1769**	**0.0189**	**0.1958**	**18.6910**	**1,333.8144**	**1,352.5054**	**1.3480**	**0.0160**	**1,385.7714**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3199	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3600e-003	1.3600e-003	0.0000	0.0000	1.4400e-003
Energy	9.1800e-003	0.0835	0.0701	5.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003	0.0000	471.6105	471.6105	0.0171	4.8400e-003	473.4683
Mobile	0.6110	1.1405	5.4987	9.7900e-003	0.6614	0.0137	0.6751	0.1769	0.0126	0.1895	0.0000	774.3859	774.3859	0.0353	0.0000	775.1273
Waste						0.0000	0.0000		0.0000	0.0000	14.3921	0.0000	14.3921	0.8506	0.0000	32.2535
Water						0.0000	0.0000		0.0000	0.0000	4.2989	87.8167	92.1156	0.4450	0.0111	104.9140
Total	**0.9401**	**1.2240**	**5.5695**	**0.0103**	**0.6614**	**0.0200**	**0.6814**	**0.1769**	**0.0189**	**0.1958**	**18.6910**	**1,333.8144**	**1,352.5054**	**1.3479**	**0.0160**	**1,385.7646**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.12**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2011	12/31/2010	5	0	
2	Site Preparation	Site Preparation	1/2/2011	12/31/2010	5	0	
3	Grading	Grading	1/2/2011	12/31/2010	5	0	
4	Building Construction	Building Construction	1/2/2011	12/31/2010	5	0	
5	Paving	Paving	1/2/2011	12/31/2010	5	0	
6	Architectural Coating	Architectural Coating	1/2/2011	12/31/2010	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 114,362; Non-Residential Outdoor: 38,121 (Architectural Coating –

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	174	0.41
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demolition	Excavators	3	8.00	162	0.38
Grading	Excavators	1	8.00	162	0.38
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	174	0.41
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40

Building Construction	Welders		1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	0.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	9	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6110	1.1405	5.4987	9.7900e-003	0.6614	0.0137	0.6751	0.1769	0.0126	0.1895	0.0000	774.3859	774.3859	0.0353	0.0000	775.1273
Unmitigated	0.6110	1.1405	5.4987	9.7900e-003	0.6614	0.0137	0.6751	0.1769	0.0126	0.1895	0.0000	774.3859	774.3859	0.0353	0.0000	775.1273

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	1,374.61	180.69	74.72	1,759,057	1,759,057
Total	1,374.61	180.69	74.72	1,759,057	1,759,057

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	5.80	5.80	5.80	33.00	48.00	19.00	77	19	4

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated	9.1800e-003	0.0835	0.0701	5.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003	0.0000	90.8905	90.8905	1.7400e-003	1.6700e-003	91.4437
NaturalGas Unmitigated	9.1800e-003	0.0835	0.0701	5.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003	0.0000	90.8905	90.8905	1.7400e-003	1.6700e-003	91.4437
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	380.7200	380.7200	0.0153	3.1700e-003	382.0246
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	380.7200	380.7200	0.0153	3.1700e-003	382.0246

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	1.70322e+006	9.1800e-003	0.0835	0.0701	5.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003	0.0000	90.8905	90.8905	1.7400e-003	1.6700e-003	91.4437
Total		**9.1800e-003**	**0.0835**	**0.0701**	**5.0000e-004**		**6.3500e-003**	**6.3500e-003**		**6.3500e-003**	**6.3500e-003**	**0.0000**	**90.8905**	**90.8905**	**1.7400e-003**	**1.6700e-003**	**91.4437**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	1.70322e+006	9.1800e-003	0.0835	0.0701	5.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003	0.0000	90.8905	90.8905	1.7400e-003	1.6700e-003	91.4437
Total		**9.1800e-003**	**0.0835**	**0.0701**	**5.0000e-004**		**6.3500e-003**	**6.3500e-003**		**6.3500e-003**	**6.3500e-003**	**0.0000**	**90.8905**	**90.8905**	**1.7400e-003**	**1.6700e-003**	**91.4437**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

General Office Building	1.16496e+006	380.7200	0.0153	3.1700e-003	382.0246
Total		**380.7200**	**0.0153**	**3.1700e-003**	**382.0246**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.16496e+006	380.7200	0.0153	3.1700e-003	382.0246
Total		**380.7200**	**0.0153**	**3.1700e-003**	**382.0246**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3199	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3600e-003	1.3600e-003	0.0000	0.0000	1.4400e-003
Unmitigated	0.3199	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3600e-003	1.3600e-003	0.0000	0.0000	1.4400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0221					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2978					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3600e-003	1.3600e-003	0.0000	0.0000	1.4400e-003
Total	**0.3199**	**1.0000e-005**	**7.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.3600e-003**	**1.3600e-003**	**0.0000**	**0.0000**	**1.4400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0221					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2978					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.3600e-003	1.3600e-003	0.0000	0.0000	1.4400e-003
Total	**0.3199**	**1.0000e-005**	**7.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.3600e-003**	**1.3600e-003**	**0.0000**	**0.0000**	**1.4400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	92.1156	0.4451	0.0112	104.9209
Mitigated	92.1156	0.4450	0.0111	104.9140

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	13.5504 / 8.3051	92.1156	0.4451	0.0112	104.9209
Total		**92.1156**	**0.4451**	**0.0112**	**104.9209**

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	13.5504 / 8.3051	92.1156	0.4450	0.0111	104.9140

Total		92.1156	0.4450	0.0111	104.9140

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	14.3921	0.8506	0.0000	32.2535
Unmitigated	14.3921	0.8506	0.0000	32.2535

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	70.9	14.3921	0.8506	0.0000	32.2535
Total		**14.3921**	**0.8506**	**0.0000**	**32.2535**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	70.9	14.3921	0.8506	0.0000	32.2535
Total		**14.3921**	**0.8506**	**0.0000**	**32.2535**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Carroll Canyon Mixed Use Project

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	4.90	1000sqft	0.50	4,900.00	0
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0
Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.50	2,400.00	0
Health Club	3.20	1000sqft	0.50	3,200.00	0
Quality Restaurant	6.20	1000sqft	0.50	6,200.00	0
Apartments Low Rise	260.00	Dwelling Unit	6.30	260,000.00	744
Strip Mall	3.60	1000sqft	0.50	3,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2017
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assuming 33% RPS implementation

Land Use - based on project description

Vehicle Trips - Based on traffic impact analysis, assuming 5.8 mile trip on average

Vechicle Emission Factors - Accounting for Pavley, LCFS, and ACC

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Assuming no fireplaces

Energy Use - Title 24 as of 2013

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	250	0
tblEnergyUse	T24E	184.75	141.70
tblEnergyUse	T24E	10.06	7.87
tblEnergyUse	T24E	5.69	4.45
tblEnergyUse	T24E	1.48	1.16
tblEnergyUse	T24E	10.06	7.87
tblEnergyUse	T24E	3.89	3.04
tblEnergyUse	T24NG	8,285.40	7,970.55
tblEnergyUse	T24NG	37.80	31.45
tblEnergyUse	T24NG	16.83	14.00
tblEnergyUse	T24NG	4.54	3.78
tblEnergyUse	T24NG	37.80	31.45
tblEnergyUse	T24NG	1.20	1.00
tblFireplaces	NumberGas	143.00	0.00
tblFireplaces	NumberNoFireplace	26.00	260.00
tblFireplaces	NumberWood	91.00	0.00
tblLandUse	LotAcreage	0.11	0.50
tblLandUse	LotAcreage	0.06	0.50
tblLandUse	LotAcreage	0.07	0.50
tblLandUse	LotAcreage	0.14	0.50
tblLandUse	LotAcreage	16.25	6.30
tblLandUse	LotAcreage	0.08	0.50

tblProjectCharacteristics	OperationalYear	2014	2017
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tblVehicleEF	HHD	72.40	65.60
tblVehicleEF	HHD	557.96	528.33
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tblVehicleEF	HHD	4.63	5.15
tblVehicleEF	HHD	0.01	0.03
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.08	0.15
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tblVehicleEF	HHD	0.01	0.03
tblVehicleEF	HHD	0.03	0.03
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tblVehicleEF	HHD	0.07	0.14
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tblVehicleEF	HHD	0.13	0.22
tblVehicleEF	HHD	0.51	0.52
tblVehicleEF	HHD	1.9130e-003	2.6420e-003
tblVehicleEF	HHD	0.24	0.33
tblVehicleEF	HHD	0.66	1.00
tblVehicleEF	HHD	2.85	3.96

tblVehicleEF	HHD	5.6030e-003	5.5860e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.8130e-003	2.1480e-003
tblVehicleEF	HHD	2.1180e-003	3.1500e-003
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tblVehicleEF	HHD	1.9130e-003	2.6420e-003
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tblVehicleEF	HHD	0.66	1.00
tblVehicleEF	HHD	3.04	4.25
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tblVehicleEF	LDA	0.01	8.5820e-003
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tblVehicleEF	LDA	0.15	0.21
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tblVehicleEF	LDA	7.7800e-004	7.9200e-004
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tblVehicleEF	LDA	0.05	0.07
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tblVehicleEF	LDT1	0.02	0.02
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tblVehicleEF	LDT1	0.26	0.28
tblVehicleEF	LDT1	0.11	0.12
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tblVehicleEF	LDT1	0.89	1.04
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tblVehicleEF	LDT1	0.11	0.12

tblVehicleEF	LDT1	0.08	0.12
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tblVehicleEF	LDT2	0.15	0.22
tblVehicleEF	LDT2	0.27	0.39
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tblVehicleEF	LDT2	0.15	0.16
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tblVehicleEF	LDT2	0.22	0.31

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tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.6200e-003	1.6000e-003
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tblVehicleEF	LHD1	0.48	0.48
tblVehicleEF	LHD1	0.42	0.48
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tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.03	0.03
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tblVehicleEF	LHD2	2.6190e-003	2.6230e-003

tblVehicleEF	LHD2	0.03	0.03
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tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
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tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	0.04	0.04
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tblVehicleEF	MCY	4.4400e-004	6.9000e-004

tblVehicleEF	MCY	1.1060e-003	1.7030e-003
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tblVehicleEF	MCY	0.42	0.47
tblVehicleEF	MCY	0.53	0.55
tblVehicleEF	MCY	3.03	3.18
tblVehicleEF	MCY	1.42	1.77
tblVehicleEF	MCY	2.15	2.22
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tblVehicleEF	MCY	0.42	0.47
tblVehicleEF	MCY	0.53	0.55
tblVehicleEF	MCY	3.30	3.46
tblVehicleEF	MCY	1.42	1.77
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tblVehicleEF	MDV	0.02	0.02
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tblVehicleEF	MDV	0.29	0.36
tblVehicleEF	MDV	0.48	0.58
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tblVehicleEF	MDV	3.0150e-003	3.0190e-003
tblVehicleEF	MDV	0.07	0.06
tblVehicleEF	MDV	0.20	0.18

tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.61	0.58
tblVehicleEF	MDV	0.42	0.51
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tblVehicleEF	MDV	0.20	0.18
tblVehicleEF	MDV	0.08	0.08
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tblVehicleEF	MH	0.52	0.62

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tblVehicleEF	MH	1.01	1.24
tblVehicleEF	MH	0.08	0.10
tblVehicleEF	MH	0.52	0.62
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tblVehicleEF	MHD	0.05	0.05

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tblVehicleEF	MHD	0.59	0.83
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tblVehicleEF	MHD	2.7060e-003	3.7410e-003
tblVehicleEF	MHD	0.12	0.19
tblVehicleEF	MHD	0.18	0.23
tblVehicleEF	MHD	2.0160e-003	2.6540e-003
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tblVehicleEF	MHD	0.59	0.83
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tblVehicleEF	OBUS	34.93	32.81
tblVehicleEF	OBUS	1.8620e-003	0.00
tblVehicleEF	OBUS	5.55	7.28

tblVehicleEF	OBUS	3.70	5.79
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tblVehicleEF	OBUS	0.01	0.06
tblVehicleEF	OBUS	0.09	0.09
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.04	0.10
tblVehicleEF	OBUS	9.4700e-004	1.4420e-003
tblVehicleEF	OBUS	9.6700e-003	0.05
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	2.5920e-003	2.5690e-003
tblVehicleEF	OBUS	0.04	0.09
tblVehicleEF	OBUS	8.5800e-004	1.2650e-003
tblVehicleEF	OBUS	8.0000e-004	8.7200e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.40	0.49
tblVehicleEF	OBUS	5.2000e-004	5.2300e-004
tblVehicleEF	OBUS	0.18	0.29
tblVehicleEF	OBUS	0.30	0.30
tblVehicleEF	OBUS	0.77	0.92
tblVehicleEF	OBUS	5.6610e-003	5.5590e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	5.9100e-004	6.4000e-004
tblVehicleEF	OBUS	8.0000e-004	8.7200e-004
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.46	0.56
tblVehicleEF	OBUS	5.2000e-004	5.2300e-004
tblVehicleEF	OBUS	0.21	0.33
tblVehicleEF	OBUS	0.30	0.30
tblVehicleEF	OBUS	0.82	0.99
tblVehicleEF	SBUS	5.4440e-003	4.4530e-003

tblVehicleEF	SBUS	7.7060e-003	5.3930e-003
tblVehicleEF	SBUS	1.07	1.05
tblVehicleEF	SBUS	7.37	4.24
tblVehicleEF	SBUS	41.46	34.11
tblVehicleEF	SBUS	562.55	547.00
tblVehicleEF	SBUS	1,090.44	1,024.49
tblVehicleEF	SBUS	131.47	116.73
tblVehicleEF	SBUS	6.0900e-004	1.0000e-003
tblVehicleEF	SBUS	8.05	8.19
tblVehicleEF	SBUS	8.15	8.40
tblVehicleEF	SBUS	2.74	2.97
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	0.55	0.56
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.09	0.09
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.24	0.24
tblVehicleEF	SBUS	2.7300e-003	2.7330e-003
tblVehicleEF	SBUS	0.08	0.08
tblVehicleEF	SBUS	8.4890e-003	0.01
tblVehicleEF	SBUS	0.04	0.04
tblVehicleEF	SBUS	0.34	0.46
tblVehicleEF	SBUS	0.12	0.12
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.57	0.71
tblVehicleEF	SBUS	2.05	2.58
tblVehicleEF	SBUS	3.12	4.05
tblVehicleEF	SBUS	5.6490e-003	5.6340e-003
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	2.1310e-003	2.3670e-003
tblVehicleEF	SBUS	0.04	0.04
tblVehicleEF	SBUS	0.34	0.46
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.63	0.78
tblVehicleEF	SBUS	2.05	2.58
tblVehicleEF	SBUS	3.34	4.35
tblVehicleEF	UBUS	3.43	3.03
tblVehicleEF	UBUS	5.86	5.66
tblVehicleEF	UBUS	2,112.22	1,981.57
tblVehicleEF	UBUS	24.26	22.78
tblVehicleEF	UBUS	2.0790e-003	1.0000e-003
tblVehicleEF	UBUS	11.82	12.42
tblVehicleEF	UBUS	0.88	0.89
tblVehicleEF	UBUS	0.20	0.21
tblVehicleEF	UBUS	2.9000e-004	4.2900e-004
tblVehicleEF	UBUS	0.19	0.19
tblVehicleEF	UBUS	2.5400e-004	3.6000e-004
tblVehicleEF	UBUS	1.9570e-003	2.0230e-003
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	1.7750e-003	1.7580e-003
tblVehicleEF	UBUS	0.63	0.68
tblVehicleEF	UBUS	0.29	0.28
tblVehicleEF	UBUS	0.54	0.57
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	3.6400e-004	3.7500e-004
tblVehicleEF	UBUS	1.9570e-003	2.0230e-003
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	1.7750e-003	1.7580e-003

tblVehicleEF	UBUS	0.71	0.76
tblVehicleEF	UBUS	0.29	0.28
tblVehicleEF	UBUS	0.57	0.61
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	HO_TL	7.50	5.80
tblVehicleTrips	HS_TL	7.30	5.80
tblVehicleTrips	HW_TL	10.80	5.80
tblVehicleTrips	ST_TR	7.16	6.00
tblVehicleTrips	ST_TR	722.03	420.00
tblVehicleTrips	ST_TR	2.37	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	94.36	90.00
tblVehicleTrips	ST_TR	42.04	36.00

tblVehicleTrips	SU_TR	6.07	6.00
tblVehicleTrips	SU_TR	542.72	420.00
tblVehicleTrips	SU_TR	0.98	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	72.16	90.00
tblVehicleTrips	SU_TR	20.43	36.00
tblVehicleTrips	WD_TR	6.59	6.00
tblVehicleTrips	WD_TR	496.12	420.00
tblVehicleTrips	WD_TR	11.01	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	89.95	90.00
tblVehicleTrips	WD_TR	44.32	36.00
tblWoodstoves	NumberCatalytic	13.00	0.00
tblWoodstoves	NumberNoncatalytic	13.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.5310	4.2289	4.0176	6.7300e-003	0.3547	0.2483	0.6030	0.1366	0.2323	0.3690	0.0000	568.4784	568.4784	0.0945	0.0000	570.4631
2018	4.6120	0.4617	0.4736	8.6000e-004	0.0231	0.0264	0.0495	6.1900e-003	0.0247	0.0309	0.0000	71.8728	71.8728	0.0133	0.0000	72.1525
Total	**5.1430**	**4.6906**	**4.4913**	**7.5900e-003**	**0.3778**	**0.2747**	**0.6525**	**0.1428**	**0.2570**	**0.3998**	**0.0000**	**640.3512**	**640.3512**	**0.1078**	**0.0000**	**642.6155**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.5310	4.2289	4.0176	6.7300e-003	0.3547	0.2483	0.6030	0.1366	0.2323	0.3690	0.0000	568.4780	568.4780	0.0945	0.0000	570.4627
2018	4.6120	0.4617	0.4736	8.6000e-004	0.0231	0.0264	0.0495	6.1900e-003	0.0247	0.0309	0.0000	71.8728	71.8728	0.0133	0.0000	72.1524
Total	**5.1430**	**4.6906**	**4.4913**	**7.5900e-003**	**0.3778**	**0.2747**	**0.6525**	**0.1428**	**0.2570**	**0.3998**	**0.0000**	**640.3507**	**640.3507**	**0.1078**	**0.0000**	**642.6151**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6960	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Energy	0.0233	0.2035	0.1190	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	691.8429	691.8429	0.0230	8.0700e-003	694.8261
Mobile	2.2884	2.1704	10.8475	0.0215	1.6170	0.0281	1.6451	0.4310	0.0257	0.4567	0.0000	1,383.9790	1,383.9790	0.0678	0.0000	1,385.4033
Waste						0.0000	0.0000		0.0000	0.0000	36.4349	0.0000	36.4349	2.1532	0.0000	81.6528
Water						0.0000	0.0000		0.0000	0.0000	6.6234	131.1741	137.7975	0.6856	0.0172	157.5126
Total	**4.0077**	**2.3966**	**12.9167**	**0.0229**	**1.6170**	**0.0547**	**1.6717**	**0.4310**	**0.0524**	**0.4833**	**43.0582**	**2,210.1499**	**2,253.2081**	**2.9328**	**0.0252**	**2,322.6151**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	1.6960	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Energy	0.0233	0.2035	0.1190	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	681.6835	681.6835	0.0226	7.9800e-003	684.6318
Mobile	2.2446	2.0286	10.2537	0.0197	1.4739	0.0261	1.5000	0.3928	0.0238	0.4167	0.0000	1,268.7708	1,268.7708	0.0629	0.0000	1,270.0925
Waste						0.0000	0.0000		0.0000	0.0000	18.2174	0.0000	18.2174	1.0766	0.0000	40.8264
Water						0.0000	0.0000		0.0000	0.0000	5.2987	110.8237	116.1224	0.5486	0.0138	131.9061
Total	**3.9638**	**2.2549**	**12.3228**	**0.0211**	**1.4739**	**0.0527**	**1.5266**	**0.3928**	**0.0505**	**0.4434**	**23.5161**	**2,064.4318**	**2,087.9480**	**1.7139**	**0.0217**	**2,130.6772**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.09**	**5.92**	**4.60**	**7.83**	**8.85**	**3.69**	**8.68**	**8.85**	**3.53**	**8.27**	**45.39**	**6.59**	**7.33**	**41.56**	**13.87**	**8.26**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2017	1/27/2017	5	20	
2	Site Preparation	Site Preparation	1/28/2017	2/10/2017	5	10	
3	Grading	Grading	2/11/2017	3/10/2017	5	20	
4	Building Construction	Building Construction	3/11/2017	1/26/2018	5	230	
5	Paving	Paving	1/27/2018	2/23/2018	5	20	
6	Architectural Coating	Architectural Coating	2/24/2018	3/23/2018	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 526,500; Residential Outdoor: 175,500; Non-Residential Indoor: 63,120; Non-Residential Outdoor: 21,040

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	204.00	35.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0405	0.4270	0.3389	4.0000e-004		0.0213	0.0213		0.0198	0.0198	0.0000	36.6182	36.6182	0.0101	0.0000	36.8292
Total	**0.0405**	**0.4270**	**0.3389**	**4.0000e-004**		**0.0213**	**0.0213**		**0.0198**	**0.0198**	**0.0000**	**36.6182**	**36.6182**	**0.0101**	**0.0000**	**36.8292**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0405	0.4270	0.3389	4.0000e-004		0.0213	0.0213		0.0198	0.0198	0.0000	36.6182	36.6182	0.0101	0.0000	36.8291
Total	**0.0405**	**0.4270**	**0.3389**	**4.0000e-004**		**0.0213**	**0.0213**		**0.0198**	**0.0198**	**0.0000**	**36.6182**	**36.6182**	**0.0101**	**0.0000**	**36.8291**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0242	0.2588	0.1970	2.0000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	18.1577	18.1577	5.5600e-003	0.0000	18.2745
Total	**0.0242**	**0.2588**	**0.1970**	**2.0000e-004**	**0.0903**	**0.0138**	**0.1041**	**0.0497**	**0.0127**	**0.0623**	**0.0000**	**18.1577**	**18.1577**	**5.5600e-003**	**0.0000**	**18.2745**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	3.7000e-004	3.5000e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6466	0.6466	3.0000e-005	0.0000	0.6473
Total	**2.8000e-004**	**3.7000e-004**	**3.5000e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6466**	**0.6466**	**3.0000e-005**	**0.0000**	**0.6473**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0242	0.2588	0.1970	2.0000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	18.1577	18.1577	5.5600e-003	0.0000	18.2745
Total	**0.0242**	**0.2588**	**0.1970**	**2.0000e-004**	**0.0903**	**0.0138**	**0.1041**	**0.0497**	**0.0127**	**0.0623**	**0.0000**	**18.1577**	**18.1577**	**5.5600e-003**	**0.0000**	**18.2745**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	3.7000e-004	3.5000e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6466	0.6466	3.0000e-005	0.0000	0.6473
Total	**2.8000e-004**	**3.7000e-004**	**3.5000e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6466**	**0.6466**	**3.0000e-005**	**0.0000**	**0.6473**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3598	0.2538	3.0000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	27.6117	27.6117	8.4600e-003	0.0000	27.7893
Total	**0.0346**	**0.3598**	**0.2538**	**3.0000e-004**	**0.0655**	**0.0204**	**0.0859**	**0.0337**	**0.0188**	**0.0524**	**0.0000**	**27.6117**	**27.6117**	**8.4600e-003**	**0.0000**	**27.7893**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3598	0.2538	3.0000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	27.6117	27.6117	8.4600e-003	0.0000	27.7893
Total	**0.0346**	**0.3598**	**0.2538**	**3.0000e-004**	**0.0655**	**0.0204**	**0.0859**	**0.0337**	**0.0188**	**0.0524**	**0.0000**	**27.6117**	**27.6117**	**8.4600e-003**	**0.0000**	**27.7893**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3258	2.7726	1.9036	2.8100e-003		0.1870	0.1870		0.1757	0.1757	0.0000	251.4531	251.4531	0.0619	0.0000	252.7527
Total	**0.3258**	**2.7726**	**1.9036**	**2.8100e-003**		**0.1870**	**0.1870**		**0.1757**	**0.1757**	**0.0000**	**251.4531**	**251.4531**	**0.0619**	**0.0000**	**252.7527**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0383	0.3210	0.4753	8.7000e-004	0.0239	4.5900e-003	0.0285	6.8400e-003	4.2200e-003	0.0111	0.0000	77.9467	77.9467	5.9000e-004	0.0000	77.9591
Worker	0.0666	0.0882	0.8339	2.1100e-003	0.1718	1.2800e-003	0.1731	0.0456	1.1800e-003	0.0468	0.0000	153.8891	153.8891	7.8200e-003	0.0000	154.0534

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.1048**	**0.4092**	**1.3092**	**2.9800e-003**	**0.1957**	**5.8700e-003**	**0.2016**	**0.0525**	**5.4000e-003**	**0.0579**	**0.0000**	**231.8358**	**231.8358**	**8.4100e-003**	**0.0000**	**232.0124**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3258	2.7726	1.9036	2.8100e-003		0.1870	0.1870		0.1757	0.1757	0.0000	251.4528	251.4528	0.0619	0.0000	252.7524
Total	**0.3258**	**2.7726**	**1.9036**	**2.8100e-003**		**0.1870**	**0.1870**		**0.1757**	**0.1757**	**0.0000**	**251.4528**	**251.4528**	**0.0619**	**0.0000**	**252.7524**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0383	0.3210	0.4753	8.7000e-004	0.0239	4.5900e-003	0.0285	6.8400e-003	4.2200e-003	0.0111	0.0000	77.9467	77.9467	5.9000e-004	0.0000	77.9591
Worker	0.0666	0.0882	0.8339	2.1100e-003	0.1718	1.2800e-003	0.1731	0.0456	1.1800e-003	0.0468	0.0000	153.8891	153.8891	7.8200e-003	0.0000	154.0534
Total	**0.1048**	**0.4092**	**1.3092**	**2.9800e-003**	**0.1957**	**5.8700e-003**	**0.2016**	**0.0525**	**5.4000e-003**	**0.0579**	**0.0000**	**231.8358**	**231.8358**	**8.4100e-003**	**0.0000**	**232.0124**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0267	0.2326	0.1753	2.7000e-004		0.0149	0.0149		0.0141	0.0141	0.0000	23.6770	23.6770	5.7900e-003	0.0000	23.7987
Total	**0.0267**	**0.2326**	**0.1753**	**2.7000e-004**		**0.0149**	**0.0149**		**0.0141**	**0.0141**	**0.0000**	**23.6770**	**23.6770**	**5.7900e-003**	**0.0000**	**23.7987**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4200e-003	0.0276	0.0433	8.0000e-005	2.2800e-003	4.1000e-004	2.6800e-003	6.5000e-004	3.7000e-004	1.0200e-003	0.0000	7.2960	7.2960	5.0000e-005	0.0000	7.2971
Worker	5.7600e-003	7.6600e-003	0.0718	2.0000e-004	0.0164	1.2000e-004	0.0165	4.3500e-003	1.1000e-004	4.4600e-003	0.0000	14.1057	14.1057	6.9000e-004	0.0000	14.1203
Total	**9.1800e-003**	**0.0353**	**0.1151**	**2.8000e-004**	**0.0186**	**5.3000e-004**	**0.0192**	**5.0000e-003**	**4.8000e-004**	**5.4800e-003**	**0.0000**	**21.4017**	**21.4017**	**7.4000e-004**	**0.0000**	**21.4174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Off-Road	0.0267	0.2326	0.1753	2.7000e-004		0.0149	0.0149		0.0141	0.0141	0.0000	23.6769	23.6769	5.7900e-003	0.0000	23.7986
Total	**0.0267**	**0.2326**	**0.1753**	**2.7000e-004**		**0.0149**	**0.0149**		**0.0141**	**0.0141**	**0.0000**	**23.6769**	**23.6769**	**5.7900e-003**	**0.0000**	**23.7986**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4200e-003	0.0276	0.0433	8.0000e-005	2.2800e-003	4.1000e-004	2.6800e-003	6.5000e-004	3.7000e-004	1.0200e-003	0.0000	7.2960	7.2960	5.0000e-005	0.0000	7.2971
Worker	5.7600e-003	7.6600e-003	0.0718	2.0000e-004	0.0164	1.2000e-004	0.0165	4.3500e-003	1.1000e-004	4.4600e-003	0.0000	14.1057	14.1057	6.9000e-004	0.0000	14.1203
Total	**9.1800e-003**	**0.0353**	**0.1151**	**2.8000e-004**	**0.0186**	**5.3000e-004**	**0.0192**	**5.0000e-003**	**4.8000e-004**	**5.4800e-003**	**0.0000**	**21.4017**	**21.4017**	**7.4000e-004**	**0.0000**	**21.4174**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0161	0.1716	0.1449	2.2000e-004		9.3900e-003	9.3900e-003		8.6400e-003	8.6400e-003	0.0000	20.3687	20.3687	6.3400e-003	0.0000	20.5019
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0168**	**0.1716**	**0.1449**	**2.2000e-004**		**9.3900e-003**	**9.3900e-003**		**8.6400e-003**	**8.6400e-003**	**0.0000**	**20.3687**	**20.3687**	**6.3400e-003**	**0.0000**	**20.5019**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	5.6000e-004	5.2800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0372	1.0372	5.0000e-005	0.0000	1.0383
Total	**4.2000e-004**	**5.6000e-004**	**5.2800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0372**	**1.0372**	**5.0000e-005**	**0.0000**	**1.0383**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0161	0.1716	0.1449	2.2000e-004		9.3900e-003	9.3900e-003		8.6400e-003	8.6400e-003	0.0000	20.3687	20.3687	6.3400e-003	0.0000	20.5019
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0168**	**0.1716**	**0.1449**	**2.2000e-004**		**9.3900e-003**	**9.3900e-003**		**8.6400e-003**	**8.6400e-003**	**0.0000**	**20.3687**	**20.3687**	**6.3400e-003**	**0.0000**	**20.5019**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	5.6000e-004	5.2800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0372	1.0372	5.0000e-005	0.0000	1.0383
Total	**4.2000e-004**	**5.6000e-004**	**5.2800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0372**	**1.0372**	**5.0000e-005**	**0.0000**	**1.0383**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.5548					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0185	3.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	2.5533	2.5533	2.4000e-004	0.0000	2.5584
Total	**4.5578**	**0.0201**	**0.0185**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.4000e-004**	**0.0000**	**2.5584**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1600e-003	1.5400e-003	0.0144	4.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	2.8350	2.8350	1.4000e-004	0.0000	2.8379

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**1.1600e-003**	**1.5400e-003**	**0.0144**	**4.0000e-005**	**3.2900e-003**	**2.0000e-005**	**3.3100e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**2.8350**	**2.8350**	**1.4000e-004**	**0.0000**	**2.8379**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.5548					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0185	3.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	2.5533	2.5533	2.4000e-004	0.0000	2.5584
Total	**4.5578**	**0.0201**	**0.0185**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.4000e-004**	**0.0000**	**2.5584**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1600e-003	1.5400e-003	0.0144	4.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	2.8350	2.8350	1.4000e-004	0.0000	2.8379
Total	**1.1600e-003**	**1.5400e-003**	**0.0144**	**4.0000e-005**	**3.2900e-003**	**2.0000e-005**	**3.3100e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**2.8350**	**2.8350**	**1.4000e-004**	**0.0000**	**2.8379**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2446	2.0286	10.2537	0.0197	1.4739	0.0261	1.5000	0.3928	0.0238	0.4167	0.0000	1,268.7708	1,268.7708	0.0629	0.0000	1,270.0925
Unmitigated	2.2884	2.1704	10.8475	0.0215	1.6170	0.0281	1.6451	0.4310	0.0257	0.4567	0.0000	1,383.9790	1,383.9790	0.0678	0.0000	1,385.4033

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,560.00	1,560.00	1560.00	2,924,660	2,665,919
Fast Food Restaurant with Drive Thru	1,008.00	1,008.00	1008.00	747,216	681,111
General Office Building	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Quality Restaurant	558.00	558.00	558.00	509,608	464,524
Strip Mall	129.60	129.60	129.60	151,194	137,818
Total	3,255.60	3,255.60	3,255.60	4,332,678	3,949,372

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	5.80	5.80	5.80	41.60	18.80	39.60	86	11	3
Fast Food Restaurant with Drive Thru	5.80	5.80	5.80	2.20	78.80	19.00	29	21	50
General Office Building	5.80	5.80	5.80	33.00	48.00	19.00	77	19	4
Health Club	5.80	5.80	5.80	16.90	64.10	19.00	52	39	9

Other Asphalt Surfaces	5.80	5.80	5.80	0.00	0.00	0.00	0	0	0
Quality Restaurant	5.80	5.80	5.80	12.00	69.00	19.00	38	18	44
Strip Mall	5.80	5.80	5.80	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511000	0.225000	0.164000	0.064000	0.002000	0.001000	0.007000	0.005000	0.000000	0.001000	0.012000	0.001000	0.007000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	451.4160	451.4160	0.0182	3.7600e-003	452.9629
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	461.5755	461.5755	0.0186	3.8400e-003	463.1572
NaturalGas Mitigated	0.0233	0.2035	0.1190	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.2675	230.2675	4.4100e-003	4.2200e-003	231.6688
NaturalGas Unmitigated	0.0233	0.2035	0.1190	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.2675	230.2675	4.4100e-003	4.2200e-003	231.6688

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	2.72182e+006	0.0147	0.1254	0.0534	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	145.2468	145.2468	2.7800e-003	2.6600e-003	146.1308
Fast Food Restaurant with Drive Thru	407784	2.2000e-003	0.0200	0.0168	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7609	21.7609	4.2000e-004	4.0000e-004	21.8933
General Office Building	89180	4.8000e-004	4.3700e-003	3.6700e-003	3.0000e-005		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	4.7590	4.7590	9.0000e-005	9.0000e-005	4.7880
Health Club	35296	1.9000e-004	1.7300e-003	1.4500e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.8835	1.8835	4.0000e-005	3.0000e-005	1.8950
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.05344e+006	5.6800e-003	0.0516	0.0434	3.1000e-004		3.9200e-003	3.9200e-003		3.9200e-003	3.9200e-003	0.0000	56.2157	56.2157	1.0800e-003	1.0300e-003	56.5578
Strip Mall	7524	4.0000e-005	3.7000e-004	3.1000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4015	0.4015	1.0000e-005	1.0000e-005	0.4040
Total		**0.0233**	**0.2035**	**0.1190**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**230.2675**	**230.2675**	**4.4200e-003**	**4.2200e-003**	**231.6688**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Fast Food Restaurant with Drive Thru	407784	2.2000e-003	0.0200	0.0168	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7609	21.7609	4.2000e-004	4.0000e-004	21.8933
General Office Building	89180	4.8000e-004	4.3700e-003	3.6700e-003	3.0000e-005		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	4.7590	4.7590	9.0000e-005	9.0000e-005	4.7880
Health Club	35296	1.9000e-004	1.7300e-003	1.4500e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.8835	1.8835	4.0000e-005	3.0000e-005	1.8950
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.05344e+006	5.6800e-003	0.0516	0.0434	3.1000e-004		3.9200e-003	3.9200e-003		3.9200e-003	3.9200e-003	0.0000	56.2157	56.2157	1.0800e-003	1.0300e-003	56.5578
Strip Mall	7524	4.0000e-005	3.7000e-004	3.1000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4015	0.4015	1.0000e-005	1.0000e-005	0.4040

Apartments Low Rise	2.72182e+006	0.0147	0.1254	0.0534	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	145.2468	145.2468	2.7800e-003	2.6600e-003	146.1308
Total		**0.0233**	**0.2035**	**0.1190**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**230.2675**	**230.2675**	**4.4200e-003**	**4.2200e-003**	**231.6688**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	932875	304.8717	0.0123	2.5400e-003	305.9164
Fast Food Restaurant with	94008	30.7226	1.2400e-003	2.6000e-004	30.8279
General Office Building	67375	22.0187	8.9000e-004	1.8000e-004	22.0942
Health Club	27776	9.0774	3.7000e-004	8.0000e-005	9.1086
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	242854	79.3668	3.1900e-003	6.6000e-004	79.6388
Strip Mall	47484	15.5182	6.2000e-004	1.3000e-004	15.5714
Total		**461.5755**	**0.0186**	**3.8500e-003**	**463.1572**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	901788	294.7122	0.0119	2.4500e-003	295.7221

Fast Food Restaurant with Drive Thru	94008	30.7226	1.2400e-003	2.6000e-004	30.8279
General Office Building	67375	22.0187	8.9000e-004	1.8000e-004	22.0942
Health Club	27776	9.0774	3.7000e-004	8.0000e-005	9.1086
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	242854	79.3668	3.1900e-003	6.6000e-004	79.6388
Strip Mall	47484	15.5182	6.2000e-004	1.3000e-004	15.5714
Total		**451.4160**	**0.0182**	**3.7600e-003**	**452.9630**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.6960	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Unmitigated	1.6960	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	0.4555					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1798					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0607	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Total	**1.6960**	**0.0227**	**1.9502**	**1.0000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**3.1539**	**3.1539**	**3.1700e-003**	**0.0000**	**3.2204**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4555					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1798					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0607	0.0227	1.9502	1.0000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	3.1539	3.1539	3.1700e-003	0.0000	3.2204
Total	**1.6960**	**0.0227**	**1.9502**	**1.0000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**3.1539**	**3.1539**	**3.1700e-003**	**0.0000**	**3.2204**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	116.1224	0.5486	0.0138	131.9061
Unmitigated	137.7975	0.6856	0.0172	157.5126

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	16.94 / 10.6796	116.2365	0.5565	0.0140	132.2487
Fast Food Restaurant with Drive Thru	0.728481 / 0.0464988	3.4999	0.0239	5.9000e-004	4.1834
General Office Building	0.870895 / 0.533775	5.9203	0.0286	7.2000e-004	6.7433
Health Club	0.189258 / 0.115997	1.2866	6.2200e-003	1.6000e-004	1.4654
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.88191 / 0.120122	9.0414	0.0617	1.5200e-003	10.8070
Strip Mall	0.266661 / 0.163437	1.8128	8.7600e-003	2.2000e-004	2.0648
Total		**137.7975**	**0.6856**	**0.0172**	**157.5126**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	13.552 / 10.0281	98.3791	0.4453	0.0112	111.2005
Fast Food Restaurant with Drive Thru	0.582785 / 0.0436624	2.8234	0.0191	4.7000e-004	3.3699
General Office Building	0.696716 / 0.501214	5.0057	0.0229	5.8000e-004	5.6646
Health Club	0.151406 / 0.108921	1.0878	4.9700e-003	1.2000e-004	1.2310
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	1.50553 / 0.112794	7.2938	0.0493	1.2100e-003	8.7057
Strip Mall	0.213329 / 0.153468	1.5327	7.0100e-003	1.8000e-004	1.7345
Total		**116.1224**	**0.5486**	**0.0138**	**131.9061**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.2174	1.0766	0.0000	40.8264
Unmitigated	36.4349	2.1532	0.0000	81.6528

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	119.6	24.2777	1.4348	0.0000	54.4079
Fast Food Restaurant with Drive Thru	27.65	5.6127	0.3317	0.0000	12.5784
General Office Building	4.56	0.9256	0.0547	0.0000	2.0744
Health Club	18.24	3.7026	0.2188	0.0000	8.2977
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	5.66	1.1489	0.0679	0.0000	2.5748
Strip Mall	3.78	0.7673	0.0454	0.0000	1.7196
Total		**36.4349**	**2.1532**	**0.0000**	**81.6528**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	59.8	12.1389	0.7174	0.0000	27.2040
Fast Food Restaurant with Drive Thru	13.825	2.8064	0.1659	0.0000	6.2892

General Office Building	2.28	0.4628	0.0274	0.0000	1.0372
Health Club	9.12	1.8513	0.1094	0.0000	4.1488
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.83	0.5745	0.0340	0.0000	1.2874
Strip Mall	1.89	0.3837	0.0227	0.0000	0.8598
Total		**18.2174**	**1.0766**	**0.0000**	**40.8264**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Carroll Canyon Allowed Uses

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	800.00	1000sqft	9.30	800,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Allowable land use

Vehicle Trips - Assuming 8132 ADT, weekend trips at CalEEMod defaults

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	18.37	9.30
tblProjectCharacteristics	OperationalYear	2014	2020
tblVehicleTrips	WD_TR	11.01	9.83

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.6530	5.1317	5.5338	9.6600e-003	0.4640	0.2613	0.7253	0.1670	0.2442	0.4112	0.0000	821.5017	821.5017	0.0981	0.0000	823.5622
2018	9.3377	0.5397	0.6142	1.1500e-003	0.0343	0.0275	0.0619	9.3000e-003	0.0258	0.0351	0.0000	96.1717	96.1717	0.0137	0.0000	96.4589
Total	**9.9906**	**5.6714**	**6.1479**	**0.0108**	**0.4984**	**0.2888**	**0.7872**	**0.1763**	**0.2700**	**0.4463**	**0.0000**	**917.6734**	**917.6734**	**0.1118**	**0.0000**	**920.0211**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.6530	5.1317	5.5338	9.6600e-003	0.4640	0.2613	0.7253	0.1670	0.2442	0.4112	0.0000	821.5013	821.5013	0.0981	0.0000	823.5618
2018	9.3377	0.5397	0.6142	1.1500e-003	0.0343	0.0275	0.0619	9.3000e-003	0.0258	0.0351	0.0000	96.1716	96.1716	0.0137	0.0000	96.4589
Total	**9.9906**	**5.6714**	**6.1479**	**0.0108**	**0.4984**	**0.2888**	**0.7872**	**0.1763**	**0.2700**	**0.4463**	**0.0000**	**917.6730**	**917.6730**	**0.1118**	**0.0000**	**920.0206**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.0521	7.0000e-005	7.4000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0151
Energy	0.0907	0.8247	0.6928	4.9500e-003		0.0627	0.0627		0.0627	0.0627	0.0000	4,816.8834	4,816.8834	0.1750	0.0491	4,835.7773
Mobile	3.0891	6.2541	30.0640	0.0787	5.3916	0.0912	5.4828	1.4420	0.0841	1.5261	0.0000	5,464.4056	5,464.4056	0.2137	0.0000	5,468.8933
Waste						0.0000	0.0000		0.0000	0.0000	151.0253	0.0000	151.0253	8.9253	0.0000	338.4574
Water						0.0000	0.0000		0.0000	0.0000	45.1094	921.4761	966.5855	4.6703	0.1171	1,100.9534
Total	**7.2320**	**7.0789**	**30.7641**	**0.0837**	**5.3916**	**0.1539**	**5.5455**	**1.4420**	**0.1469**	**1.5888**	**196.1347**	**11,202.7795**	**11,398.9141**	**13.9843**	**0.1662**	**11,744.0965**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.0521	7.0000e-005	7.4000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0151
Energy	0.0907	0.8247	0.6928	4.9500e-003		0.0627	0.0627		0.0627	0.0627	0.0000	4,816.8834	4,816.8834	0.1750	0.0491	4,835.7773
Mobile	3.0891	6.2541	30.0640	0.0787	5.3916	0.0912	5.4828	1.4420	0.0841	1.5261	0.0000	5,464.4056	5,464.4056	0.2137	0.0000	5,468.8933
Waste						0.0000	0.0000		0.0000	0.0000	151.0253	0.0000	151.0253	8.9253	0.0000	338.4574
Water						0.0000	0.0000		0.0000	0.0000	45.1094	921.4761	966.5855	4.6694	0.1169	1,100.8814
Total	**7.2320**	**7.0789**	**30.7641**	**0.0837**	**5.3916**	**0.1539**	**5.5455**	**1.4420**	**0.1469**	**1.5888**	**196.1347**	**11,202.7795**	**11,398.9141**	**13.9834**	**0.1660**	**11,744.0246**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.10	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2017	1/27/2017	5	20	
2	Site Preparation	Site Preparation	1/28/2017	2/10/2017	5	10	
3	Grading	Grading	2/11/2017	3/10/2017	5	20	
4	Building Construction	Building Construction	3/11/2017	1/26/2018	5	230	
5	Paving	Paving	1/27/2018	2/23/2018	5	20	
6	Architectural Coating	Architectural Coating	2/24/2018	3/23/2018	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,200,000; Non-Residential Outdoor: 400,000 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38

Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	256.00	131.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0405	0.4270	0.3389	4.0000e-004		0.0213	0.0213		0.0198	0.0198	0.0000	36.6182	36.6182	0.0101	0.0000	36.8292

Total	0.0405	0.4270	0.3389	4.0000e-004		0.0213	0.0213		0.0198	0.0198	0.0000	36.6182	36.6182	0.0101	0.0000	36.8292

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0405	0.4270	0.3389	4.0000e-004		0.0213	0.0213		0.0198	0.0198	0.0000	36.6182	36.6182	0.0101	0.0000	36.8291
Total	**0.0405**	**0.4270**	**0.3389**	**4.0000e-004**		**0.0213**	**0.0213**		**0.0198**	**0.0198**	**0.0000**	**36.6182**	**36.6182**	**0.0101**	**0.0000**	**36.8291**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0242	0.2588	0.1970	2.0000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	18.1577	18.1577	5.5600e-003	0.0000	18.2745
Total	**0.0242**	**0.2588**	**0.1970**	**2.0000e-004**	**0.0903**	**0.0138**	**0.1041**	**0.0497**	**0.0127**	**0.0623**	**0.0000**	**18.1577**	**18.1577**	**5.5600e-003**	**0.0000**	**18.2745**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	3.7000e-004	3.5000e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6466	0.6466	3.0000e-005	0.0000	0.6473
Total	**2.8000e-004**	**3.7000e-004**	**3.5000e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6466**	**0.6466**	**3.0000e-005**	**0.0000**	**0.6473**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0242	0.2588	0.1970	2.0000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	18.1577	18.1577	5.5600e-003	0.0000	18.2745
Total	**0.0242**	**0.2588**	**0.1970**	**2.0000e-004**	**0.0903**	**0.0138**	**0.1041**	**0.0497**	**0.0127**	**0.0623**	**0.0000**	**18.1577**	**18.1577**	**5.5600e-003**	**0.0000**	**18.2745**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	3.7000e-004	3.5000e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6466	0.6466	3.0000e-005	0.0000	0.6473
Total	**2.8000e-004**	**3.7000e-004**	**3.5000e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6466**	**0.6466**	**3.0000e-005**	**0.0000**	**0.6473**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3598	0.2538	3.0000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	27.6117	27.6117	8.4600e-003	0.0000	27.7893
Total	**0.0346**	**0.3598**	**0.2538**	**3.0000e-004**	**0.0655**	**0.0204**	**0.0859**	**0.0337**	**0.0188**	**0.0524**	**0.0000**	**27.6117**	**27.6117**	**8.4600e-003**	**0.0000**	**27.7893**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3598	0.2538	3.0000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	27.6117	27.6117	8.4600e-003	0.0000	27.7893
Total	**0.0346**	**0.3598**	**0.2538**	**3.0000e-004**	**0.0655**	**0.0204**	**0.0859**	**0.0337**	**0.0188**	**0.0524**	**0.0000**	**27.6117**	**27.6117**	**8.4600e-003**	**0.0000**	**27.7893**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	6.2000e-004	5.8400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0777	1.0777	5.0000e-005	0.0000	1.0788
Total	**4.7000e-004**	**6.2000e-004**	**5.8400e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0777**	**1.0777**	**5.0000e-005**	**0.0000**	**1.0788**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3258	2.7726	1.9036	2.8100e-003		0.1870	0.1870		0.1757	0.1757	0.0000	251.4531	251.4531	0.0619	0.0000	252.7527

Total	**0.3258**	**2.7726**	**1.9036**	**2.8100e-003**		**0.1870**	**0.1870**		**0.1757**	**0.1757**	**0.0000**	**251.4531**	**251.4531**	**0.0619**	**0.0000**	**252.7527**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1432	1.2013	1.7788	3.2600e-003	0.0895	0.0172	0.1067	0.0256	0.0158	0.0414	0.0000	291.7435	291.7435	2.2000e-003	0.0000	291.7897
Worker	0.0835	0.1107	1.0465	2.6500e-003	0.2156	1.6100e-003	0.2172	0.0573	1.4800e-003	0.0588	0.0000	193.1157	193.1157	9.8200e-003	0.0000	193.3219
Total	**0.2268**	**1.3120**	**2.8253**	**5.9100e-003**	**0.3050**	**0.0188**	**0.3238**	**0.0829**	**0.0173**	**0.1002**	**0.0000**	**484.8592**	**484.8592**	**0.0120**	**0.0000**	**485.1116**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3258	2.7726	1.9036	2.8100e-003		0.1870	0.1870		0.1757	0.1757	0.0000	251.4528	251.4528	0.0619	0.0000	252.7524
Total	**0.3258**	**2.7726**	**1.9036**	**2.8100e-003**		**0.1870**	**0.1870**		**0.1757**	**0.1757**	**0.0000**	**251.4528**	**251.4528**	**0.0619**	**0.0000**	**252.7524**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1432	1.2013	1.7788	3.2600e-003	0.0895	0.0172	0.1067	0.0256	0.0158	0.0414	0.0000	291.7435	291.7435	2.2000e-003	0.0000	291.7897
Worker	0.0835	0.1107	1.0465	2.6500e-003	0.2156	1.6100e-003	0.2172	0.0573	1.4800e-003	0.0588	0.0000	193.1157	193.1157	9.8200e-003	0.0000	193.3219
Total	**0.2268**	**1.3120**	**2.8253**	**5.9100e-003**	**0.3050**	**0.0188**	**0.3238**	**0.0829**	**0.0173**	**0.1002**	**0.0000**	**484.8592**	**484.8592**	**0.0120**	**0.0000**	**485.1116**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0267	0.2326	0.1753	2.7000e-004		0.0149	0.0149		0.0141	0.0141	0.0000	23.6770	23.6770	5.7900e-003	0.0000	23.7987
Total	**0.0267**	**0.2326**	**0.1753**	**2.7000e-004**		**0.0149**	**0.0149**		**0.0141**	**0.0141**	**0.0000**	**23.6770**	**23.6770**	**5.7900e-003**	**0.0000**	**23.7987**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0128	0.1033	0.1620	3.1000e-004	8.5200e-003	1.5200e-003	0.0100	2.4400e-003	1.4000e-003	3.8400e-003	0.0000	27.3078	27.3078	2.1000e-004	0.0000	27.3121
Worker	7.2300e-003	9.6200e-003	0.0902	2.5000e-004	0.0205	1.5000e-004	0.0207	5.4600e-003	1.4000e-004	5.5900e-003	0.0000	17.7013	17.7013	8.7000e-004	0.0000	17.7196
Total	**0.0200**	**0.1129**	**0.2521**	**5.6000e-004**	**0.0291**	**1.6700e-003**	**0.0307**	**7.9000e-003**	**1.5400e-003**	**9.4300e-003**	**0.0000**	**45.0091**	**45.0091**	**1.0800e-003**	**0.0000**	**45.0317**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0267	0.2326	0.1753	2.7000e-004		0.0149	0.0149		0.0141	0.0141	0.0000	23.6769	23.6769	5.7900e-003	0.0000	23.7986
Total	**0.0267**	**0.2326**	**0.1753**	**2.7000e-004**		**0.0149**	**0.0149**		**0.0141**	**0.0141**	**0.0000**	**23.6769**	**23.6769**	**5.7900e-003**	**0.0000**	**23.7986**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0128	0.1033	0.1620	3.1000e-004	8.5200e-003	1.5200e-003	0.0100	2.4400e-003	1.4000e-003	3.8400e-003	0.0000	27.3078	27.3078	2.1000e-004	0.0000	27.3121
Worker	7.2300e-003	9.6200e-003	0.0902	2.5000e-004	0.0205	1.5000e-004	0.0207	5.4600e-003	1.4000e-004	5.5900e-003	0.0000	17.7013	17.7013	8.7000e-004	0.0000	17.7196
Total	**0.0200**	**0.1129**	**0.2521**	**5.6000e-004**	**0.0291**	**1.6700e-003**	**0.0307**	**7.9000e-003**	**1.5400e-003**	**9.4300e-003**	**0.0000**	**45.0091**	**45.0091**	**1.0800e-003**	**0.0000**	**45.0317**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0161	0.1716	0.1449	2.2000e-004		9.3900e-003	9.3900e-003		8.6400e-003	8.6400e-003	0.0000	20.3687	20.3687	6.3400e-003	0.0000	20.5019
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0161**	**0.1716**	**0.1449**	**2.2000e-004**		**9.3900e-003**	**9.3900e-003**		**8.6400e-003**	**8.6400e-003**	**0.0000**	**20.3687**	**20.3687**	**6.3400e-003**	**0.0000**	**20.5019**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	5.6000e-004	5.2800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0372	1.0372	5.0000e-005	0.0000	1.0383
Total	**4.2000e-004**	**5.6000e-004**	**5.2800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0372**	**1.0372**	**5.0000e-005**	**0.0000**	**1.0383**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0161	0.1716	0.1449	2.2000e-004		9.3900e-003	9.3900e-003		8.6400e-003	8.6400e-003	0.0000	20.3687	20.3687	6.3400e-003	0.0000	20.5019
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0161**	**0.1716**	**0.1449**	**2.2000e-004**		**9.3900e-003**	**9.3900e-003**		**8.6400e-003**	**8.6400e-003**	**0.0000**	**20.3687**	**20.3687**	**6.3400e-003**	**0.0000**	**20.5019**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	5.6000e-004	5.2800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0372	1.0372	5.0000e-005	0.0000	1.0383
Total	**4.2000e-004**	**5.6000e-004**	**5.2800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0372**	**1.0372**	**5.0000e-005**	**0.0000**	**1.0383**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.2700					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	2.9900e-003	0.0201	0.0185	3.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	2.5533	2.5533	2.4000e-004	0.0000	2.5584
Total	**9.2730**	**0.0201**	**0.0185**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.4000e-004**	**0.0000**	**2.5584**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	1.9200e-003	0.0180	5.0000e-005	4.0900e-003	3.0000e-005	4.1200e-003	1.0900e-003	3.0000e-005	1.1100e-003	0.0000	3.5264	3.5264	1.7000e-004	0.0000	3.5301
Total	**1.4400e-003**	**1.9200e-003**	**0.0180**	**5.0000e-005**	**4.0900e-003**	**3.0000e-005**	**4.1200e-003**	**1.0900e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**3.5264**	**3.5264**	**1.7000e-004**	**0.0000**	**3.5301**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.2700					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9900e-003	0.0201	0.0185	3.0000e-005		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	2.5533	2.5533	2.4000e-004	0.0000	2.5584
Total	**9.2730**	**0.0201**	**0.0185**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.4000e-004**	**0.0000**	**2.5584**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	1.9200e-003	0.0180	5.0000e-005	4.0900e-003	3.0000e-005	4.1200e-003	1.0900e-003	3.0000e-005	1.1100e-003	0.0000	3.5264	3.5264	1.7000e-004	0.0000	3.5301
Total	**1.4400e-003**	**1.9200e-003**	**0.0180**	**5.0000e-005**	**4.0900e-003**	**3.0000e-005**	**4.1200e-003**	**1.0900e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**3.5264**	**3.5264**	**1.7000e-004**	**0.0000**	**3.5301**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.0891	6.2541	30.0640	0.0787	5.3916	0.0912	5.4828	1.4420	0.0841	1.5261	0.0000	5,464.4056	5,464.4056	0.2137	0.0000	5,468.8933
Unmitigated	3.0891	6.2541	30.0640	0.0787	5.3916	0.0912	5.4828	1.4420	0.0841	1.5261	0.0000	5,464.4056	5,464.4056	0.2137	0.0000	5,468.8933

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	7,864.00	1,896.00	784.00	14,338,517	14,338,517
Total	7,864.00	1,896.00	784.00	14,338,517	14,338,517

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.513300	0.073549	0.191092	0.130830	0.036094	0.005140	0.012550	0.022916	0.001871	0.002062	0.006564	0.000586	0.003446

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3,919.0907	3,919.0907	0.1577	0.0326	3,932.5208
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3,919.0907	3,919.0907	0.1577	0.0326	3,932.5208
NaturalGas Mitigated	0.0907	0.8247	0.6928	4.9500e-003		0.0627	0.0627		0.0627	0.0627	0.0000	897.7927	897.7927	0.0172	0.0165	903.2565
NaturalGas Unmitigated	0.0907	0.8247	0.6928	4.9500e-003		0.0627	0.0627		0.0627	0.0627	0.0000	897.7927	897.7927	0.0172	0.0165	903.2565

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	1.6824e+007	0.0907	0.8247	0.6928	4.9500e-003		0.0627	0.0627		0.0627	0.0627	0.0000	897.7927	897.7927	0.0172	0.0165	903.2565
Total		**0.0907**	**0.8247**	**0.6928**	**4.9500e-003**		**0.0627**	**0.0627**		**0.0627**	**0.0627**	**0.0000**	**897.7927**	**897.7927**	**0.0172**	**0.0165**	**903.2565**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	1.6824e+007	0.0907	0.8247	0.6928	4.9500e-003		0.0627	0.0627		0.0627	0.0627	0.0000	897.7927	897.7927	0.0172	0.0165	903.2565
Total		**0.0907**	**0.8247**	**0.6928**	**4.9500e-003**		**0.0627**	**0.0627**		**0.0627**	**0.0627**	**0.0000**	**897.7927**	**897.7927**	**0.0172**	**0.0165**	**903.2565**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.1992e+007	3,919.0907	0.1577	0.0326	3,932.5208
Total		**3,919.0907**	**0.1577**	**0.0326**	**3,932.5208**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.1992e+007	3,919.0907	0.1577	0.0326	3,932.5208
Total		**3,919.0907**	**0.1577**	**0.0326**	**3,932.5208**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.0521	7.0000e-005	7.4000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0151
Unmitigated	4.0521	7.0000e-005	7.4000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0151

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9270					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.1244					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-004	7.0000e-005	7.4000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0151
Total	**4.0521**	**7.0000e-005**	**7.4000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0143**	**0.0143**	**4.0000e-005**	**0.0000**	**0.0151**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9270					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.1244					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-004	7.0000e-005	7.4000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0151
Total	**4.0521**	**7.0000e-005**	**7.4000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0143**	**0.0143**	**4.0000e-005**	**0.0000**	**0.0151**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	966.5855	4.6694	0.1169	1,100.8814
Unmitigated	966.5855	4.6703	0.1171	1,100.9534

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	142.187 / 87.1469	966.5855	4.6703	0.1171	1,100.9534
Total		**966.5855**	**4.6703**	**0.1171**	**1,100.9534**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	142.187 / 87.1469	966.5855	4.6694	0.1169	1,100.8814
Total		**966.5855**	**4.6694**	**0.1169**	**1,100.8814**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	151.0253	8.9253	0.0000	338.4574
Unmitigated	151.0253	8.9253	0.0000	338.4574

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	744	151.0253	8.9253	0.0000	338.4574
Total		**151.0253**	**8.9253**	**0.0000**	**338.4574**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	744	151.0253	8.9253	0.0000	338.4574
Total		**151.0253**	**8.9253**	**0.0000**	**338.4574**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

NOISE STUDY

Carroll Canyon
Mixed Use Development
San Diego CA

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TABLE OF CONTENTS

TABLE OF CONTENTS II
LIST OF FIGURES III
LIST OF TABLES III
APPENDICES III
GLOSSARY OF TERMS IV
EXECUTIVE SUMMARY V
1.0 PROJECT INTRODUCTION 1
1.1 Purpose of this Study 1
1.2 Project Location 1
1.3 Project Description 1
2.0 ACOUSTICAL FUNDAMENTALS 4
3.0 SIGNIFICANCE THRESHOLDS AND STANDARDS 6
3.1 Construction Noise 6
3.2 Operational Noise 6
3.3 Onsite Transportation Noise (Land Use Compatibility) 7
3.4 Offsite Transportation Noise 7
4.0 EXISTING NOISE ENVIRONMENT 9
4.1 Existing Noise Environment Onsite 9
4.2 Existing Site with Respect to Miramar Onsite 11
5.0 CONSTRUCTION NOISE LEVELS 12
5.1 Potential Noise Impact Identification 12
5.2 Construction Noise Conclusions 13
6.0 OPERATIONAL NOISE LEVELS 14
6.1 Operational Reference Noise Levels 14
6.2 Operational Noise Conclusions 19
7.0 TRANSPORTATION NOISE LEVELS 20
7.1 Onsite Transportation Related Noise Levels 20
7.2 Offsite Project Related Transportation Noise Levels 25
7.3 Transportation Noise Conclusions 27

LIST OF FIGURES

FIGURE 1-1: PROJECT VICINITY MAP 2
FIGURE 1-2: PROJECT SITE PLAN 3
FIGURE 4-1: AMBIENT NOISE MONITORING LOCATIONS 10
FIGURE 4-2: MCAS MIRAMAR NOISE CONTOURS/PROJECT LOCATION 11
FIGURE 6-1: REFERENCE NOISE SOURCE LOCATIONS 15
FIGURE 7-1: MODELED RECEPTOR LOCATIONS 21
FIGURE 7-2: FUTURE TRAFFIC NOISE CONTOURS 24

LIST OF TABLES

TABLE 3-1: SOUND LEVEL LIMITS IN DECIBELS (DBA) 6
TABLE 3-2: LAND USE - NOISE COMPATIBILITY GUIDELINES 8
TABLE 4-1: MEASURED AMBIENT NOISE LEVELS 9
TABLE 5-1: CONSTRUCTION NOISE LEVELS 13
TABLE 6-2: PROJECT HVAC NOISE LEVELS (EASTERN PROPERTY LINE) 16
TABLE 6-3: PROJECT HVAC NOISE LEVELS (SOUTHERN PROPERTY LINE) 17
TABLE 6-4: PROJECT HVAC NOISE LEVELS (NORTHERN PROPERTY LINE) 17
TABLE 6-5: ONSITE HVAC NOISE LEVELS (BUILDING 3) 18
TABLE 6-6: ONSITE HVAC NOISE LEVELS (BUILDING 4) 18
TABLE 7-1: TRAFFIC PARAMETERS 20
TABLE 7-2: FUTURE RESIDENTIAL EXTERIOR NOISE LEVELS 23
TABLE 7-3: NEAR TERM NOISE LEVELS WITHOUT PROJECT 26
TABLE 7-4: NEAR TERM + PROJECT NOISE LEVELS 27
TABLE 7-5: NEAR TERM VS. NEAR TERM + PROJECT NOISE LEVELS 27

APPENDICES

FUTURE NOISE MODEL INPUT AND OUTPUT FILES 29

GLOSSARY OF TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for night time noise. Typically LDN's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts to and from the proposed mixed use project. The proposed Carroll Canyon Mixed Use Development is located on an approximate 9.3-acre project site at 9850 Carroll Canyon Road, San Diego, California 92131. The site is situated in the northeast quadrant Interstate 15 (I-15) and Carroll Canyon Road in the Scripps Miramar Ranch Community Plan Area of the City of San Diego and is within the Marine Corps Air Station (MCAS) Miramar Airport Influence Area, and Council District 5.

The Carroll Canyon Mixed Use project proposes the redevelopment of an existing office complex with a mixed use development with residential apartments and commercial/retail space. The existing 76,241 square foot office building and associated facilities would be demolished and replaced with 260 apartment units and approximately 12,200 square feet of commercial and retail space to include a mix of retail shops, financial institution(s), sit-down restaurants(s), and fast service restaurant(s). Additionally, the residential portion of the project will include community facilities consisting of a gym, swimming pool, and lounge areas. This project requires discretionary approvals including: General Plan Amendment to change the current land use designation from Industrial Park (IP-2-1) to Residential (RM-3-7) and a Community Plan Amendment to change the current land use designation from Industrial Park to Residential.

Construction Noise Levels

The construction equipment will be spread out over the project site from average distances of more than 300-feet from the nearest property lines with the exception of the minor grading needed for the proposed southern portions of the site where grading will occur at an average distance as close as 110-180 feet from the existing uses to the south. Based upon the calculations of the noise levels when construction equipment is located near the property line, the average noise levels would be 74.8 dBA and does not exceed the 75-dBA standard. As a result, no impacts will occur and no mitigation measures are required.

Operational Noise Levels – Offsite

Based upon the property line noise levels determined in the report, none of the proposed noise sources directly or cumulatively exceeds the City's most restrictive 60 dBA property line standards at any of the adjacent property lines. Therefore, the proposed development related operational noise levels comply with the daytime and nighttime noise standards. No impacts are anticipated and no mitigation is required.

Operational Noise Levels – Onsite

Based upon the noise levels determined above, none of the proposed noise sources directly or cumulatively exceed the City's most restrictive 55 dBA standards at the proposed onsite residential uses. Therefore, the proposed development-related operational noise levels comply with the noise standards. No impacts to onsite users are anticipated and no mitigation is required.

Onsite Transportation Related Noise Levels

The results of this analysis indicate that future vehicle noise from Interstate 15 and Carroll Canyon Road are the principal source of community noise that could impact the site. Based upon the findings, no exterior noise mitigation will be necessary for compliance with the City of San Diego's Noise Standard of 65 dBA CNEL at 75% of the private use areas or for the common use areas, most of which are shielded from the roadways with the proposed buildings and proposed 8-foot wall along the western property line. The future noise levels at the outdoor commercial retail uses areas were found to be below the City of San Diego 75 dBA CNEL exterior noise level standard. Therefore, no impacts are anticipated and no mitigation is required.

The proposed project is near the Marine Corps Air Station (MCAS) Miramar over flight areas but is not within any of the noise contours due to infrequent aircraft over flights and the altitude the aircraft are operating at when passing near the site. Noise from MCAS Miramar would not be expected to exceed 60 dBA CNEL and therefore no mitigation to any structures or sensitive land uses is necessary due to aircraft.

The City of San Diego as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above the normally compatible noise level in order to ensure that acceptable interior noise levels can be achieved. The City of San Diego's Noise Compatibility Guidelines require interior noise levels in residential structures to be reduced to 45 dBA CNEL and office buildings be reduced to 50 dBA CNEL.

An interior noise level reduction of 34 dBA CNEL is needed for the proposed residential units located adjacent to Interstate 15 and a noise level reduction of 24 dBA CNEL is needed for the residential units on the eastern portion of the site. Based on the preliminary architectural plans provided by MVE + Partners, to meet the 45 dBA CNEL interior noise standard, a minimum STC 34-36 rated dual pane windows and mechanical ventilation is needed to achieve the necessary interior noise reductions to meet the City's standard for the residential units adjacent to Interstate 15. A minimum STC 26 rated assemblies and mechanical ventilation is needed to achieve the interior noise reductions for the residential units on the eastern portion of the site. Once the final architectural plans are prepared, the proposed project site will require an interior noise study be prepared prior to the issuance of building permits to determine the detailed components to reduce interior noise to 45 dBA CNEL.

To meet the 50 dBA CNEL interior noise standard at the commercial uses, an interior noise level reduction of minimum 18 dBA CNEL is needed for the proposed project. Therefore with the incorporation of a minimum STC 26 rated dual pane windows and mechanical ventilation will achieve the necessary interior noise reductions to meet the City's 50 dBA CNEL standard. Office spaces shall be provided with a continuously running fan to comply with indoor air quality per ASHRAE 62.2-2007.

Offsite Project Related Transportation Noise Levels

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment. Therefore, the project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

1.0 PROJECT INTRODUCTION

1.1 Purpose of this Study

The purpose of this Noise study is to determine noise impacts, if any, to the Project from off-site sources (i.e. traffic along Interstate 15 (I-15) and Carroll Canyon Road, aircraft from MCAS Miramar, and adjacent uses) and impacts from the Project operations (i.e. HVAC, onsite uses, and traffic generated). Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to reduce impacts to below a level of significance.

1.2 Project Location

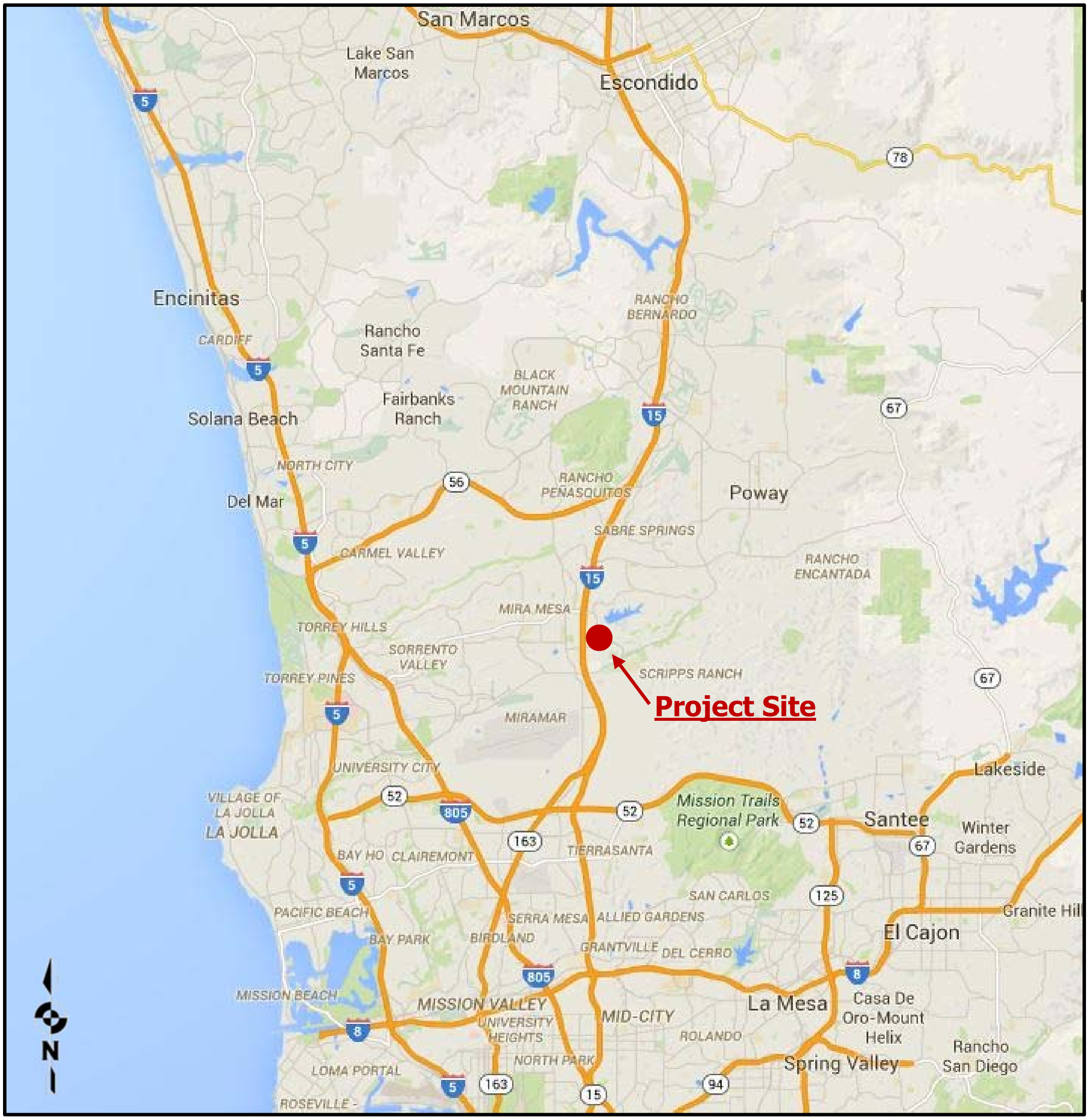
The proposed Carroll Canyon Mixed Use Development is located on a 9.3-acre project site at 9850 Carroll Canyon Road, San Diego, California 92131. The site is situated in the northeast quadrant Interstate 15 (I-15) and Carroll Canyon Road in the Scripps Miramar Ranch Community Plan Area of the City of San Diego and is within the Marine Corps Air Station (MCAS) Miramar Airport Influence Area, and Council District 5. A general project vicinity map is shown in Figure 1–1 on the following page.

1.3 Project Description

The Carroll Canyon Mixed Use project proposes the redevelopment of an existing office complex with a mixed use development with residential apartments and commercial/retail space. The existing 76,241 square foot office building and associated facilities would be demolished and replaced with 260 apartment units and approximately 12,200 square feet of commercial and retail space to include a mix of retail shops, financial institution(s), sit-down restaurants(s), and fast service restaurant(s). Additionally, the residential portion of the project will include community facilities consisting of a gym, swimming pool, and lounge areas.

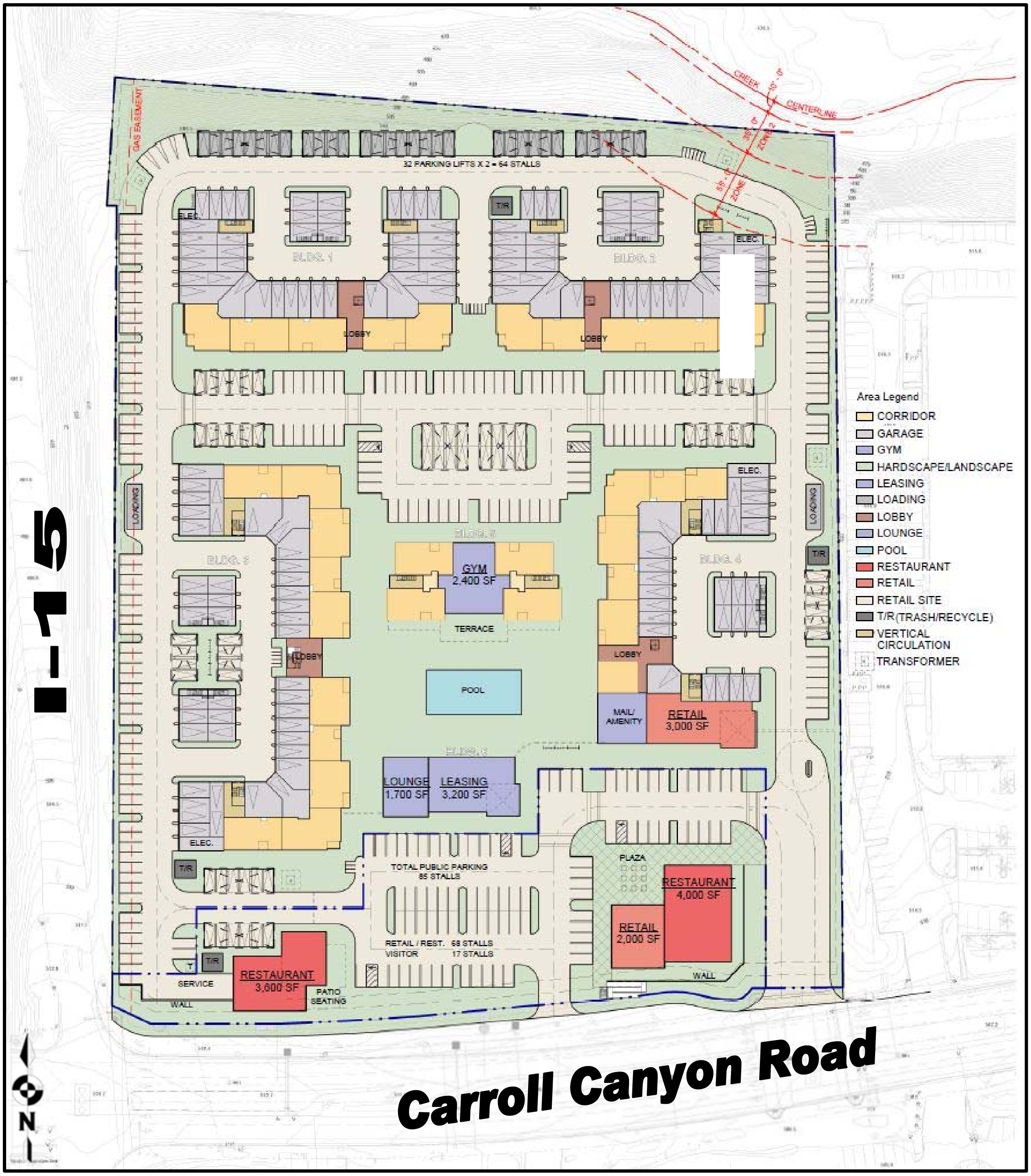
This project requires discretionary approvals including: General Plan Amendment to change the current land use designation from Industrial Park (IP-2-1) to Residential (RM-3-7) and a Community Plan Amendment to change the current land use designation from Industrial Park to Residential.

Figure 1-1: Project Vicinity Map



Source: Google Maps, 2/15

Figure 1-2: Project Site Plan



2.0 ACOUSTICAL FUNDAMENTALS

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs, and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24-hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicles noise level is a combination of the noise produced by a vehicle's engine, exhaust, and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds, and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt, and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas, and vegetation. Alternately, fixed/point sources radiate outward uniformly as it travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source and blocking the noise transmission with barriers. Any or all of these methods may be required to reduce noise levels to an acceptable level. To be effective, a noise barrier must have enough mass to prevent significant noise transmission through it and high enough and long enough to shield the receiver from the noise source. A safe minimum surface weight for a noise barrier is 3.5 pounds/square foot (equivalent to 3/4-inch plywood), and the barrier must be carefully constructed so that there are no cracks or openings.

Barriers constructed of wood or as a wooden fence must have minimum design considerations as follows: the boards must be ¾ inch thick and free of any gaps or knot holes. The design must also incorporate either overlapping the boards at least 1 inch or utilizing a tongue-and-grove design for this to be achieved.

3.0 SIGNIFICANCE THRESHOLDS AND STANDARDS

3.1 Construction Noise

Division 4 of Article 9.5 of the City of San Diego Municipal Code addresses the limits of disturbing or offensive construction noise. The Municipal Code states that with the exception of an emergency, it should be unlawful to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

3.2 Operational Noise

The generation of noise from certain types of land uses could cause potential land use incompatibility. A project which would generate noise levels at the property line which exceed Section 59.5.0401 of the City's Municipal Code is considered potentially significant, as identified in Table 3-1 below.

Table 3-1: Sound Level Limits in Decibels (dBA)

Land Use Zone	Time of Day	One-Hour Average Sound Level (decibels)
1. Residential: All R-1	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7a.m.	50 45 40
2. All R-2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7a.m.	55 50 45
3. R-3, R-4 and all other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7a.m.	60 55 50
4. All Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7a.m.	65 60 60
5. Manufacturing all other Industrial, including Agricultural and Extractive Industry	any time	75

Source: City of San Diego Noise Ordinance Section 59.5.0401

The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Sections 59.5.0404 of this article.

3.3 Onsite Transportation Noise (Land Use Compatibility)

The City uses the Land Use - Noise Compatibility Guidelines as shown on Table NE-3 in the Noise Element of the General Plan (provided as Table 3-2 below) for evaluating land use noise compatibility when reviewing proposed land use development projects. A "compatible" land use indicates that standard construction methods will attenuate exterior noise to an acceptable indoor noise level and people can carry out outdoor activities with minimal noise interference. Evaluation of land use that falls into the "conditionally compatible" noise environment should have an acoustical study prepared. The acoustical study should include, with consideration of the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with speech, sleep, or other activities characteristic of the land use. For land uses indicated as "conditionally compatible", structures must be capable of attenuating exterior noise to the indoor noise level as shown in Table 3-2. For land uses indicated as "incompatible", new construction should generally not be undertaken.

Additionally, if the project is proposed within the Airport Environs Overlay Zone (AEOZ) as defined in Chapter 13, Article 2, Division 3 of the San Diego Municipal Code, the potential exterior noise impacts from aircraft noise would not constitute a significant environmental impact. However, the City recommends that structures within an AEOZ must also follow the requirements as shown in Table 3-2.

3.4 Offsite Transportation Noise

In accordance with CEQA, a project should not have a noticeable adverse impact on the surrounding environment. Noise level changes greater than 3 dBA, or a doubling of the acoustic energy, are often identified as audible and considered potentially significant, while changes less than 1 dBA are not discernible. In the range of 1 to 3 dBA, humans who are very sensitive to noise may perceive a slight change. For the purposes for this analysis, a direct and cumulative roadway noise impact would be considered significant if the project increases noise levels at a noise sensitive land use 3 dBA CNEL and if the noise level increases above an unacceptable noise level per the City's General Plan.

Table 3-2: Land Use - Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
		60	65	70	75
Open Space and Parks and Recreational					
Community & Neighborhood Parks; Passive Recreation					
Regional Parks; Outdoor Spectator Sports, Golf Courses; Athletic Fields; Outdoor Spectator Sports, Water Recreational Facilities; Horse Stables; Park Maint. Facilities					
Agricultural					
Animal Raising, Maintain & Keeping; Commercial Stables					
Residential					
Single Units; Mobile Homes; Senior Housing		45			
Multiple Units; Mixed-Use Commercial/Residential; Live Work; Group Living Accommodations **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Places of Worship; Child Care Facilities		45			
Vocational or Professional Educational Facilities; Higher Education Institution Facilities (Community or Junior Colleges, Colleges, or Universities)		45	45		
Cemeteries					
Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Assembly & Entertainment; Radio & Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research & Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

Source: City of San Diego Noise Element (2008)

4.0 EXISTING NOISE ENVIRONMENT

4.1 Existing Noise Environment Onsite

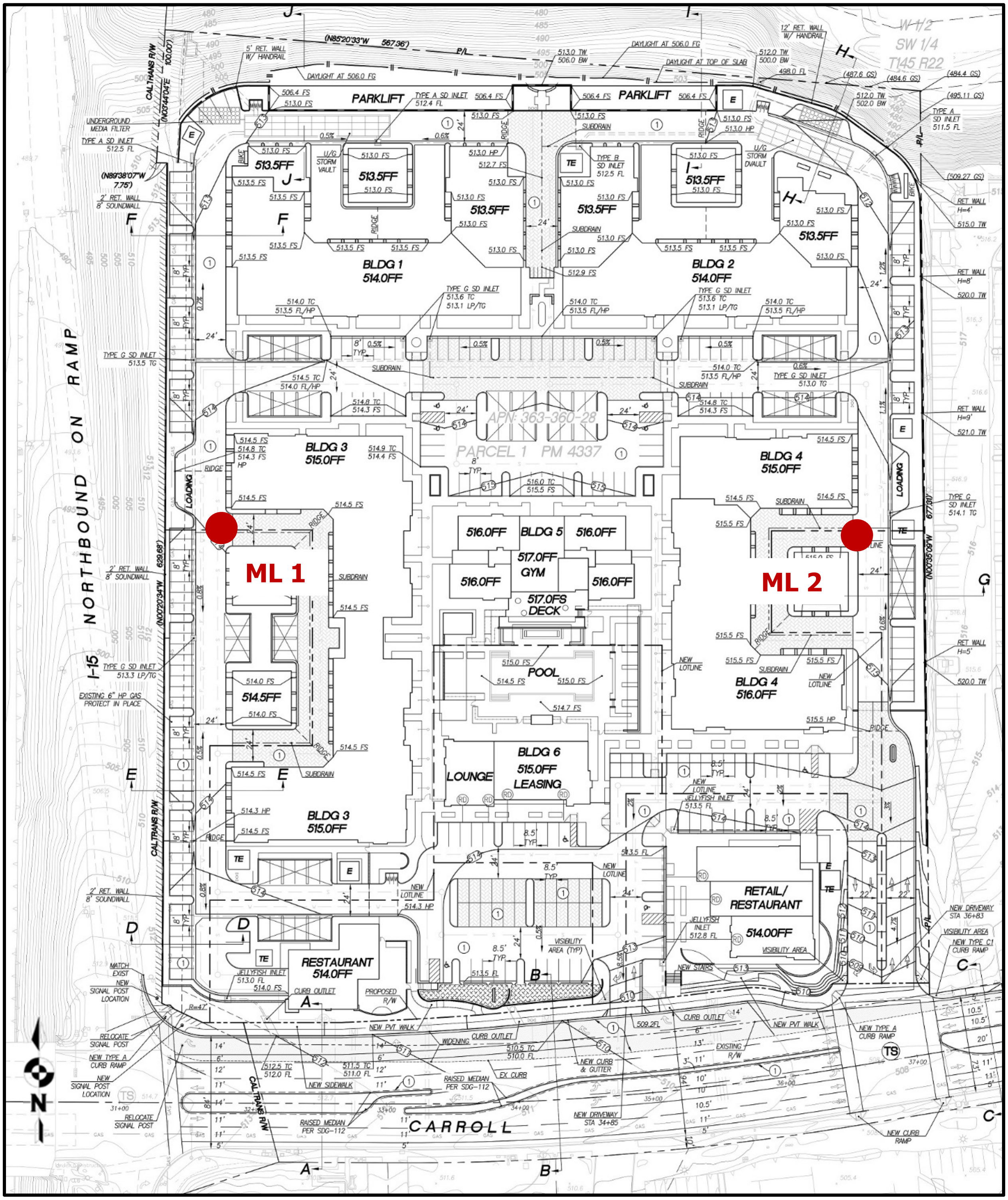
Noise measurements were taken June 21, 2012, in the afternoon hours using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 150.

Monitoring location 1 (M1) was located roughly 425 feet from1 the centerline of Interstate 15 in the western portion of the site. Monitoring location 2 (M2) was located in the eastern portion of the site approximately 725 feet from Interstate 15. The noise monitoring locations are provided graphically in Figure 4-1 on the following page. The results of the noise level measurements are presented in Table 4-1. The noise measurements were monitored for a time period of one hour during heavy traffic conditions. The existing noise levels in the project area consisted primarily of traffic from Interstate 15 and two aircraft over flights during each measurement. The ambient Leq noise levels measured in the area of the project during the afternoon hours were found to be 60-70 dBA Leq based on the separation from Interstate 15. The statistical indicators Lmax, Lmin, L10, L50 and L90, are given for the monitoring location. As can be seen from the L90 data, 90% of the time the noise level is approximately 60-68 dBA from Interstate 15 across the site.

Table 4-1: Measured Ambient Noise Levels

Measurement Identification	Description	Time	Noise Levels (dBA)					
			Leq	Lmax	Lmin	L10	L50	L90
M1	Western Portion	1:00-1:20 p.m.	69.5	71.5	67.3	70.7	69.4	68.2
M2	Lower Pad	1:25-1:45 p.m.	60.6	62.2	59.0	61.5	60.4	59.5
Source: Ldn Consulting, Inc. June 21, 2012								

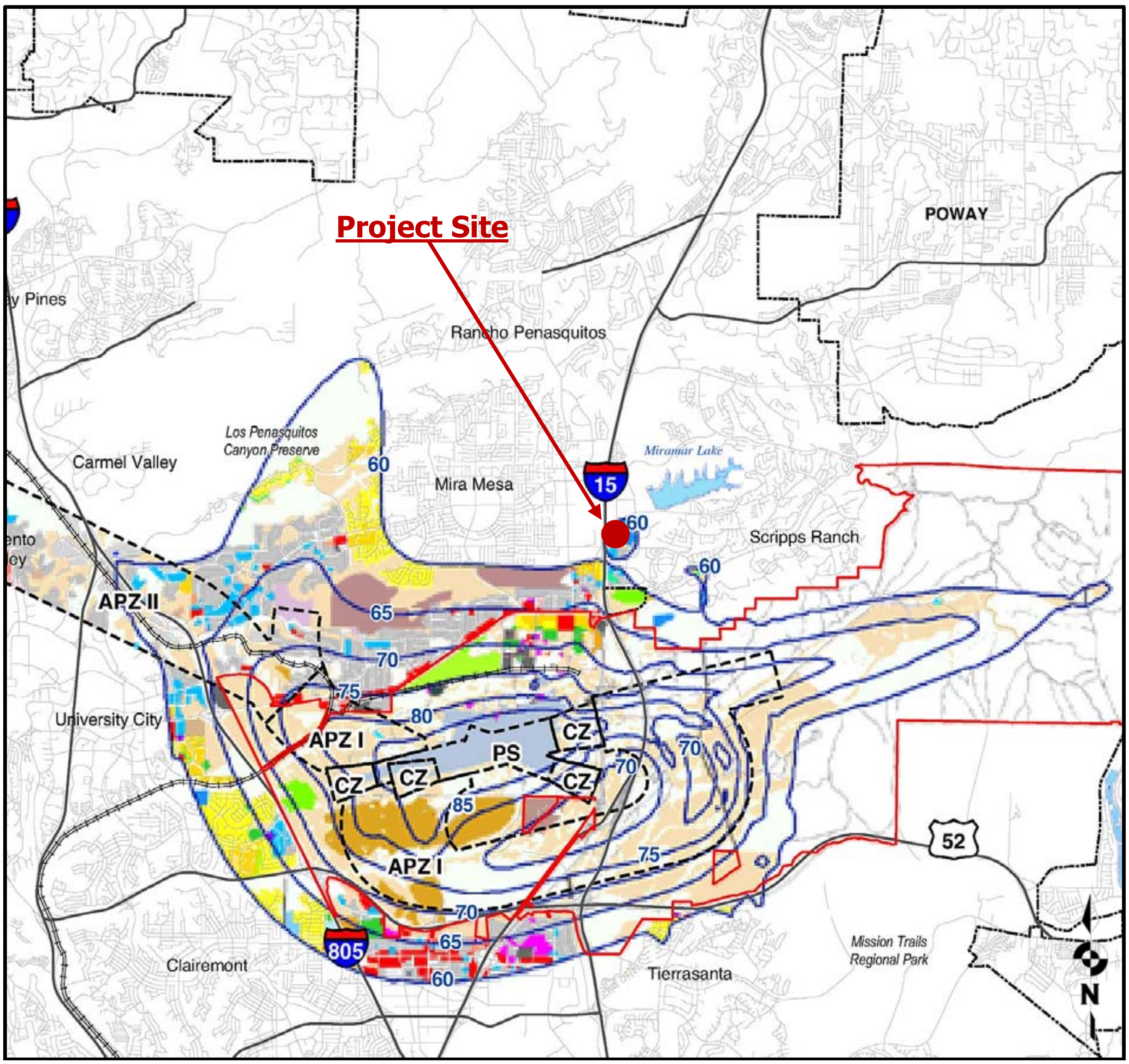
Figure 4-1: Ambient Noise Monitoring Locations



4.2 Existing Site with Respect to Miramar Onsite

The proposed project is near the Marine Corps Air Station (MCAS) Miramar over flight areas and is within the 60 dBA CNEL noise contour pocket due to aircraft over flights but is outside the 65 dBA CNEL contour due to flight paths and the altitude at which the aircraft are operating when passing near the site. Noise from MCAS Miramar would not be expected to exceed 65 dBA CNEL and therefore no mitigation to any structures or sensitive land uses due to aircraft is required. The project site location along with the noise contours from MCAS Miramar is shown in Figure 4-2 below.

Figure 4-2: MCAS Miramar Noise Contours/Project Location



5.0 CONSTRUCTION NOISE LEVELS

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders, and scrapers and can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

Division 4 of Article 9.5 of the City of San Diego Municipal Code addresses the limits of disturbing or offensive construction noise. The Municipal Code states that with the exception of an emergency, it should be unlawful to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

Using a point-source noise prediction model, calculations of the expected construction noise levels were completed. The essential model input data for these performance equations include the source levels of the equipment, source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day (also referred to as the duty-cycle), and any transmission loss from topography or barriers.

5.1 Potential Noise Impact Identification

Based on the EPA noise emissions, empirical data and the amount of equipment needed, worst-case noise levels from the construction equipment operations would occur during the base operations (grading/site preparation). The construction schedule identifies that grading activities will occur in a single phase all at the same time, with anticipated equipment including a two dozers, two backhoes, several haul trucks, a roller compactor, and a water truck. Due to physical constraints and normal site preparation operations, most of the equipment will be spread out over the site. Based upon the proposed site plan, the majority of the grading operations will occur more than 300 feet from the nearest property lines, with the exception of the minor grading needed for the proposed southern portions of the site where grading will occur at an average distance as close as 110-180 feet from the existing uses to the south.

Therefore the worst-case noise condition would occur when the construction equipment is working in close proximity to each other at an average distance of approximately 110 feet from the southern property line. The noise levels utilized in this analysis are shown in Table 5-1. The amount of time the equipment will be utilized over an 8-hour period at this distance from the property line is also given and factored into the average noise level calculations. This is referred to as the duty-cycle.

Table 5-1: Construction Noise Levels

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA)*	Duty Cycle (Hours/Day)	Cumulative Noise Level @ Property Line (dBA)
Haul Truck	4	75	4	78.0
Dozer	2	72	6	73.8
Backhoe	2	74	6	75.8
Roller Compactor	1	73	6	71.8
Water Truck	1	70	6	68.8
Cumulative Noise Levels @ 50-Feet (dBA)				**81.7**
Nearest Average Distance (Feet)				**110**
Anticipated Property Line Noise Level @ 110-Feet (dBA)				**74.8**
*Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data				

As can be seen in Table 5-1, with the equipment working closely together the cumulative noise levels at an average distance of 110 feet would be 74.8 dBA at the nearest property line. Therefore, the average noise level will be below the 75 dBA threshold and no impacts are anticipated.

5.2 Construction Noise Conclusions

The construction equipment will be spread out over the project site from average distances of more than 300-feet from the nearest property lines with the exception of the minor grading needed for the proposed southern portions of the site where grading will occur at an average distance as close as 110-180 feet from the existing uses to the south. Based upon the calculations of the noise levels when construction equipment is located near the property line, the average noise levels would be 74.8 dBA and does not exceed the 75-dBA standard; as a result, no impacts will occur and no mitigation measures are required.

6.0 OPERATIONAL NOISE LEVELS

This section examines the potential stationary noise source levels and delivery operations associated with the development and operation of the proposed project. Noise from a fixed or point source drops off at a rate of 6 dBA for each doubling of distance. Which means a noise level of 70 dBA at 5 feet would be 64 dBA at 10-feet and 58 dBA at 20 feet. A review of the proposed project indicates that noise sources such as occasional small box truck deliveries, parking lifts, and the roof mounted mechanical ventilation system (HVAC) are the primary sources of stationary noise.

All property lines surrounding the project site are considered commercial and would therefore be subject to the 60 dBA standard during the nighttime hours at the adjacent commercial property lines. The commercial components of the Project must also meet the most restrictive arithmetic mean nighttime standard of 55 dBA at the proposed onsite residential properties as shown in Table 3-1 above. This section will analyze the noise levels at the property line to determine the worst-case noise levels, any impacts, and necessary mitigation solutions, if needed.

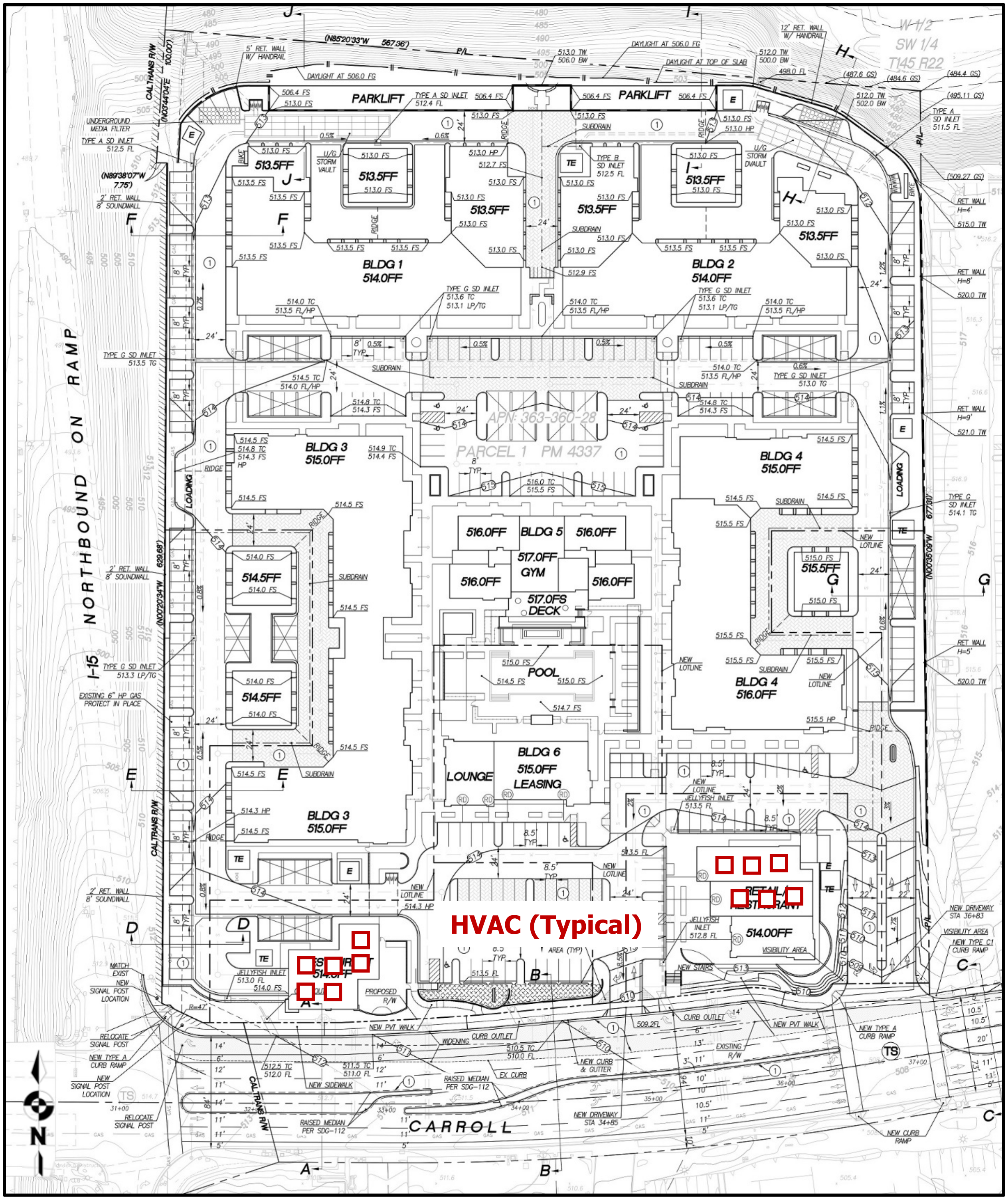
The location of the noise sources including the parking lifts and a typical HVAC layout are shown in Figure 6-1 for reference. Each building will have a series of HVAC units for temperature control and are discussed in more detail below. The buildings on site would have small (step side or box trucks) arriving during normal business hours to bring deliveries. Therefore, truck noise is anticipated to be lower than the City's noise standards and no impacts were found. Each anticipated noise source is provided in more detail below to determine if noise impacts will occur.

6.1 Operational Reference Noise Levels

This section provides a detailed description of the reference noise level measurement results. It is important to note that the following projected noise levels assume the worst-case noise environment with the parking lifts and roof-top mounted mechanical ventilation (HVAC) all occurring at the same time. In reality, these noise levels will vary throughout the day. The mechanical ventilation may operate during nighttime hours or early morning hours.

A cumulative noise level analysis with associated distances, noise reductions, and calculations of the proposed sources is provided below along with tables showing the individual noise sources and their associated property line noise levels. Additionally, the commercial buildings on site would have small (step side or box trucks) arriving during normal business hours to bring deliveries. Therefore, truck noise is anticipated to be lower than the City's noise standards and no impacts were found.

Figure 6-1: Reference Noise Source Locations



Air Conditioning Units (HVAC) – Offsite

Rooftop mechanical ventilation units (HVAC) will be installed on the proposed commercial use buildings. In order to evaluate the HVAC noise impacts, the analysis utilized reference noise level measurements taken at a Shopping Center in Encinitas, California, in 2010 for the commercial and retail buildings. The unshielded noise levels for these smaller HVAC units were measured to be 65.9 dBA Leq at a distance of 6 feet (Source: Lennox Commercial HVAC Units – October, 2008).

To predict the worst-case future noise environment, a continuous reference noise level of 65.9 dBA Leq at 6 feet was used to represent the roof-top mechanical ventilation system for the commercial and retail use buildings. Even though the mechanical ventilation system will cycle on and off throughout the day, this approach presents the worst-case noise condition of continuous operation. In addition, these units are designed to provide cooling during the peak summer daytime periods, and it is unlikely that all the units will be operating continuously.

The noise levels associated with the mechanical ventilation system will be limited with the proposed parapet walls on each building that will vary in height but will be roughly as high if not higher than the HVAC units to shield them both visually and acoustically based upon the architectural plans (Source: MVE, 2015). To be conservative, no noise level reductions from the parapet walls that are planned were accounted for in this noise analysis. The number of HVAC units that are proposed for each building is also provided below. The noise level reductions due to distance from the property lines to the east, south, and north are provided in Tables 6-2, 6-3, and 6-4, respectively. The western property line is located farther from the site, across Interstate 15; and no impacts are anticipated due to the increased distances.

Table 6-2: Project HVAC Noise Levels (Eastern Property Line)

Building	Distance To Observer Location (Feet)	Hourly Reference Noise Level (dBA Leq)	Noise Source Reference Distance (Feet)	Noise Reduction Due To Distance (dBA)	Noise Level At Property Line Single Unit (dBA Leq)	Quantity	Property Line Cumulative Noise Level (dBA Leq)*
Restaurant	445	65.9	6	-37.4	28.5	6	36.3
Rest/Retail	130	65.9	6	-26.7	39.2	8	48.2
Retail	95	65.9	6	-24.0	41.9	6	49.7
Gym	285	65.9	6	-33.5	32.4	5	39.4
Lounge/Lease	430	65.9	6	-37.1	28.8	4	34.8
Cumulative Noise Level from ALL HVAC Units							**52.4***
*Complies with the commercial nighttime Noise Standard of 60 dBA.							

Table 6-3: Project HVAC Noise Levels (Southern Property Line)

Building	Distance To Observer Location (Feet)	Hourly Reference Noise Level (dBA Leq)	Noise Source Reference Distance (Feet)	Noise Reduction Due To Distance (dBA)	Noise Level At Property Line Single Unit (dBA Leq)	Quantity	Property Line Cumulative Noise Level (dBA Leq)*
Restaurant	145	65.9	6	-27.7	38.2	6	46.0
Rest/Retail	175	65.9	6	-29.3	36.6	8	45.6
Retail	325	65.9	6	-34.7	31.2	6	39.0
Gym	450	65.9	6	-37.5	28.4	5	35.4
Lounge/Lease	290	65.9	6	-33.7	32.2	4	38.2
Cumulative Noise Level from ALL HVAC Units							**49.8***
*Complies with the commercial nighttime Noise Standard of 60 dBA.							

Table 6-4: Project HVAC Noise Levels (Northern Property Line)

Building	Distance To Observer Location (Feet)	Hourly Reference Noise Level (dBA Leq)	Noise Source Reference Distance (Feet)	Noise Reduction Due To Distance (dBA)	Noise Level At Property Line Single Unit (dBA Leq)	Quantity	Property Line Cumulative Noise Level (dBA Leq)*
Restaurant	850	65.9	6	-43.0	22.9	6	30.7
Rest/Retail	615	65.9	6	-40.2	25.7	8	34.7
Retail	460	65.9	6	-37.7	28.2	6	36.0
Gym	370	65.9	6	-35.8	30.1	5	37.1
Lounge/Lease	535	65.9	6	-39.0	26.9	4	32.9
Cumulative Noise Level from ALL HVAC Units							**41.8***
*Complies with the commercial nighttime Noise Standard of 60 dBA.							

The proposed HVAC operational noise levels are in compliance with the City's most restrictive nighttime 60 dBA Leq property line standard at the adjacent commercial uses. No impacts are anticipated and no mitigation is required. Additionally, the HVAC units will be shielded from the property lines from the roof parapets and the HVAC noise is anticipated to be lower.

Air Conditioning Units (HVAC) – Onsite

In order to evaluate the HVAC noise impacts to the proposed onsite uses, the analysis used the same reference noise levels as stated above from the Shopping Center in Encinitas, California, in 2010. The unshielded noise levels for these smaller HVAC units were measured to be 65.9 dBA Leq at a distance of 6 feet (Source: Lennox Commercial HVAC Units – October, 2008). Even though the mechanical ventilation system will cycle on and off throughout the day, this approach presents the worst-case noise condition of continuous operation. The noise levels associated with the roof-top mechanical ventilation system will be limited with the proposed parapet walls on each building. Hence, the parapet wall will block the line-of-sight and reduce the noise levels at the adjacent property lines. To be conservative, no noise level reductions from the parapet walls that are planned were accounted for in this noise analysis. The number of HVAC units that are proposed for each building is also provided below.

The worst-case onsite noise levels from the proposed HVAC units would occur at the upper level balconies of Residential Buildings 3 and 4 having direct line of sight to the units (please refer to the site plan for more details). The noise level reductions due to distance at the worst-case onsite locations, are provided in Tables 6-5 and 6-6. The anticipated unshielded noise level are below the most restrictive 55 dBA Leq standard. Therefore, no impacts are anticipated and no mitigation is required.

Table 6-5: Onsite HVAC Noise Levels (Building 3)

Building	Distance To Observer Location (Feet)	Hourly Reference Noise Level (dBA Leq)	Noise Source Reference Distance (Feet)	Noise Reduction Due To Distance (dBA)	Noise Level At Property Line Single Unit (dBA Leq)	Quantity	Property Line Cumulative Noise Level (dBA Leq)*
Restaurant	95	65.9	6	-24.0	41.9	6	49.7
Rest/Retail	265	65.9	6	-32.9	33.0	8	42.0
Retail	305	65.9	6	-34.1	31.8	6	39.6
Gym	110	65.9	6	-25.3	40.6	5	47.6
Lounge/Lease	70	65.9	6	-21.3	44.6	4	50.6
Cumulative Noise Level from ALL HVAC Units							**54.6***
*Complies with the nighttime Noise Standard of 55 dBA.							

Table 6-6: Onsite HVAC Noise Levels (Building 4)

Building	Distance To Observer Location (Feet)	Hourly Reference Noise Level (dBA Leq)	Noise Source Reference Distance (Feet)	Noise Reduction Due To Distance (dBA)	Noise Level At Property Line Single Unit (dBA Leq)	Quantity	Property Line Cumulative Noise Level (dBA Leq)*
Restaurant	310	65.9	6	-34.3	31.6	6	39.4
Rest/Retail	140	65.9	6	-27.4	38.5	8	47.6
Retail	70	65.9	6	-21.3	44.6	6	52.3
Gym	115	65.9	6	-25.7	40.2	5	47.2
Lounge/Lease	165	65.9	6	-28.8	37.1	4	43.1
Cumulative Noise Level from ALL HVAC Units							**54.9***
*Complies with the nighttime Noise Standard of 55 dBA.							

6.2 Operational Noise Conclusions

Operational Noise Levels – Offsite

Based upon the property line noise levels determined above, none of the proposed noise sources directly or cumulatively exceed the City's most restrictive 60 dBA property line standards at any of the adjacent property lines. Therefore, the proposed development-related operational noise levels comply with the noise standards. No offsite impacts are anticipated and no mitigation is required.

Operational Noise Levels – Onsite

Based upon the noise levels determined above, none of the proposed noise sources directly or cumulatively exceed the City's most restrictive 55 dBA standards at the proposed onsite residential uses. Therefore, the proposed development-related operational noise levels comply with the noise standards. No impacts to onsite users are anticipated and no mitigation is required.

7.0 TRANSPORTATION NOISE LEVELS

7.1 Onsite Transportation Related Noise Levels

To determine the future noise environment and impact potentials the Caltrans Sound32 noise model was utilized. The critical model input parameters, to determine the projected traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions (hard or soft) and the peak hour traffic volume.

For purposes of evaluating future land use compatibility, peak hour traffic volumes were developed based on the maximum hourly traffic volume provided by the Draft Transportation Impact Analysis performed by LOS Engineering (*Carroll Canyon Mixed Use Draft Transportation Impact Analysis, 2015)*. The traffic mix used in the modeling for Interstate 15 was developed from Caltrans truck traffic data. The typical vehicle mixed observed in the City was used along Carroll Canyon Road. Table 7-1 presents the roadway parameters used in the analysis including the average daily traffic volumes, vehicle speeds, and the hourly traffic flow distribution (vehicle mix) for the future conditions. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the Noise Model. The modeled observer locations for the sampled units of the proposed project are presented in Figure 7-1.

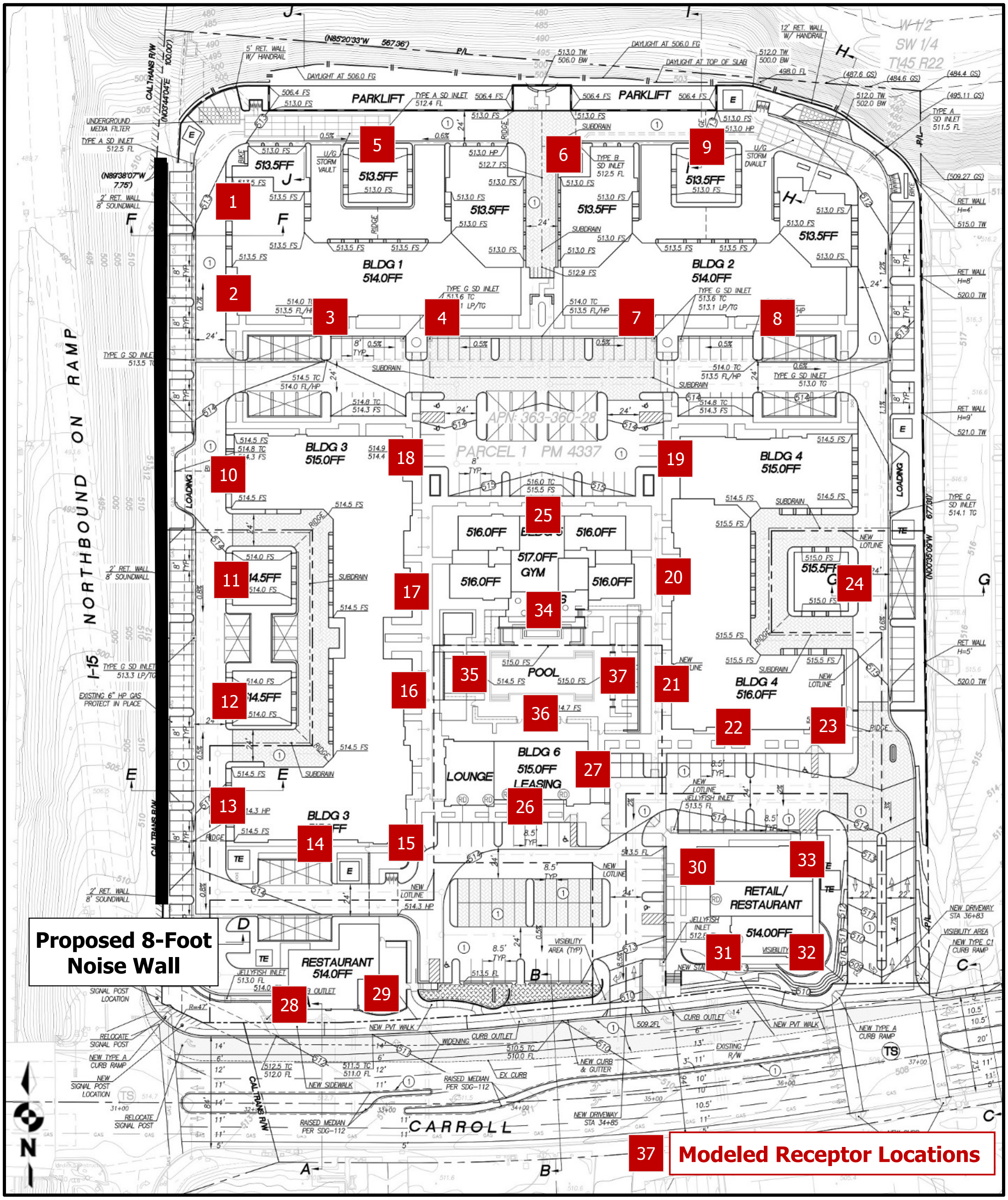
Additionally, the project is proposing the construction of an 8-foot noise wall along the western property line. The proposed wall has been incorporated into this analysis and represented in Figure 7-1.

Table 7-1: Traffic Parameters

Source	Roadway Type	Average Daily Traffic (ADT)[1]	Vehicle Speeds (MPH)	Vehicle Mix %		
				Auto	Medium Trucks	Heavy Trucks
Interstate 15	Freeway	308,900	65	96.1[2]	2.3	1.6
Carroll Canyon Road	4 Lane	27,600	40	96.0[3]	2.0	2.0

[1] Source: Project Traffic Study, LOS Engineering 2015.
[2] Caltrans 2012 Annual Average Daily Truck Traffic on the California State Highway System.
[3] Typical City vehicle mix data.

Figure 7-1: Modeled Receptor Locations



The required coordinate information necessary for the traffic noise prediction model input was taken from the preliminary site plans provided by Pasco Laret Suiter and Associates, 2015. To predict the future noise levels, the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the receptor areas. Traffic was consolidated into a single lane for each directional flow of the roadways and the roadway segments were extended beyond the observer locations. The Buildout analysis was modeled utilizing the roadway parameters described above for the future conditions. The common outdoor use areas at the Project site are located at the swimming pool area and the proposed pedestrian plaza uses in the center of the site. Receptors were modeled 5 feet above grade level and coincide with potential exterior use areas associated with the proposed project. The modeling results are quantitatively shown in Table 7-2 below. The modeling input parameters and output files for the future conditions are also provided in ***Attachment A.***

Figure 7-2 shows the future noise contours for the first floor as a solid line. The upper floor contours are relatively the same and the worst case noise level contours are depicted as a single dashed line. Based upon these findings, no exterior noise mitigation will be necessary for compliance with the City of San Diego's Noise Standard of 65 dBA CNEL at 75% of the private use areas or for the common use area which is set back from the major roadways. The commercial uses were found to be below the City compatibility threshold of 75 dBA CNEL at the proposed outdoor use areas. Noise contours were developed based upon the traffic modeling to determine compatibility with the proposed uses.

The City of San Diego as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above the normally compatible noise level in order to ensure that acceptable interior noise levels can be achieved. The City of San Diego's Noise Compatibility Guidelines require interior noise levels in residential structures to be reduced to 45 dBA CNEL and office buildings be reduced to 50 dBA CNEL as shown in Table 3-2.

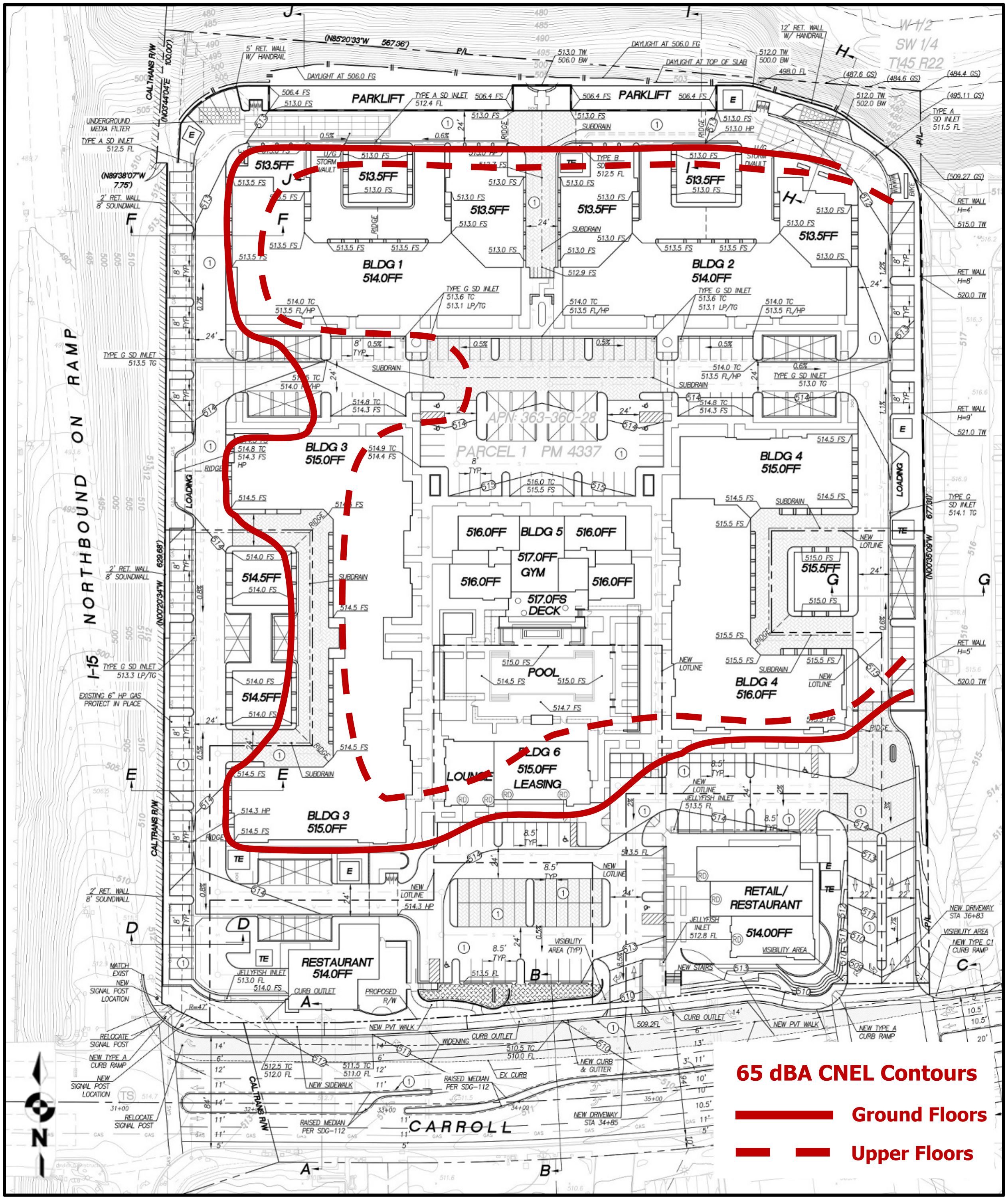
An interior noise level reduction of 34 dBA CNEL is needed for the proposed residential units located adjacent to Interstate 15 and a noise level reduction of 24 dBA CNEL is needed for the residential units on the eastern portion of the site. Based on the preliminary architectural plans provided by MVE + Partners, to meet the 45 dBA CNEL interior noise standard, a minimum STC 34-36 rated dual pane windows and mechanical ventilation is needed to achieve the necessary interior noise reductions to meet the City's standard for the residential units adjacent to Interstate 15. A minimum STC 26 rated assemblies and mechanical ventilation is needed to achieve the interior noise reductions for the residential units on the eastern portion of the site. Once the final architectural plans are prepared, the proposed project site will require an interior noise study be prepared prior to the issuance of building permits to determine the detailed components to reduce interior noise to 45 dBA CNEL.

Table 7-2: Future Residential Exterior Noise Levels

Receptor Number [1]	Receptor Location	First Floor Noise Level (dBA CNEL)	Second Floor Noise Level (dBA CNEL)	Third Floor Noise Level (dBA CNEL)	Fourth Floor Noise Level (dBA CNEL)
1	Building 1	71.9	76.3	78.4	78.4
2	Building 1	68.9	74.0	78.5	78.4
3	Building 1	62.9	66.9	69.6	72.4
4	Building 1	59.3	61.4	63.7	66.1
5	Building 1	67.1	68.7	70.4	70.7
6	Building 2	68.2	68.2	68.2	68.4
7	Building 2	56.7	57.8	59.2	61.3
8	Building 2	55.2	56.0	57.2	59.4
9	Building 2	67.1	67.1	67.2	57.3
10	Building 3	68.8	74.2	78.6	78.5
11	Building 3	68.4	73.9	78.5	78.5
12	Building 3	68.3	73.9	78.5	78.5
13	Building 3	68.8	74.1	78.5	78.4
14	Building 3	67.0	70.6	72.3	73.9
15	Building 3	65.9	67.6	69.6	71.7
16	Building 3	58.7	59.2	59.8	62.9
17	Building 3	57.9	58.1	58.5	61.6
18	Building 3	56.9	57.1	57.5	61.0
19	Building 4	57.1	58.1	59.7	61.5
20	Building 4	57.7	58.5	59.8	61.5
21	Building 4	60.0	61.3	62.7	64.7
22	Building 4	64.8	65.2	66.2	67.0
23	Building 4	66.1	66.3	66.5	67.0
24	Building 4	59.7	60.0	60.4	61.3
25	Building 5	57.0	--	--	--
26	Leasing Office	64.8	--	--	--
27	Leasing Office	62.1	--	--	--
28	Restaurant	76.2	--	--	--
29	Restaurant Patio	73.4	--	--	--
30	Restaurant 2	67.8	--	--	--
31	Restaurant 2	71.1	--	--	--
32	Restaurant 2	71.8	--	--	--
33	Restaurant 2	67.5	--	--	--
34	Gym Deck	56.7	--	--	--
35	Pool	57.7	--	--	--
36	Pool	58.4	--	--	--
37	Pool	59.4	--	--	--

[1] Interior Noise Study required if noise level is above 60 dBA CNEL per City Guidelines.
[2] Commercial interior Noise Levels are anticipated to meet the 50 dBA CNEL standard.

Figure 7-2: Future Traffic Noise Contours



To meet the 50 dBA CNEL interior noise standard at the commercial uses, an interior noise level reduction of minimum 18 dBA CNEL is needed for the proposed project. Therefore with the incorporation of a minimum STC 26 rated dual pane windows and mechanical ventilation will achieve the necessary interior noise reductions to meet the City's 50 dBA CNEL standard. Office spaces shall be provided with a continuously running fan to comply with indoor air quality per ASHRAE 62.2-2007.

7.2 Offsite Project Related Transportation Noise Levels

The off-site project-related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December, 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level. A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level over many distances until the distance to the desired noise contour(s) are found.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt, and hard pack dirt, while soft site conditions exist in areas having slight grade changes, landscaped areas, and vegetation. Hard site conditions, to be conservative, were used to develop the identified noise contours and analyze noise impacts along all roadway segments. The future traffic noise model utilizes a typical, vehicle mix of 96% Autos, 2% Medium Trucks, and 2% Heavy Trucks for all analyzed roadway segments. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA Model.

Community noise level changes greater than 3 dBA are often identified as audible and considered potential significant, while changes less than 1 dBA will not be discernible to local residents. In the range of 1 to 3 dBA, residents who are very sensitive to noise may perceive a slight change. There is no scientific evidence available to support the use of 3 dBA as the significance threshold; community noise exposures are typically over a long time period rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely greater than 1 dBA and 3 dBA appears to be appropriate for most people. For the purposes for this analysis, a direct roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if the project increases noise levels above an unacceptable noise level per the City's General Plan in the area adjacent to the roadway segment.

Traffic Noise Impacts

To determine if off-site noise level increases associated with the development of the project will create noise impacts, the noise levels for the near term conditions were compared with the noise level increase from when the project is full built. Utilizing the project's traffic assessment (Source: LOS Engineering, 2015), noise contours were developed for the following traffic scenarios:

Near Term: Traffic projections at the time the proposed project would open without project traffic.

Near Term Plus Project: Projected Near Term conditions plus the added noise from the proposed project related traffic.

Near Term vs. Near Term Plus Project: Comparison between the Near Term conditions without the project and Near Term traffic with the project.

The noise levels and reference distances to the 65 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 7-3 for the Near Term Scenario and in Table 74 for the Near Term Plus Project Scenario. Table 7-5 presents the comparison of the Near Term Year with and without project related noise levels. The overall roadway segment noise levels will have a less than 0.1 dBA CNEL increase with the development of the project.

As can be seen in Table 7-5, the project does not create a direct noise increase of more than 3 dBA CNEL on any roadway segment. Therefore, the project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Table 7-3: Near Term Noise Levels without Project

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Carroll Canyon				
I-15 to Project Access	19,889	40	71.1	643
Project Access to Businesspark Ave	19,889	40	71.1	643
[1] Source: Project Traffic study prepared by LOS Engineering, 2015				

Table 7-4: Near Term + Project Noise Levels

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Carroll Canyon				
I-15 to Project Access	20,089	40	71.1	650
Project Access to Businesspark Ave	20,089	40	71.1	650
[1] Source: Project Traffic study prepared by LOS Engineering, 2015				

Table 7-5: Near Term vs. Near Term + Project Noise Levels

Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing Plus Project Noise Level @ 50-Feet (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
Carroll Canyon			
I-15 to Project Access	71.1	71.1	0.0
Project Access to Businesspark Ave	71.1	71.1	0.0

7.3 Transportation Noise Conclusions

Onsite Transportation Related Noise Levels

Based upon the findings, no exterior noise mitigation will be necessary for compliance with the City of San Diego's Noise Standard of 65 dBA CNEL at 75% of the private use areas or for the common use areas, most of which are shielded from the roadways with the proposed buildings. The future noise levels at the outdoor commercial retail uses areas were found to be below the City of San Diego 75 dBA CNEL exterior noise level standard. Therefore, no impacts are anticipated and no mitigation is required.

The proposed project is near the Marine Corps Air Station (MCAS) Miramar over flight areas but is not within any of the noise contours due to infrequent aircraft over flights and the altitude at which the aircraft are operating when passing near the site. Noise from MCAS Miramar would not be expected to exceed 60 dBA CNEL and therefore no mitigation to any structures or sensitive land uses due to aircraft are required.

The City of San Diego as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above the normally compatible noise level in order to ensure that acceptable interior noise levels can be achieved. The City of San Diego's Noise Compatibility Guidelines require interior noise levels in residential structures to be reduced to 45 dBA CNEL and office buildings be reduced to 50 dBA CNEL as shown in Table 3-2.

An interior noise level reduction of 34 dBA CNEL is needed for the proposed residential units located adjacent to Interstate 15 and a noise level reduction of 24 dBA CNEL is needed for the residential units on the eastern portion of the site. Based on the preliminary architectural plans provided by MVE + Partners, to meet the 45 dBA CNEL interior noise standard, a minimum STC 34-36 rated dual pane windows and mechanical ventilation is needed to achieve the necessary interior noise reductions to meet the City's standard for the residential units adjacent to Interstate 15. A minimum STC 26 rated assemblies and mechanical ventilation is needed to achieve the interior noise reductions for the residential units on the eastern portion of the site. Once the final architectural plans are prepared, the proposed project site will require an interior noise study be prepared prior to the issuance of building permits to determine the detailed components to reduce interior noise to 45 dBA CNEL.

To meet the 50 dBA CNEL interior noise standard at the commercial uses, an interior noise level reduction of minimum 18 dBA CNEL is needed for the proposed project. Therefore with the incorporation of a minimum STC 26 rated dual pane windows and mechanical ventilation will achieve the necessary interior noise reductions to meet the City's 50 dBA CNEL standard. Office spaces shall be provided with a continuously running fan to comply with indoor air quality per ASHRAE 62.2-2007.

<u>Offsite Project Related Transportation Noise Levels</u>

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment. Therefore, the project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses. No mitigation is required.

ATTACHMENT A

FUTURE NOISE MODEL INPUT AND OUTPUT FILES

Carroll Canyon Mixed Use Ground Level Unmitigated
T-PEAK HOUR NORTH, 1
13116 , 65 , 314 , 65 , 219 , 65
T-PEAK HOUR SOUTH, 2
11961 , 65 , 287 , 65 , 200 , 65
T-PEAK HOUR, 3
2650 , 40 , 56 , 40 , 56 , 40
L-I-15 NB, 1
N,428,-71,486,
N,455,1626,493,
L-I-15 SB, 2
N,278,-68,486,
N,305,1626,493,
L-CARROLL CANYON, 3
N,143,368,514,
N,788,365,512,
N,1004,375,510,
N,1212,405,508,
N,1404,435,506,
N,1552,446,504,
B-8-FOOT, 1 , 2 , 0 ,0
621.,1070,513,521,
621.,1043,514,522,
618.,454,514,522,
B-N RET WALL, 2 , 2 , 0 ,0
629,1070,513,513,
631,1099,513,513,
653,1119,513,513,
681,1128,513,513,
697,1128,513,513,
B-REST1, 3 , 2 , 0 ,0
618.,454,513,513,
639.,454,514,514,
650.,445,514,514,
664.,442,514,514,
712.,442,514,514,
B-REST_BLDG, 4 , 2 , 0 ,0
712.,480,514,529,
712.,436,514,529,
764.,436,514,529,
764.,458,514,529,
780.,458,514,529,
780.,499,514,529,
B-REST1-1, 5 , 2 , 0 ,0
764.,436,514,514,
783.,431,514,514,
801.,436,514,514,
801.,450,514,514,
B-REST2, 6 , 2 , 0 ,0
1006.,481,514,514,
1017.,470,514,514,
1031.,470,514,514,
1078.,469,514,514,
B-REST2-1, 7 , 2 , 0 ,0
1078.,469,514,514,
1094.,461,514,514,
1111.,467,514,514,
1118.,484,514,514,
1109.,500,514,514,
B-REST2_BLDG, 8 , 2 , 0 ,0
1044.,505,514,529,
1044.,475,514,529,
1104.,475,514,529,
1104.,540,514,529,
B-BLDG3, 9 , 2 , 0 ,0
671.,865,515,555,
800.,865,515,555,
800.,560,515,555,
671.,560,515,555,
B-BLDG2, 10 , 2 , 0 ,0
916.,1060,514,554,
916.,956,514,554,

```
1130.,956,514,554,
1130.,1047,514,554,
B-BLDG1, 11 , 2 , 0 ,0
673.,1083,514,554,
673.,956,514,554,
886.,956,514,554,
886.,1083,514,554,
B-BLDG4, 12 , 2 , 0 ,0
1134.,865,515,555,
1005.,865,515,555,
1005.,645,516,555,
1129.,645,516,555,
B-LEASING, 13 , 2 , 0 ,0
830.,636,515,530,
830.,588,515,530,
936.,588,515,530,
936.,636,515,530,
R, 1 , 65 ,10
668,1066,518.5,BLDG1
R, 2 , 65 ,10
669,975,519.,BLDG1
R, 3 , 65 ,10
731,950,519.,BLDG1
R, 4 , 65 ,10
826,949,519.,BLDG1
R, 5 , 65 ,10
779,1032,518.5,BLDG1
R, 6 , 65 ,10
910,1073,518.5,BLDG2
R, 7 , 65 ,10
974,951,519.,BLDG2
R, 8 , 65 ,10
1068,951,519.,BLDG2
R, 9 , 65 ,10
1025,1035,518.5,BLDG2
R, 10 , 65 ,10
666,838,520.,BLDG3
R, 11 , 65 ,10
667,761,519.5,BLDG3
R, 12 , 65 ,10
667,671,519.5,BLDG3
R, 13 , 65 ,10
667,592,520.,BLDG3
R, 14 , 65 ,10
728,554,520.,BLDG3
R, 15 , 65 ,10
804,556,520.,BLDG3
R, 16 , 65 ,10
805,674,520.,BLDG3
R, 17 , 65 ,10
806,764,520.,BLDG3
R, 18 , 65 ,10
806,857,520.,BLDG3
R, 19 , 65 ,10
1000,858,520.,BLDG4
R, 20 , 65 ,10
999,778,520.,BLDG4
R, 21 , 65 ,10
999,686,521.,BLDG4
R, 22 , 65 ,10
1016,637,521.,BLDG4
R, 23 , 65 ,10
1119,640,521.,BLDG4
R, 24 , 65 ,10
1135,757,520.5,BLDG4
R, 25 , 65 ,10
902,815,522.,BLDG5
R, 26 , 65 ,10
886,584,520.,LEASE
R, 27 , 65 ,10
944,607,520.,LEASE
R, 28 , 65 ,10
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711,435,519.,REST1
R, 29 , 65 ,10
782,442,519.,REST1P
R, 30 , 65 ,10
1012,545,519.,REST2
R, 31 , 65 ,10
1031,481,519.,REST2
R, 32 , 65 ,10
1074,473,519.,REST2
R, 33 , 65 ,10
1101,550,519.,REST2
R, 34 , 65 ,10
901,739,522.,GYMDECK
R, 35 , 65 ,10
845,691,521.,POOL
R, 36 , 65 ,10
903,654,521.,POOL
R, 37 , 65 ,10
957,691,521.,POOL
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
Carroll Canyon Mixed Use Ground Level Unmitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	BLDG1	65.	10.	71.9
2	BLDG1	65.	10.	68.9
3	BLDG1	65.	10.	62.9
4	BLDG1	65.	10.	59.3
5	BLDG1	65.	10.	67.1
6	BLDG2	65.	10.	68.2
7	BLDG2	65.	10.	56.7
8	BLDG2	65.	10.	55.2
9	BLDG2	65.	10.	67.1
10	BLDG3	65.	10.	68.8
11	BLDG3	65.	10.	68.4
12	BLDG3	65.	10.	68.3
13	BLDG3	65.	10.	68.8
14	BLDG3	65.	10.	67.0
15	BLDG3	65.	10.	65.9
16	BLDG3	65.	10.	58.7
17	BLDG3	65.	10.	57.9
18	BLDG3	65.	10.	56.9
19	BLDG4	65.	10.	57.1
20	BLDG4	65.	10.	57.7
21	BLDG4	65.	10.	60.0
22	BLDG4	65.	10.	64.8
23	BLDG4	65.	10.	66.1
24	BLDG4	65.	10.	59.7
25	BLDG5	65.	10.	57.0
26	LEASE	65.	10.	64.8
27	LEASE	65.	10.	62.1
28	REST1	65.	10.	76.2
29	REST1P	65.	10.	73.4
30	REST2	65.	10.	67.8
31	REST2	65.	10.	71.1
32	REST2	65.	10.	71.8
33	REST2	65.	10.	67.5
34	GYMDECK	65.	10.	56.7
35	POOL	65.	10.	57.7
36	POOL	65.	10.	58.4
37	POOL	65.	10.	59.4

Carroll Canyon Mixed Use Second Level Unmitigated
T-PEAK HOUR NORTH, 1
13116 , 65 , 314 , 65 , 219 , 65
T-PEAK HOUR SOUTH, 2
11961 , 65 , 287 , 65 , 200 , 65
T-PEAK HOUR, 3
2650 , 40 , 56 , 40 , 56 , 40
L-I-15 NB, 1
N,428,-71,486,
N,455,1626,493,
L-I-15 SB, 2
N,278,-68,486,
N,305,1626,493,
L-CARROLL CANYON, 3
N,143,368,514,
N,788,365,512,
N,1004,375,510,
N,1212,405,508,
N,1404,435,506,
N,1552,446,504,
B-8-FOOT, 1 , 2 , 0 ,0
621.,1070,513,521,
621.,1043,514,522,
618.,454,514,522,
B-N RET WALL, 2 , 2 , 0 ,0
629,1070,513,513,
631,1099,513,513,
653,1119,513,513,
681,1128,513,513,
697,1128,513,513,
B-REST1, 3 , 2 , 0 ,0
618.,454,513,513,
639.,454,514,514,
650.,445,514,514,
664.,442,514,514,
712.,442,514,514,
B-REST_BLDG, 4 , 2 , 0 ,0
712.,480,514,529,
712.,436,514,529,
764.,436,514,529,
764.,458,514,529,
780.,458,514,529,
780.,499,514,529,
B-REST1-1, 5 , 2 , 0 ,0
764.,436,514,514,
783.,431,514,514,
801.,436,514,514,
801.,450,514,514,
B-REST2, 6 , 2 , 0 ,0
1006.,481,514,514,
1017.,470,514,514,
1031.,470,514,514,
1078.,469,514,514,
B-REST2-1, 7 , 2 , 0 ,0
1078.,469,514,514,
1094.,461,514,514,
1111.,467,514,514,
1118.,484,514,514,
1109.,500,514,514,
B-REST2_BLDG, 8 , 2 , 0 ,0
1044.,505,514,529,
1044.,475,514,529,
1104.,475,514,529,
1104.,540,514,529,
B-BLDG3, 9 , 2 , 0 ,0
671.,865,515,555,
800.,865,515,555,
800.,560,515,555,
671.,560,515,555,
B-BLDG2, 10 , 2 , 0 ,0
916.,1060,514,554,
916.,956,514,554,

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1130.,956,514,554,
1130.,1047,514,554,
B-BLDG1, 11 , 2 , 0 ,0
673.,1083,514,554,
673.,956,514,554,
886.,956,514,554,
886.,1083,514,554,
B-BLDG4, 12 , 2 , 0 ,0
1134.,865,515,555,
1005.,865,515,555,
1005.,645,516,555,
1129.,645,516,555,
B-LEASING, 13 , 2 , 0 ,0
830.,636,515,530,
830.,588,515,530,
936.,588,515,530,
936.,636,515,530,
R, 1 , 65 ,10
668,1066,528.5,BLDG1
R, 2 , 65 ,10
669,975,529.,BLDG1
R, 3 , 65 ,10
731,950,529.,BLDG1
R, 4 , 65 ,10
826,949,529.,BLDG1
R, 5 , 65 ,10
779,1032,528.5,BLDG1
R, 6 , 65 ,10
910,1073,528.5,BLDG2
R, 7 , 65 ,10
974,951,529.,BLDG2
R, 8 , 65 ,10
1068,951,529.,BLDG2
R, 9 , 65 ,10
1025,1035,528.5,BLDG2
R, 10 , 65 ,10
666,838,530.,BLDG3
R, 11 , 65 ,10
667,761,529.5,BLDG3
R, 12 , 65 ,10
667,671,529.5,BLDG3
R, 13 , 65 ,10
667,592,530.,BLDG3
R, 14 , 65 ,10
728,554,530.,BLDG3
R, 15 , 65 ,10
804,556,530.,BLDG3
R, 16 , 65 ,10
805,674,530.,BLDG3
R, 17 , 65 ,10
806,764,530.,BLDG3
R, 18 , 65 ,10
806,857,530.,BLDG3
R, 19 , 65 ,10
1000,858,530.,BLDG4
R, 20 , 65 ,10
999,778,530.,BLDG4
R, 21 , 65 ,10
999,686,531.,BLDG4
R, 22 , 65 ,10
1016,637,531.,BLDG4
R, 23 , 65 ,10
1119,640,530.,BLDG4
R, 24 , 65 ,10
1135,757,530.5,BLDG4
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
Carroll Canyon Mixed Use Second Level Unmitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	BLDG1	65.	10.	76.3
2	BLDG1	65.	10.	74.0
3	BLDG1	65.	10.	66.9
4	BLDG1	65.	10.	61.4
5	BLDG1	65.	10.	68.7
6	BLDG2	65.	10.	68.2
7	BLDG2	65.	10.	57.8
8	BLDG2	65.	10.	56.0
9	BLDG2	65.	10.	67.1
10	BLDG3	65.	10.	74.2
11	BLDG3	65.	10.	73.9
12	BLDG3	65.	10.	73.9
13	BLDG3	65.	10.	74.1
14	BLDG3	65.	10.	70.6
15	BLDG3	65.	10.	67.6
16	BLDG3	65.	10.	59.2
17	BLDG3	65.	10.	58.1
18	BLDG3	65.	10.	57.1
19	BLDG4	65.	10.	58.1
20	BLDG4	65.	10.	58.5
21	BLDG4	65.	10.	61.3
22	BLDG4	65.	10.	65.2
23	BLDG4	65.	10.	66.3
24	BLDG4	65.	10.	60.0

Carroll Canyon Mixed Use Third Level Unmitigated
T-PEAK HOUR NORTH, 1
13116 , 65 , 314 , 65 , 219 , 65
T-PEAK HOUR SOUTH, 2
11961 , 65 , 287 , 65 , 200 , 65
T-PEAK HOUR, 3
2650 , 40 , 56 , 40 , 56 , 40
L-I-15 NB, 1
N,428,-71,486,
N,455,1626,493,
L-I-15 SB, 2
N,278,-68,486,
N,305,1626,493,
L-CARROLL CANYON, 3
N,143,368,514,
N,788,365,512,
N,1004,375,510,
N,1212,405,508,
N,1404,435,506,
N,1552,446,504,
B-8-FOOT, 1 , 2 , 0 ,0
621.,1070,513,521,
621.,1043,514,522,
618.,454,514,522,
B-N RET WALL, 2 , 2 , 0 ,0
629,1070,513,513,
631,1099,513,513,
653,1119,513,513,
681,1128,513,513,
697,1128,513,513,
B-REST1, 3 , 2 , 0 ,0
618.,454,513,513,
639.,454,514,514,
650.,445,514,514,
664.,442,514,514,
712.,442,514,514,
B-REST_BLDG, 4 , 2 , 0 ,0
712.,480,514,529,
712.,436,514,529,
764.,436,514,529,
764.,458,514,529,
780.,458,514,529,
780.,499,514,529,
B-REST1-1, 5 , 2 , 0 ,0
764.,436,514,514,
783.,431,514,514,
801.,436,514,514,
801.,450,514,514,
B-REST2, 6 , 2 , 0 ,0
1006.,481,514,514,
1017.,470,514,514,
1031.,470,514,514,
1078.,469,514,514,
B-REST2-1, 7 , 2 , 0 ,0
1078.,469,514,514,
1094.,461,514,514,
1111.,467,514,514,
1118.,484,514,514,
1109.,500,514,514,
B-REST2_BLDG, 8 , 2 , 0 ,0
1044.,505,514,529,
1044.,475,514,529,
1104.,475,514,529,
1104.,540,514,529,
B-BLDG3, 9 , 2 , 0 ,0
671.,865,515,555,
800.,865,515,555,
800.,560,515,555,
671.,560,515,555,
B-BLDG2, 10 , 2 , 0 ,0
916.,1060,514,554,
916.,956,514,554,

1130.,956,514,554,
1130.,1047,514,554,
B-BLDG1, 11 , 2 , 0 ,0
673.,1083,514,554,
673.,956,514,554,
886.,956,514,554,
886.,1083,514,554,
B-BLDG4, 12 , 2 , 0 ,0
1134.,865,515,555,
1005.,865,515,555,
1005.,645,516,555,
1129.,645,516,555,
B-LEASING, 13 , 2 , 0 ,0
830.,636,515,530,
830.,588,515,530,
936.,588,515,530,
936.,636,515,530,
R, 1 , 65 ,10
668,1066,538.5,BLDG1
R, 2 , 65 ,10
669,975,539.,BLDG1
R, 3 , 65 ,10
731,950,539.,BLDG1
R, 4 , 65 ,10
826,949,539.,BLDG1
R, 5 , 65 ,10
779,1032,538.5,BLDG1
R, 6 , 65 ,10
910,1073,538.5,BLDG2
R, 7 , 65 ,10
974,951,539.,BLDG2
R, 8 , 65 ,10
1068,951,539.,BLDG2
R, 9 , 65 ,10
1025,1035,538.5,BLDG2
R, 10 , 65 ,10
666,838,540.,BLDG3
R, 11 , 65 ,10
667,761,538.5,BLDG3
R, 12 , 65 ,10
667,671,539.5,BLDG3
R, 13 , 65 ,10
667,592,540.,BLDG3
R, 14 , 65 ,10
728,554,540.,BLDG3
R, 15 , 65 ,10
804,556,540.,BLDG3
R, 16 , 65 ,10
805,674,540.,BLDG3
R, 17 , 65 ,10
806,764,540.,BLDG3
R, 18 , 65 ,10
806,857,540.,BLDG3
R, 19 , 65 ,10
1000,858,540.,BLDG4
R, 20 , 65 ,10
999,778,540.,BLDG4
R, 21 , 65 ,10
999,686,541.,BLDG4
R, 22 , 65 ,10
1016,637,541.,BLDG4
R, 23 , 65 ,10
1119,640,540.,BLDG4
R, 24 , 65 ,10
1135,757,540.5,BLDG4
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Carroll Canyon Mixed Use Third Level Unmitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	BLDG1	65.	10.	78.4
2	BLDG1	65.	10.	78.5
3	BLDG1	65.	10.	69.6
4	BLDG1	65.	10.	63.7
5	BLDG1	65.	10.	70.4
6	BLDG2	65.	10.	68.2
7	BLDG2	65.	10.	59.2
8	BLDG2	65.	10.	57.2
9	BLDG2	65.	10.	67.2
10	BLDG3	65.	10.	78.6
11	BLDG3	65.	10.	78.5
12	BLDG3	65.	10.	78.5
13	BLDG3	65.	10.	78.5
14	BLDG3	65.	10.	72.3
15	BLDG3	65.	10.	69.6
16	BLDG3	65.	10.	59.8
17	BLDG3	65.	10.	58.5
18	BLDG3	65.	10.	57.5
19	BLDG4	65.	10.	59.7
20	BLDG4	65.	10.	59.8
21	BLDG4	65.	10.	62.7
22	BLDG4	65.	10.	66.2
23	BLDG4	65.	10.	66.5
24	BLDG4	65.	10.	60.4

Carroll Canyon Mixed Use Fourth Level Unmitigated
T-PEAK HOUR NORTH, 1
13116 , 65 , 314 , 65 , 219 , 65
T-PEAK HOUR SOUTH, 2
11961 , 65 , 287 , 65 , 200 , 65
T-PEAK HOUR, 3
2650 , 40 , 56 , 40 , 56 , 40
L-I-15 NB, 1
N,428,-71,486,
N,455,1626,493,
L-I-15 SB, 2
N,278,-68,486,
N,305,1626,493,
L-CARROLL CANYON, 3
N,143,368,514,
N,788,365,512,
N,1004,375,510,
N,1212,405,508,
N,1404,435,506,
N,1552,446,504,
B-8-FOOT, 1 , 2 , 0 ,0
621.,1070,513,521,
621.,1043,514,522,
618.,454,514,522,
B-N RET WALL, 2 , 2 , 0 ,0
629,1070,513,513,
631,1099,513,513,
653,1119,513,513,
681,1128,513,513,
697,1128,513,513,
B-REST1, 3 , 2 , 0 ,0
618.,454,513,513,
639.,454,514,514,
650.,445,514,514,
664.,442,514,514,
712.,442,514,514,
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764.,458,514,529,
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B-REST1-1, 5 , 2 , 0 ,0
764.,436,514,514,
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801.,436,514,514,
801.,450,514,514,
B-REST2, 6 , 2 , 0 ,0
1006.,481,514,514,
1017.,470,514,514,
1031.,470,514,514,
1078.,469,514,514,
B-REST2-1, 7 , 2 , 0 ,0
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B-REST2_BLDG, 8 , 2 , 0 ,0
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B-BLDG3, 9 , 2 , 0 ,0
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671.,560,515,555,
B-BLDG2, 10 , 2 , 0 ,0
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B-BLDG1, 11 , 2 , 0 ,0
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B-BLDG4, 12 , 2 , 0 ,0
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B-LEASING, 13 , 2 , 0 ,0
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R, 1 , 65 ,10
668,1066,548.5,BLDG1
R, 2 , 65 ,10
669,975,549.,BLDG1
R, 3 , 65 ,10
731,950,549.,BLDG1
R, 4 , 65 ,10
826,949,549.,BLDG1
R, 5 , 65 ,10
779,1032,548.5,BLDG1
R, 6 , 65 ,10
910,1073,548.5,BLDG2
R, 7 , 65 ,10
974,951,549.,BLDG2
R, 8 , 65 ,10
1068,951,549.,BLDG2
R, 9 , 65 ,10
1025,1035,548.5,BLDG2
R, 10 , 65 ,10
666,838,550.,BLDG3
R, 11 , 65 ,10
667,761,548.5,BLDG3
R, 12 , 65 ,10
667,671,549.5,BLDG3
R, 13 , 65 ,10
667,592,550.,BLDG3
R, 14 , 65 ,10
728,554,550.,BLDG3
R, 15 , 65 ,10
804,556,550.,BLDG3
R, 16 , 65 ,10
805,674,550.,BLDG3
R, 17 , 65 ,10
806,764,550.,BLDG3
R, 18 , 65 ,10
806,857,550.,BLDG3
R, 19 , 65 ,10
1000,858,550.,BLDG4
R, 20 , 65 ,10
999,778,550.,BLDG4
R, 21 , 65 ,10
999,686,551.,BLDG4
R, 22 , 65 ,10
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R, 23 , 65 ,10
1119,640,550.,BLDG4
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1135,757,550.5,BLDG4
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Carroll Canyon Mixed Use Fourth Level Unmitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	BLDG1	65.	10.	78.4
2	BLDG1	65.	10.	78.4
3	BLDG1	65.	10.	72.4
4	BLDG1	65.	10.	66.1
5	BLDG1	65.	10.	70.7
6	BLDG2	65.	10.	68.4
7	BLDG2	65.	10.	61.3
8	BLDG2	65.	10.	59.4
9	BLDG2	65.	10.	67.3
10	BLDG3	65.	10.	78.5
11	BLDG3	65.	10.	78.5
12	BLDG3	65.	10.	78.5
13	BLDG3	65.	10.	78.4
14	BLDG3	65.	10.	73.9
15	BLDG3	65.	10.	71.7
16	BLDG3	65.	10.	62.9
17	BLDG3	65.	10.	61.6
18	BLDG3	65.	10.	61.0
19	BLDG4	65.	10.	61.5
20	BLDG4	65.	10.	61.5
21	BLDG4	65.	10.	64.7
22	BLDG4	65.	10.	67.0
23	BLDG4	65.	10.	67.0
24	BLDG4	65.	10.	61.3

BLUE CONSULTING GROUP

BIOLOGY - LAND USE & - ENTITLEMENTS

BIOLOGICAL ASSESSMENT REPORT FOR THE CARROLL CANYON MIXED USE REDEVELOPMENT PROJECT

CITY OF SAN DIEGO
PROJECT # 240716

August 4, 2016

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Biological Assessment Report For The Carroll Canyon Mixed Used Redevelopment Project City of San Diego

Project # 240716

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August 4, 2016

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TABLE OF CONTENTS

Summary of Findings……………………………………………………………………………………………………..3

Introduction………..3

Survey Methods………..4

Existing Conditions……5

A. Surrounding Land Use…………………………………………………………………………………………5

B. Topography and Soils…………………………………………………………………………………………5

C. Botany………..6

D. Zoology……….7

E. Sensitive Biological Resources………………………………………………………………………………7

Project Impacts……9

A. City of San Diego Significance Thresholds…………………………………………………………….9

B. Plant Communities……………………………………………………………………………………………10

C. Wildlife……..10

D. Environmentally Sensitive Lands (ESL) Regulations……………………………………………….11

E. Jurisdictional Wetlands and Waters of the U.S………………………………………………………11

F. Indirect Impacts……………………………………………………………………………………………….12

G. Wildlife Corridor………………………………………………………………………………………………13

H. Nesting Birds……………………………………………………………………………………………………13

Cumulative Impacts………………………………………………………………………………………………………13

Mitigation Measures………………………………………………………………………………………………………14

A. Sensitive Habitat Communities…………………………………………………………………………..14

B. Sensitive Wildlife………………………………………………………………………………………………14

C. Nesting Birds……………………………………………………………………………………………………14

Certification/Qualification……………………………………………………………………………………………..16

References Cited………17

TABLE OF CONTENTS (cont.)

FIGURES

1:	Regional Location of the Project	attached
2:	Project Location on USGS Topo Map	attached
3:	Aerial of the Proposed Project	attached
4:	On-Site Habitat	attached
5:	Proposed Impacts	attached

TABLES

1:	Vegetation Communities	7
2:	Sensitive Plant Species Observed or with the Potential for Occurrence	attached
3:	Sensitivity Codes	attached
4:	Sensitive Wildlife Species Known (or Potentially Occurring)	attached
5:	Proposed Impacts	10

PHOTOGRAPHS

1:	Looking North; Across the Developed Site	attached
2:	Looking South; Existing Development and Eucalyptus Landscaping	attached
3:	Looking at the North-West Corner and Offsite of the Property	attached
4:	Looking West; Existing Development and Eucalyptus Landscaping	attached

ATTACHMENTS

1: Plant Species Observed

2: Wildlife Species Observed

3: Figures (as referenced above)

4: Tables (as referenced above)

5: Photographs (as referenced above)

SUMMARY OF FINDINGS

The approximately 9.52 acre Carroll Canyon Mixed-Use re-development project is located in the north-eastern portion of the City of San Diego, within the Multiple Species Conservation Program (MSCP), and outside of the Coastal Overlay Zone and Multi-Habitat Planning Area (MHPA) boundary. The property was previously developed to accommodate the Pacific Southwest Airlines (PSA) training facility. Of the property's approximately 9.52 acres, the entire property supports either developed or disturbed/urban habitat comprised of mature *eucalyptus* sp. landscaping. This is the same onsite habitat designation as identified in the City of San Diego SanGIS data base.

This Biological Technical report has analyzed the potential impacts from the proposed development including: permanent grading impacts, temporary impacts, and Brush Management Zone (BMZ) 1 and BMZ 2 (impact neutral) impacts. Any potential significant impacts to sensitive habitat or species onsite shall require mitigation.

The approximately 9.52-acre property supports no native or sensitive habitat. The property is comprised of 7.42 acres of developed land and 2.09 acres of eucalyptus landscaping and urban disturbed habitat (Tier IV).

The proposed re-development project impacts no sensitive species or habitat. Mitigation for significant direct impacts is therefore not required or recommended at this time.

Potential indirect impacts to migratory birds could occur during the construction f birds are nesting in mature trees on or adjacent to the Project site. Impacts will be reduced to below a level of significance with implementation of the recommended preventative mitigation measures.

While no specific impacts were assessed at this time, a biological evaluation of potential offsite traffic/road improvements within the Carroll Canyon Road easement was conducted and found that those potentially impacted developed areas supported no sensitive habitat or species.

INTRODUCTION

The Carroll Canyon Mixed-Use property encompasses a total of approximately 9.52 acres within the City of San Diego, San Diego County. The property is bound to the south by Carroll Canyon Road, to the North by Scripps Ranch High School, to the east by commercial development, and to the west by Interstate 15 and a north-bound onramp (Figures 1-3).

The Carroll Canyon Mixed-Use project proposes the redevelopment of an existing office complex with a mixed-use development.

General biological surveys as well as endemic, rare plant and animal presence/absence and/or potential surveys were conducted to map the vegetation communities and to assess the presence or potential for presence of sensitive floral and faunal species. This report provides biological data and background information required for environmental analysis by the California Environmental Quality Act (CEQA). In addition, impacts were analyzed using information provided in the City of San Diego's MSCP; including the

Environmentally Sensitive Lands (ESL) regulations.

SURVEY METHODS

The general and rare biological resource surveys were conducted on July 3rd, 2012 and February 11, 2015 by BLUE senior biologist, Michael Jefferson.

Vegetation communities were assessed and mapped on a color aerial flown in March 2012. Animal species observed directly or detected from calls, tracks, scat, nests, or other sign were noted. All plant species observed on-site were also noted, and plants that could not be identified in the field were identified later using taxonomic keys.

Limitations to the compilation of a comprehensive faunal and floral checklist were few. While the surveys were conducted in the summer and winter months, which typically precludes the observation of some spring annuals, the general quality of existing urbanized habitat is so poor that it is believed that a comprehensive species checklist was prepared.

Since surveys were performed during the day, nocturnal animals were detected only by sign. Floral nomenclature for common plants follows Hickman (1993). Plant community classifications follow the MSCP (City of San Diego 1997). Zoological nomenclature for birds is in accordance with the American Ornithologists' Union Checklist (1998); for mammals, Jones et al. (1982); and for amphibians and reptiles, Collins (1997). Assessments of the sensitivity of species and habitats are based primarily on Skinner and Pavlik (1994), State of California (2015), and Holland (1986).

While no protocol wetland delineation was completed, a general wetland assessment was conducted. Guidelines for delineating the boundaries of wetlands for the ACOE differ from those used by the CDFG. Under Sections 1600-1607 of the Fish and Game Code, CDFG regulates activities that shall alter streams, rivers, or lakes. CDFG also has jurisdiction over riparian habitats (e.g., salt disturbed wetlands and freshwater disturbed wetlands) associated with watercourses. Areas considered jurisdictional by CDFG are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider.

The City of San Diego, under the Environmentally Sensitive Lands (ESL) regulations, requires only one of the three parameters to be considered a wetland habitat.

Three Wetland Criteria

1a. Hydrophytic Vegetation

Hydrophytic vegetation is defined as "the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (USACE 1987). The potential wetland areas were surveyed by walking the proposed project site and making observations of those areas exhibiting characteristics of jurisdictional waters or wetlands. Vegetation units with the potential to be wetlands were examined. The dominant plant species for each vegetation stratum (i.e., tree, shrub, herb, and vine) within the unit was determined, and the relative canopy cover was visually estimated. The dominant species from each stratum were then recorded on a summary data sheet along with the associated wetland indicator status of those species. The wetland indicator status of each dominant species was determined by using the list of wetland plants for California provided by the U.S. Fish and Wildlife Service (1997).

The hydrophytic vegetation criterion is considered fulfilled at a location if greater than 50 percent of all the dominant species present within the vegetation unit have a wetland indicator status of obligate (OBL), facultative-wet (FACW), or facultative (FAC) (USACE 1987). An OBL indicator status refers to plants that have a 99 percent probability of occurring in wetlands under natural conditions. A FACW indicator status refers to plants that occur in wetlands (67-99 percent probability) but are occasionally found in non-wetlands. A FAC indicator status refers to plants that are equally likely to occur in wetlands or non-wetlands (estimated probability 34-66 percent).

1b. Hydrology

Hydrologic information for the site was obtained by locating "blue-line" streams on U.S. Geological Survey (USGS) topographic maps, reviewing groundwater table elevation information from soil surveys, and direct observations of hydrology indicators in the field (e.g., inundation, drift lines, sediment deposits, and drainage patterns). Evidence of flows, flooding, and ponding were recorded and the frequency and duration of these events were inferred.

The wetland hydrology criterion is considered fulfilled at a location based upon the conclusions inferred from the field observations, which indicate that an area has a high probability of being inundated or saturated (flooded or ponded) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE 1987).

1c. Hydric Soils

The hydric soil criterion is considered fulfilled at a location if soils in the area could be inferred to have a high groundwater table, evidence of prolonged soil saturation, or any indicators suggesting a long-term reducing environment in the upper 12 inches of the soil profile.

EXISTING CONDITIONS

A. Surrounding Land Use

The approximately 9.52-acre property is bordered on all sides by development. To the north is Scripps Ranch High School (separated by a canyon supporting an ephemeral USGS dashed blue-line stream), to the east is a business park center, to the west is Interstate 15 and a north bound on-ramp, and immediately to the south is Carroll Canyon Road and an office complex.

B. Topography and Soils

At the southern property line there is an uphill driveway to reach the main existing pad. This central portion of the property was previously graded and is generally flat. The northern portion of the property supports a partially manufactured slope leading into a small canyon.

Elevations onsite are 518' Above Mean Sea Level (AMSL) in the center of the property (developed pad) and a low of 495' AMSL at the northern property line. The elevation at the entrance of the property off of Carroll Canyon Road is 508' AMSL.

The soil classifications present within the majority of the property limits is comprised of Redding gravelly loam (RdC), 2 to 9 percent slopes. At the northern property line the soils are Redding cobbly loam, 9 to 30 percent slopes (ReE; Web Soil Survey.com, 2015).

C. Botany

No natural vegetation communities were identified within the property limits. Developed area and urban disturbed/eucalyptus landscaping habitat was observed onsite. The observed communities are as follows: 2.09 acres of disturbed/eucalyptus landscaping habitat (Tier IV) and 7.43 acres of previously developed area (Photographs 1-4).

Table 1 presents the acreages of each community within the property limits. The property acreage totals approximately 9.52 acres. Figure 4 illustrates the locations of the plant communities on-site. A total of 16 plant species were identified on the site (Attachment 1). Of this total, 5 (31 percent) are species native to southern California and 11 (69 percent) are introduced species.

1. **Previously Developed**

Much of the peripheral study area is comprised of existing structures, a paved parking lot, abandoned previously graded areas and planters dominated by non-native/exotic vegetation, eucalyptus woodland, and urban/disturbed habitat.

2. **Disturbed Habitat/Eucalyptus Landscaping; Tier IV**

Disturbed urban and semi-urban areas contain numerous plantings located within planters and as perimeter screening. These older, urbanized portions of the City, tall exotic plantings, such as eucalyptus trees (*Eucalyptus* sp.) with allelopathic toxins that tend to inhibit understory growth, form well developed, and dense woodlands. Occasionally, other planted woodlands such as introduced pines, ash, and elm are present. Disturbed areas are typically located adjacent to urbanization and contain a mix of primarily weedy species, including non-native forbs, annuals, and grasses, usually found pioneering on recently disturbed soils. Characteristic weedy species include prickly sow thistle (*Sonchus asper*), common sow thistle (*Sonchus oleraceus*), bristly ox-tongue (*Picris echioides*), Russian thistle (*Salsola tragus*), giant reed, hottentot-fig (*Carpobrotus edulis*), wild lettuce (*Lactuca serriola*), tree tobacco (*Nicotiana glauca*), castor-bean (*Ricinus communis*), pampas grass, smooth cat's-ear (*Hypochoeris glabra*), red-stem filaree (*Erodium cicutarium*), short-beak filaree (*Erodium brachycarpum*) and white-stem filaree (*Erodium moschatum*). These urban lands do not typically contain native vegetation or provide essential habitat connectivity; and therefore, tend to have reduced biological value.

Onsite, the property is fenced along the northern, easterly, and western property lines. Within the fenced property there are a few native chaparral shrub species persisting on the un-impacted slope but due to the preponderance of eucalyptus trees and their duff, there is little to no understory and where there is one, it is dominated by weedy exotic species.

The non-native disturbed habitat located offsite, to the north of the Project property on the existing north facing slope, is punctuated by a few native chaparral shrub species persisting on the slope, but due to the preponderance of eucalyptus trees and their duff, there is little to no understory and where there is one, it is dominated by weedy exotic species.

TABLE 1
BIOLOGICAL RESOURCES ON-SITE

Habitat Type	Total (acres)
Urban/Eucalyptus (Tier IV)	2.09
Developed Area (Tier IV)	7.43
TOTAL	9.52

D. Zoology

Overall, the property provides a very low value habitat for wildlife species. The portion of the site that supports the landscaping and urban disturbed habitat provides little cover, water, and foraging habitat for native wildlife species. While no active nests were observed, the mature eucalyptus trees are potentially viable nesting sites for raptors, etc.

A complete list of the wildlife species detected is provided in Attachment 2. A total of 2 birds, and 1 mammal species were observed. No sensitive species were observed on-site.

1. **Birds**

Bird species observed on-site are typical for the existing habitat types and surrounding development. The tall eucalyptus trees on-site offer areas for cover, foraging, and potential nesting. No sensitive species were observed on-site. Species observed and/or detected on-site are listed in attachment 2.

2. **Mammals**

Ruderal habitat typically provides cover and foraging opportunities for a variety of common mammal species. Many mammal species are nocturnal and must be detected during daytime surveys by observing their sign, such as tracks, scat, and burrows. Species observed and/or detected on-site are listed in attachment 2.

E. Sensitive Biological Resources

1. Sensitivity Criteria

The subject property is located within the City's Multiple Species Conservation Program (MSCP) area and outside of the Coastal Overlay Zone and Multi-Habitat Planning Area (MHPA) boundary. The sensitive resources on-site shall be protected, preserved, and where damaged, restored according to the Environmentally Sensitive Lands (ESL) Regulations. The proposed project has been designed to meet or exceed those regulations.

State and federal agencies regulate sensitive species and require an assessment of their presence or potential presence to be conducted on-site prior to the approval of any proposed development on a property. For purposes of this report, species will be considered sensitive if they are: (1) listed or proposed for listing by state or federal agencies as threatened or endangered; (2) on List 1B (considered endangered throughout its range) or List 2 (considered endangered in California but more common elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994); (3) within the Multiple Species Conservation Program (MSCP) list of species evaluated for coverage or list of narrow endemic plant species; or (4) considered fully protected, sensitive, rare, endangered, or threatened by the State of California and Natural Diversity Data Base (NDDB), or other local conservation organizations or specialists. California fully protected is a designation adopted by the State of California prior to the creation of the State Endangered Species Act and is intended as protection from harm or harassment.

Noteworthy plant species are considered to be those which are on List 3 (more information about the plant's distribution and rarity needed) and List 4 (plants of limited distribution) of the CNPS Inventory. Sensitive habitat types are those identified by the NDDB, Holland (1986) and/or those considered sensitive by other resource agencies.

Determination of the potential occurrence for listed, sensitive, or noteworthy species are based upon known ranges and habitat preferences for the species (Zeiner et al. 1988a, 1988b, 1990; Skinner and Pavlik 1994; Reiser 1994); species occurrence records from the NDDB (State of California 2015); and species occurrence records from other sites in the vicinity of the project site.

2. Sensitive Plant Communities and Habitats

No sensitive plant communities or habitats were observed onsite. The offsite canyon, within 100 feet of the northern property line, supports an ephemeral drainage and southern willow scrub.

3. Sensitive Plants

a. Observed

No sensitive plant communities and habitats was observed onsite or expected to occur due to the degraded nature of the habitat.

b. Not Observed

Several other sensitive species are known to occur in the vicinity of the project site. However, due to the developed and urban/disturbed nature of the property these species are not considered as potentially occurring on-site based on the lack of supporting native vegetation communities.

4. Sensitive Wildlife

a. Observed

No sensitive wildlife was observed or expected to occur onsite.

b. Not Observed

Several other sensitive animals are either known to occur in the vicinity or have a potential to be present on-site. Table 4 lists the sensitive species that could potentially occur on-site based on the ranges and habitat requirements of these species and includes the likelihood of occurrence for these species. Overall, there is no potential for sensitive species onsite due to the pre-existing developed nature of the property; no native habitat is present.

5. Wildlife Movement Corridors

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations (Beier and Loe 1992). Wildlife movement corridors are considered sensitive by resource and conservation agencies.

This property is not adjacent to any significant areas of high quality habitat or corridor system and will not be impacting any identified corridors.

PROJECT IMPACTS

A total of 9.22 acres are proposed to be impacted by the Project. This is inclusive of all permanent and temporary impacts. No offsite impacts are proposed. No potentially significant impacts are proposed. No preserved onsite habitat is proposed.

The biological impacts of the project were assessed according to guidelines set forth in the City of San Diego's Land Development Code Biology Guidelines (City of San Diego, 2001) and CEQA. Mitigation is required for impacts that are considered significant under the Land Development Code and CEQA guidelines.

A. City of San Diego Significance Thresholds

Impacts to biological resources are assessed by City staff through the CEQA review process, and through review of the project's consistency with the Environmentally Sensitive Lands (ESL) regulations, the Biology Guidelines (July 2002) and with the City's MSCP Subarea Plan. Sensitive biological resources are defined by the City of San Diego Municipal Code as:

- Wetlands (as defined by the Municipal Code, Section 113.0103);
- Lands outside the MHPA that contain Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats as identified in the Biology Guidelines (July 2002 or current edition) of the Land Development manual;
- Lands supporting species or subspecies listed as rare, endangered, or threatened;
- Lands containing habitats with narrow endemic species as listed in the Biology Guidelines of the Land Development manual; and
- Lands containing habitats of covered species as listed in the Biology Guidelines of the Land Development manual.
- Lands that have been included in the Multi-Habitat Planning Area (MHPA) as identified in the City of San Diego Multiple Species Conservation Program (MSCP) Subarea Plan (City of San Diego, 1997);

B. Plant Communities

Of the approximately 9.52 onsite acres, a total of 9.22 acres are proposed to be impacted. In addition, a total of 0.3 acres of BMZ 2 impact neutral maintenance will be completed as required. All of the BMZ 1 and a portion of the BMZ 2 area (approximately 0.14 acres) is within the proposed graded footprint. BMZ 1 totals approximately 0.53 acres and has a width ranging between 32 feet and 50 feet. BMZ 2 totals approximately 0.44 acres and has a varying width of approximately 10-65 feet.

No offsite impacts, direct or indirect, are proposed.

TABLE 5
PROPOSED IMPACTS

Habitat Type	Total Onsite	Grading & BMZ 1 Impacts	BMZ 2 (impact neutral*)	Total Impact
Disturbed/Eucalyptus Landscaping (Tier IV)	2.09	1.79	0.3	1.79
Developed	7.43	7.43	0.0	7.43
TOTAL	9.52	9.22	0.3	9.22

*not included in impact total

C. Wildlife

Due to the existing developed condition of the property and the offsite slope to the north, while unlikely, some impacts to general wildlife associated with the property may occur through implementation of the proposed project. Birds have a high mobility and will most likely be displaced off the site during grading. Small mammals, amphibians, and reptiles with low mobility may be inadvertently killed during demolition of the existing structures, parking lots and re-grading of the site. Impacts on general wildlife are considered less than significant.

Typical potential indirect impacts to habitat and species associated with project implementation (in this case outside of the northern property limit) which includes a potential increase in night lighting, traffic, and litter and pollutants into adjacent wildlife habitat are not expected due to the previously existing active development onsite. Therefore, these potential indirect impacts are not expected to reduce the wildlife populations of the area below self-sustaining levels and are thus considered less than significant. No Mitigation Measures are required or recommended at this time.

D. Environmentally Sensitive Lands Regulations (ESL)

1. Multiple Species Conservation Program

The Multiple Species Conservation Program (MSCP) is designed to identify lands that shall conserve habitat for federal and state endangered, threatened, or sensitive species, including the California gnatcatcher. The MSCP is a plan and a process for the local issuance of permits under the federal and state Endangered Species Acts for impacts to threatened and endangered species. Also included in the MSCP are implementation strategies, preserve design, and management guidelines. The City of San Diego prepared a subarea preserve plan to guide implementation of the MSCP Plan within its corporate boundaries. The City of San Diego adopted the MSCP in March 1997.

2. Sensitivity Criteria

The assessment of the sensitivity of plant communities and species follows the guidelines presented in the MSCP. The Multi-Habitat Planning Area (MHPA) lands are those that have been included within the City's MSCP Subarea Plan for habitat conservation. These lands have been determined to provide the necessary habitat quality, quantity, and connectivity to sustain the unique biodiversity of the San Diego region. The MHPA lands are considered by the City to be a sensitive biological resource.

Under the MSCP, upland plant communities have been divided into four tiers of sensitivity. Upland plant communities that are classified as Tier I, Tier II, or Tier III are considered sensitive by the City. Tier IV plant communities are not considered sensitive. A total of 85 sensitive plant and wildlife species are considered to be adequately protected within MHPA lands. These sensitive species are MSCP covered species and are included in the Incidental Take Authorization issued to the City by federal and state governments as part of the City's MSCP Subarea Plan.

There are 15 plants that are considered to be "narrow endemic species" based on their limited distributions in the region. These narrow endemics are sensitive biological resources. All 15 narrow endemic plants are also MSCP covered species and some are state or federally listed as threatened or endangered species.

All species listed by state or federal agencies as rare, threatened, or endangered or proposed for listing are considered to be sensitive biological resources. The habitat that supports a listed species or a narrow endemic species is also a sensitive biological resource.

Species that are not MSCP covered species, but are on Lists 1B or 2 of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994), California fully protected species, and California species of special concern are also considered sensitive. Impacts to these species, if considered significant, may require mitigation according to California Environmental Quality Act (CEQA) guidelines.

Assessments for the potential occurrence of sensitive species are based upon known ranges, habitat preferences for the species, species occurrence records from the NDDB, and species occurrence records from other sites in the vicinity of the project site.

The proposed project, which lies outside of any MHPA boundary fully complies with the requirements of ESL. The site is physically suited to support the proposed development and as designed, the project will not disturb any environmentally sensitive lands and species.

1. **Sensitive Plant Communities**

The proposed re-development Project will impact no sensitive habitat.

2. **Sensitive Plants**

The proposed re-development Project will impact no sensitive plant species.

3. **Sensitive Wildlife**

The proposed re-development Project will impact no sensitive wildlife species.

E. Jurisdictional and ESL Wetlands

No jurisdictional and/or ESL wetlands were observed onsite. The proposed re-development project does not directly or indirectly impact the offsite jurisdictional/ESL wetlands or the existing functions and values of the system. This jurisdictional offsite habitat, whose closest proximity to the property is located approximately 60 feet from the north-east corner of the property, is comprised of low quality SWS habitat which is located at the bottom of the slope (supporting eucalyptus trees) and will not be impacted by the proposed project.

F. Potential Indirect Impacts

Biological resources located adjacent to the proposed development (north of the property) could be indirectly impacted by both construction and post-construction activities associated with the proposed Carroll Canyon Mixed-Use project. Potential indirect impacts include an increase in urban pollutants entering sensitive water bodies, an increase in night lighting, habitat disturbance, edge effects and pollutants (fugitive dust). No Mitigation Measures are required.

1. Water Quality

The proposed project site is located proximate to an ephemeral drainage and will continue to partially drain into it, within the existing concrete brow ditches which drain into the canyon and the existing ephemeral drainage at its' center. Water quality has the potential to be adversely affected by potential surface runoff and sedimentation during the construction and operation of the project; however, Best Management Practices (BMPs) will be implemented, which will avoid potential impacts associated with water quality. Therefore, the project is not expected to decrease water quality or affect vegetation, aquatic animals, or terrestrial wildlife that depends upon the water resources. No Mitigation Measures are required.

2. Habitat Disturbance

Development of residential, commercial, office, and/or restaurant uses typically lead to an increase in human presence on and around project sites. However, this is a re-development project which is predominantly within the pre-existing developed envelope. Therefore, while there may be an increase in total human activity in the area, the area has already absorbed the biological loss to function and value and the project will not lead to further fragmentation of habitat and the degradation of habitat if people or pets wandered onsite, outside the developed area. Additionally, illegal dumping of green waste, trash, and other refuse, which currently negatively impacts the adjacent habitat in the canyon, would be curtailed.

3. Edge Effects

Edge effects occur when blocks of habitat are fragmented by development. These edges make it easier for non-native plant species to invade native habitats. Edge effects can also make it easier for both native and non-native predators to access prey that may have otherwise have been protected within large, contiguous blocks of habitat. In addition, the disruption of predator-prey, parasite-host, and plant-pollinator relations can occur.

The proposed project would not lead to significant edge effects. The project's proposed landscape plan does not include any invasive plant species. Steep slopes that rim development areas are within the BMZ 1 and 2 and will be landscaped in Fire Marshal approved native and naturalized plant material and serve as a buffer to native habitat to the north of the project site. Additionally, the project does not affect contiguous blocks of habitat.

4. Night-time Lighting

Development of the project site shall introduce night-time lighting in the form of street and parking lights, car headlights, and residential lights. Night-time lighting on native habitats can provide nocturnal predators with an unnatural advantage over their prey. This could cause an increased loss in native wildlife that could be a significant impact unless mitigated. Nighttime lighting will be consistent with the City's lighting requirements and will not cause significant impacts on wildlife habitat.

5. Fugitive Dust

Fugitive dust produced by construction could disperse onto vegetation. Effects on vegetation due to airborne dust could occur adjacent to construction. A continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This, in turn, could affect animals dependent on these plants (e.g., seed eating rodents or insects or browsing herbivores). Fugitive dust impacts would not be significant because the project will be required to implement mandatory dust control requirements that ensure dust control and significant impacts do not occur.

G. Wildlife Movement Corridors

Due to the developed nature and current use of the property, the property does not maintain an identified wildlife corridor. The proposed project will not significantly impact a wildlife movement corridor. No mitigation will be required.

H. Nesting Birds

The proposed project site contains Eucalyptus trees, most of which will be removed. While no active nests were observed during the survey, there is a potential for raptors to nest in these and other suitable on-site trees during the nesting season of January 31 to September 15. Avian species observed on-site are protected under the Migratory Bird Treaty Act (MBTA; Code Section 16 U.S.C. 703-712; Chapter 128; July 13, 1918; 40 Statute 755). This federal statute prohibits, unless permitted by regulations, the pursuit, hunting, taking, capture, killing, possession, sale, purchase, transport, or export of any migratory bird or any part, nest or egg of that bird. Project compliance with the MBTA shall preclude any direct impacts. Noise impacts to nesting raptors shall be avoided during the breeding season through preconstruction surveys and adherence to appropriate noise buffer zone restrictions.

Due to the high level of existing noise from the surrounding high intensity uses (including the freeways, high school, prior active use of the property etc.) it is thought that that is why no old or active raptor nests were observed onsite during any of the surveys; it is therefore not expected that raptors would begin to nest onsite. However, if grading is scheduled to occur during the raptor breeding season (February 1-September 15) a pre-construction survey for active raptor nests shall be completed.

CUMULATIVE IMPACTS

No natural habitat is proposed to be impacted. The proposed project shall impact a total of 9.22 acres of habitat; 1.79 acres of urban disturbed/eucalyptus landscaping habitat as well 7.43 acres of previously developed area (within the pre-existing PSA development footprint).

No listed/sensitive species were observed or are expected to occur within the proposed development footprint; none are proposed to be impacted. Due to the fact that the proposed project will conform with the MSCP and its' implementing ordinances (July 2002 Biology guidelines and ESL regulations), the project will not result in a significant cumulative impact for those biological resources adequately covered by the MSCP.

No cumulatively significant impacts would occur as a result of the proposed Project. No mitigation is recommended at this time.

MITIGATION MEASURES

Mitigation is required for impacts that are considered significant under CEQA. Mitigation measures typically employed include resource avoidance, on-site habitat preservation and/or replacement, payment of funds into a habitat conservation program, and/or the off-site acquisition and preservation of habitat. Mitigation is required for impacts that are considered significant, including impacts to listed species, sensitive plant communities and habitats, and wetlands that are not adequately protected by the MSCP. Impact ratios are determined based on the habitat impacted, the location of the impacted habitat, and the location of the proposed mitigation.

The proposed project requires no species or habitat specific mitigation measures.

DIRECT IMPACTS

A. Sensitive Habitat Communities

The proposed re-development of approximately 9.22 acres will directly impact no sensitive habitat(s). None of the proposed impacts are considered significant and therefore no mitigation is recommended at this time.

B. Sensitive Wildlife Species

The proposed re-development of approximately 9.22 acres will impact no sensitive wildlife species. None of the proposed impacts are considered significant and therefore no mitigation is recommended at this time.

C. Nesting Birds

In order to avoid the potential to impacts nesting birds, the following mitigation shall be implemented.

A. Prior to the Issuance of Grading Permits

Prior to issuance of grading permits a qualified biologist shall determine the presence or absence of occupied nests within the project site, with written results including proposed mitigation measures, submitted to the ADD Environmental designee of LDR prior to the preconstruction meeting.

B. Prior to Start of Construction

If active nests are detected, the report shall include mitigation in conformance with the City's Biology Guidelines (i.e. appropriate buffers, monitoring schedules, etc.) to the satisfaction of the ADD of the LDR. Mitigation requirements determined by the project biologist and the ADD of LDR shall be incorporated into the project's Biological Construction Monitoring Exhibit (BCME) and monitoring results incorporated in to the final biological construction monitoring report.

C. During Construction

1. If raptor nests are discovered during construction activities, the biologist shall notify the Resident Engineer (RE).

2. The RE shall stop work in the vicinity of the nests. The qualified biologist shall mark all pertinent trees and delineate the appropriate "no construction" buffer area as determined by a qualified biologist. - Raptors measure 1.B. (above), around any nest sites, satisfactory to the ADD Environmental designee of LDR. The buffer shall be maintained until the qualified biologist determines, and demonstrates in a survey report satisfactory to the ADD Environmental designee of LDR that any young birds have fledged.

D. Post Construction

1. The biologist shall be responsible for ensuring that all field notes and reports have been completed, all outstanding items of concern have been resolved or noted for follow up, and that focused surveys are completed, as appropriate.

2. Within three months following the completion of monitoring, two copies of the Final Biological Monitoring Report (even if negative) and/or evaluation report, if applicable, which describes the results, analysis, and conclusions of the Biological Monitoring Program (with appropriate graphics) shall be submitted to Mitigation Monitoring Coordination (MMC) for approval by the ADD Environmental designee of LDR:

3. This report shall address findings of active/inactive nests and any recommendations for retention of active nest, removal of inactive nests and mitigation for offsetting loss of breeding habitat. MMC shall notify the RE of receipt of the Final Biological Monitoring Report.

Certification/Qualification

I, Michael Jefferson, completed the field surveys and preparation of this report.

Michael Jefferson; University of California at San Diego, B.A., Biological Anthropology and Socio-Biology, 1996
Qualified County of San Diego Biologist
Qualified Riverside County Biologist

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Attachment 1

ATTACHMENT 1
PLANT SPECIES OBSERVED

Scientific Name	Common Name	Habitat	Origin
Atriplex semibaccata R.Br.	Australian saltbush	DEV,DIS	I
Avena sp.	Wild oats	DEV,DIS	N
Brassica nigra (L.) Koch.	Black mustard	DEV,DIS	I
Bromus diandrus Roth.	Ripgut grass	DEV,DIS	I
Bromus madritensis L. ssp. *rubens* (L.) Husnot	Foxtail chess	DEV,DIS	I
Carpobrotus edulis	Hottentot fig	DEV,DIS	I
Centaurea melitensis L.	Tocolote, star-thistle	DEV,DIS	I
Chamaesyce albomarginata (Torrey & A. Gray) Small	Rattlesnake weed	DEV,DIS	N
Adenostoma fasciculatum Hook. & Arn.	Chamise	DIS	N
Chrysanthemum sp.	Chrysanthemum	DEV, DIS	I
Eriogonum fasciculatum Benth. var. *fasciculatum*	California buckwheat	DEV,DIS	N
Eucalyptus spp.	Eucalyptus	DEV,DIS	I
Heteromeles arbutifolia (Lindley) Roemer	Toyon, Christmas berry	DIS	N
Melilotus sp.	Sweet clover	DEV,DIS	I
Salsola trDEVus L.	Russian thistle, tumbleweed	DEV,DIS	I
Sisymbrium sp.	Mustard	DEV,DIS	I

HABITATS
DEV = Developed
DIS = Urban/Disturbed

OTHER TERMS
N = Native to locality
I = Introduced species from outside locality

Attachment 2

ATTACHMENT 2
WILDLIFE SPECIES OBSERVED/DETECTED

Common Name	Scientific Name	Occupied Habitat	Evidence of Occurrence
Birds (Nomenclature from American Ornithologists' Union)			
House finch	*Carpodacus mexicanus frontalis*	DEV	O,F
American crow	*Corvus brachyrhynchos*	DEV	O,F
Mammals (Nomenclature from Jones et al. 1982)			
California ground squirrel	*Spermophilus beecheyi*	DEV	O,B

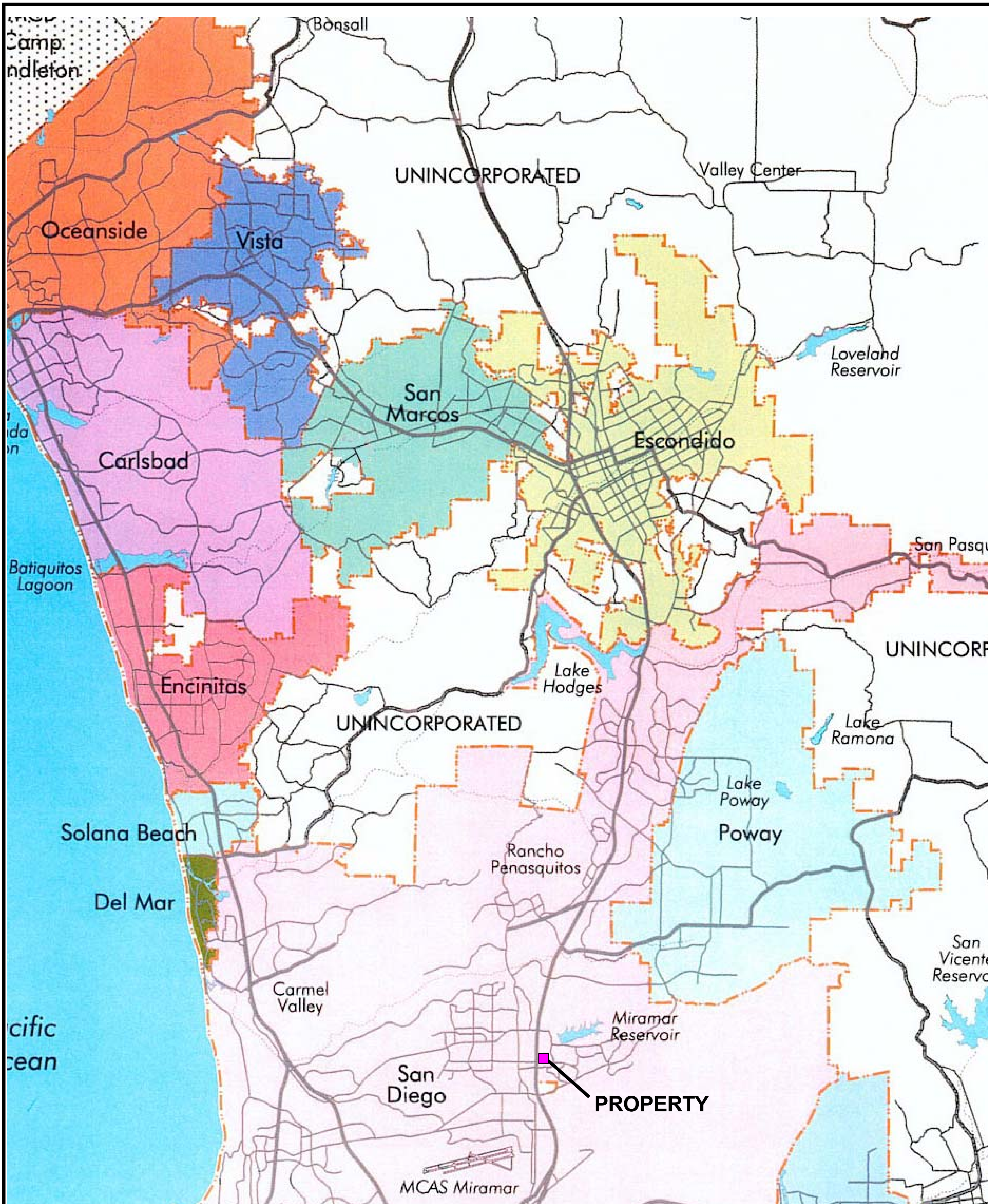
Habitats

F = Flying overhead
DEV = Developed Area
DIS = Disturbed

Evidence of Occurrence

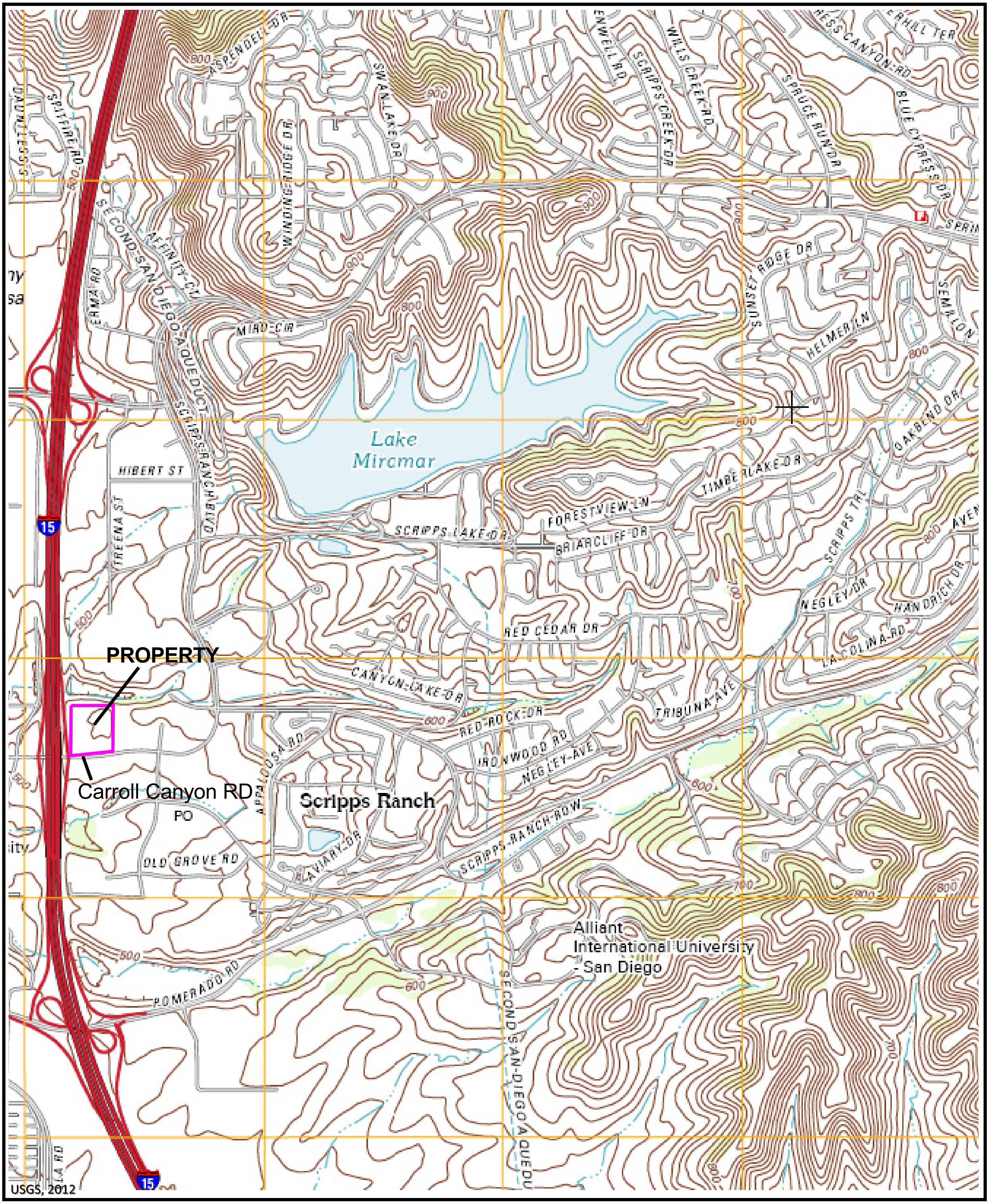
O = Observed
B = Burrow

Attachment 3



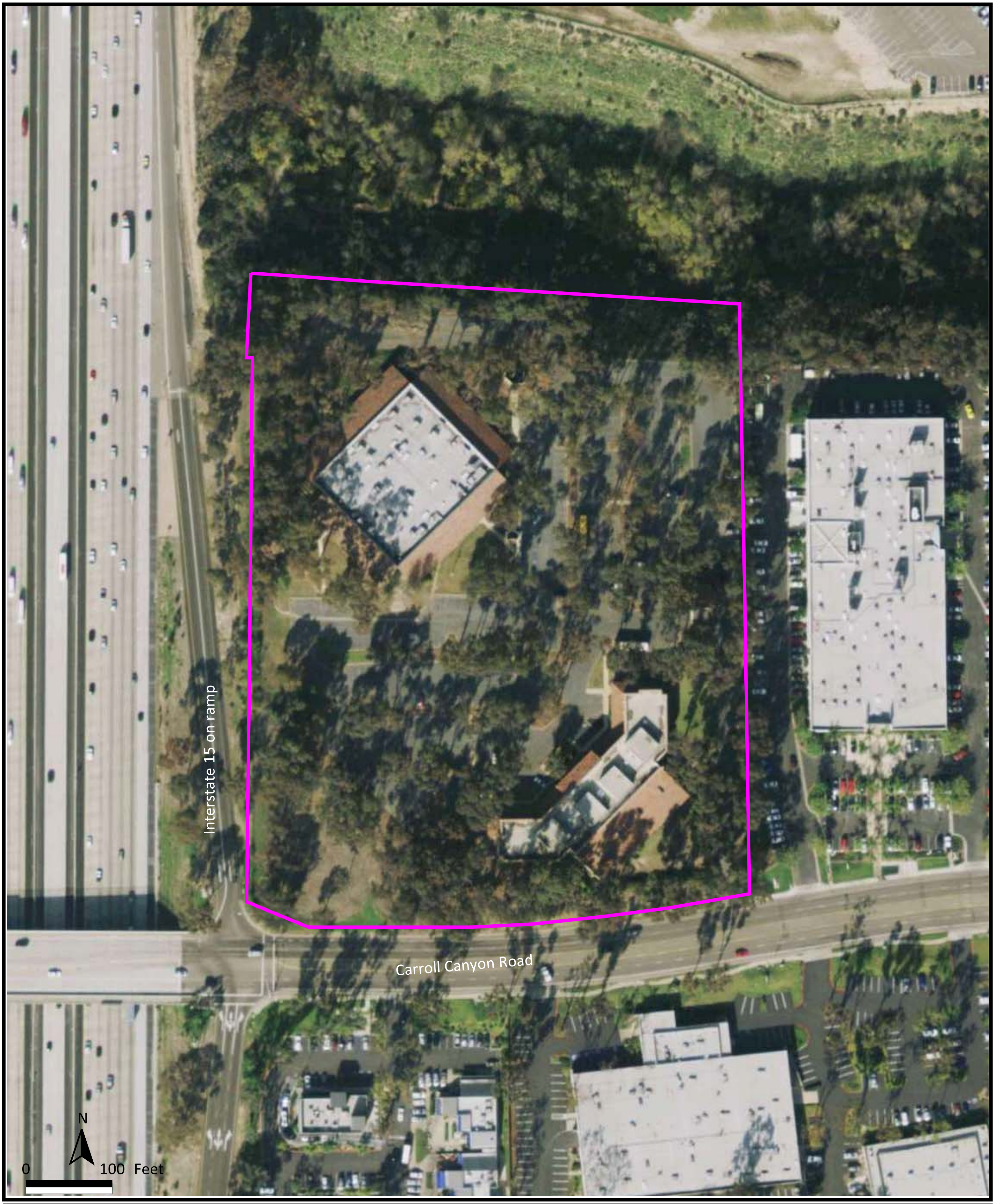
Property, City of San Diego

FIGURE 1
Regional Property
Location



Property

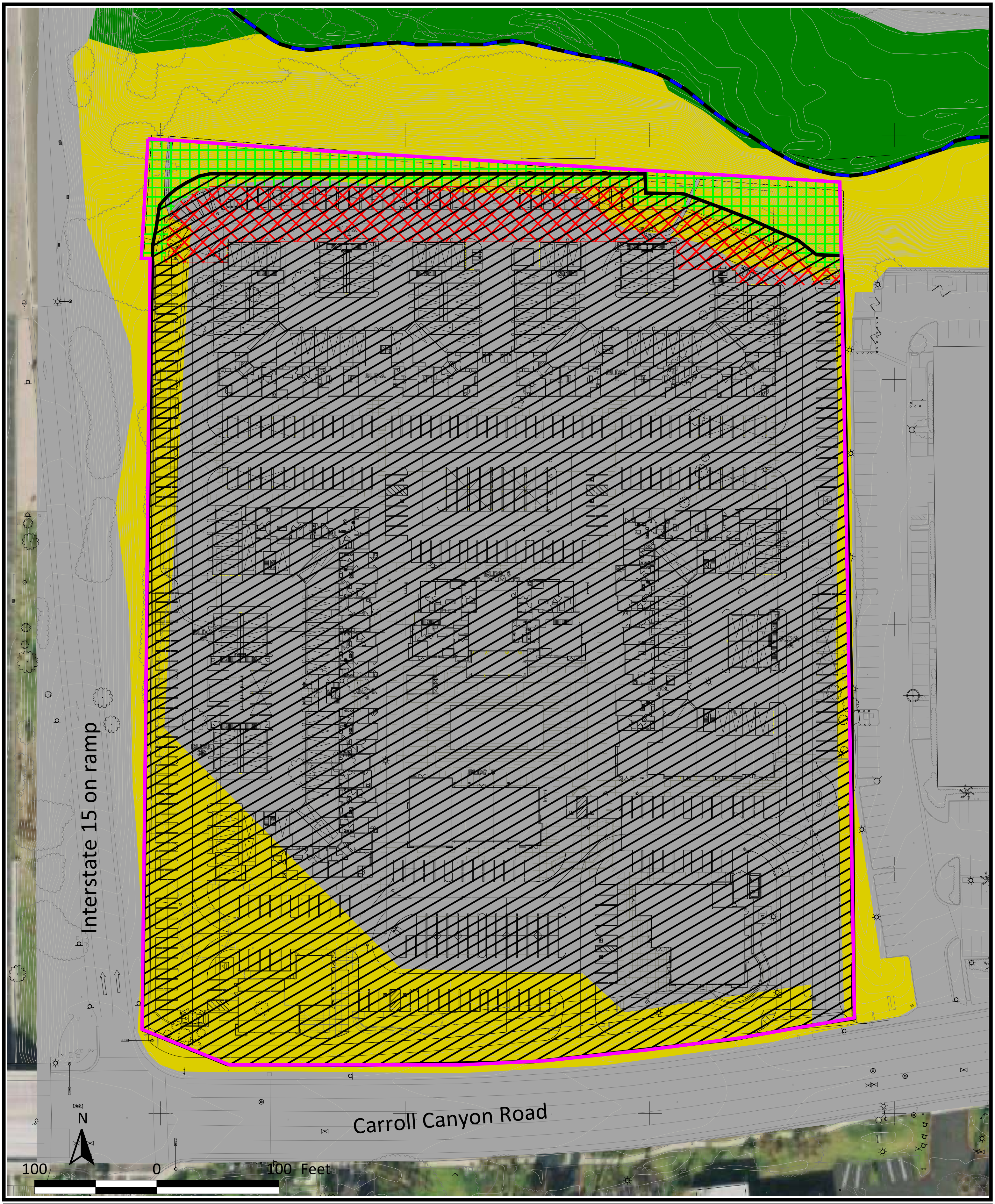
FIGURE 2
Property on USGS
Topo Map



Property

FIGURE 3
Property Aerial

FIGURE 4
Habitat Map



Property
Developed
Eucalyptus Trees/ Disturbed Habitat
Southern Willow Scrub
Incised Channel
Grading Footprint
BMZ 1; 32' - 50' wide
BMZ 2; 10' - 65' wide

FIGURE 5
Habitat Impact Map

Attachment 4

TABLE 2
SENSITIVE PLANT SPECIES
OBSERVED (†) OR WITH THE POTENTIAL FOR OCCURRENCE

Species	State/Federal Status	City of San Diego Status	CNPS List/Code	Typical Habitat/Comments
Acanthomintha ilicifolia San Diego thornmint	CE/FT	NE, MSCP	1B/2-3-2	Chaparral, coastal sage scrub, valley and foothill grassland/ clay soils. Low potential to occur.
Ambrosia pumila San Diego ambrosia	–/–	NE, MSCP	1B/3-2-2	Creekbeds, seasonally dry drainages, floodplains. No suitable habitat. Low potential to occur.
Arctostaphylos glandulosa ssp. *crassifolia* Del Mar manzanita	–/FE	MSCP	1B/3-3-2	Southern maritime chaparral. No suitable habitat. Not observed on-site.
Artemisia palmeri San Diego sagewort	–/–	–	2/2-2-1	Coastal sage scrub, chaparral, riparian. Low potential to occur.
Baccharis vanessae Encinitas coyote bush	CE/FT	NE, MSCP	1B/2-3-3	Chaparral. Not observed on-site.
Brodiaea filifolia Thread-leaved brodiaea†	CE/FT	MSCP	1B/3-3-3	Valley and foothill grassland, vernal pools. Low potential to occur.
Brodiaea orcuttii Orcutt's brodiaea	–/–	MSCP	1B/1-3-2	Closed-cone coniferous forest, meadows, cismontane wood-land, valley and foothill grass-land, vernal pools. Low potential to occur.
Chorizanthe polygonoides var. *longispina* Long-spined spineflower	–/–	–	1B/2-2-2	Open chaparral, coastal sage scrub, montane meadows, valley and foothill grasslands; vernal pools/clay. Low potential to occur.
Dichondra occidentalis Western dichondra†	–/–	–	4/1-2-1	Chaparral, cismontane wood-land, coastal sage scrub, valley and foothill grassland/generally post-burn. Low potential to occur.

TABLE 2
SENSITIVE PLANT SPECIES
OBSERVED (†) OR WITH THE POTENTIAL FOR OCCURRENCE
(continued)

Species	State/Federal Status	City of San Diego Status	CNPS List/Code	Typical Habitat/Comments
Ferocactus viridescens Coast barrel cactus	–/–	MSCP	2/1-3-1	Chaparral, coastal sage scrub, valley and foothill grassland. Not observed on-site.
Harpagonella palmeri var. *palmeri* Palmer's grappling hook†	–/–	–	2/1-2-1	Chaparral, coastal sage scrub, valley and foothill grassland. Low potential to occur.
Juncus acutus ssp. leopoldii Spiny rush†	–/–	–	4/1-2-1	Coastal dunes (mesic) meadows (alkaline), coastal salt marsh. Not observed on-site.
Lessingia filaginifolia var. *filaginifolia* (=*Corethrogyne filaginifolia* var. *incana*) San Diego sand aster	–/–	–	1B/2-2-2	Coastal sage scrub, chaparral. Low potential to occur.
Muilla clevelandii San Diego goldenstar	–/–	MSCP	1B/2-2-2	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools. Low potential to occur.
Quercus dumosa Nuttall's scrub oak†	–/–	–	1B/2-3-2	Coastal chaparral. Low potential to occur.
Tetracoccus dioicus Parry's tetracoccus	–/–	MSCP	1B/3-2-2	Chaparral, coastal sage scrub. Low potential to occur.

NOTE: See Table 3 for explanation of sensitivity codes.

TABLE 3
SENSITIVITY CODES

FEDERAL CANDIDATES AND LISTED PLANTS

FE = Federally listed, endangered
FT = Federally listed, threatened
FPE = Federally proposed endangered
FPT = Federally proposed threatened

STATE LISTED PLANTS

CE = State listed, endangered
CR = State listed, rare
CT = State listed, threatened

CITY OF SAN DIEGO STATUS

MSCP = City of San Diego Multiple Species Conservation Program
NE = Narrow endemic species in MSCP

CALIFORNIA NATIVE PLANT SOCIETY

LISTS

1A = Species presumed extinct.

1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.

2 = Species rare, threatened, or endangered in California but which are more common elsewhere. These species are eligible for state listing.

3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.

4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.

R-E-D CODES

R (Rarity)

1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.

2 = Occurrence confined to several populations or to one extended population.

3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1 = Not endangered
2 = Endangered in a portion of its range
3 = Endangered throughout its range

D (Distribution)

1 = More or less widespread outside California
2 = Rare outside California
3 = Endemic to California

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)

Species	Status	Habitat	Occurrence/Comments*
Invertebrates			
Quino checkerspot butterfly *Euphydryas editha quino*	FE, MSCP	Open, dry areas in foothills, mesas, lake margins. Larval host plant *Plantago erecta.*	No suitable habitat present; Low potential to occur on-site.
Harbison's dun skipper *Euphyes vestris harbisoni*	MSCP	Riparian habitats. Larval host plant *Carex spissa*.	No suitable habitat present; Low potential to occur on-site.
Amphibians (Nomenclature from Collins 1997)			
Western spadefoot *Spea hammondii*	CSC, MSCP	Vernal pools, floodplains, and alkali flats within areas of open vegetation.	No suitable habitat present; Low potential to occur on-site.
Reptiles (Nomenclature from Collins 1997)			
Southwestern pond turtle *Clemmys marmorata pallida*	CSC, FSS, MSCP	Ponds, small lakes, marshes, slow-moving, sometimes brackish water.	No suitable habitat present; Low potential to occur on-site.
San Diego horned lizard *Phrynosoma coronatum blainvillii*	CSC, MSCP, *	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.	No suitable habitat present; Low potential to occur on-site.
Belding's orangethroat whiptail *Cnemidophorus hyperythrus beldingi*	CSC, MSCP	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.	No suitable habitat present; Low potential to occur on-site.

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)
(continued)

Species	Status	Habitat	Occurrence/Comments*
Silvery legless lizard *Anniella pulchra pulchra*	CSC	Herbaceous layers with loose soil in coastal scrub, chaparral, and open riparian habitats. Prefers dunes and sandy washes near moist soil.	No suitable habitat present; Low potential to occur on-site.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	CSC	Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.	No suitable habitat present; Low potential to occur on-site.
Red diamond rattlesnake *Crotalus exsul (= C. ruber ruber)*	CSC	Desert scrub and riparian habitats, coastal sage scrub, open chaparral, grassland, and agricultural fields.	No suitable habitat present; Low potential to occur on-site.
<u>Birds</u> (Nomenclature from American Ornithologists' Union)			
Great blue heron (rookery site) *Ardea herodias*	*	Bays, lagoons, ponds, lakes. Non-breeding year-round visitor, some localized breeding.	No suitable habitat present; Low potential to occur on-site.
Great egret (rookery site) *Ardea alba*	*	Lagoons, bays, estuaries. Ponds and lakes in the coastal lowland. Winter visitor, uncommon in summer.	No suitable habitat present; Low potential to occur on-site.
White-tailed kite (nesting) *Elanus leucurus*	CFP, *	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.	Low potential to nest on-site.

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)
(continued)

Species	Status	Habitat	Occurrence/Comments*
Northern harrier (nesting) *Circus cyaneus*	CSC, MSCP	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.	Low potential to nest on-site.
Sharp-shinned hawk (nesting) *Accipiter striatus*	CSC	Open deciduous woodlands, forests, edges, parks, residential areas. Migrant and winter visitor.	Low potential to nest on-site.
Cooper's hawk (nesting) *Accipiter cooperii*	CSC, MSCP,HMP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas. Migrant and winter visitor.	No suitable habitat present; Low potential to nest on-site.
Ferruginous hawk (wintering) *Buteo regalis*	CSC	Require large foraging areas. Grasslands, agricultural fields. Uncommon winter resident.	No suitable habitat present; Low potential to nest on-site.
Golden eagle (nesting and wintering) *Aquila chrysaetos*	CSC, CFP, BEPA, MSCP	Require vast foraging areas in grassland, broken chaparral, or sage scrub. Nest in cliffs and boulders. Uncommon resident.	No suitable habitat present; Low potential to nest on-site.
Merlin *Falco columbarius*	CSC	Rare winter visitor. Grasslands, agricultural fields, occasionally mud flats.	No suitable habitat present; Low potential to nest on-site.
Prairie falcon (nesting) *Falco mexicanus*	CSC	Grassland, agricultural fields, desert scrub. Uncommon winter resident. Rare breeding resident. Breeds on cliffs.	No suitable habitat present; Low potential to nest on-site.

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)
(continued)

Species	Status	Habitat	Occurrence/Comments*
Western yellow-billed cuckoo (breeding) *Coccyzus americanus occidentalis*	SE	Large riparian woodlands. Summer resident. Very localized breeding.	Only a few recent sightings in county; not expected to occur. No suitable habitat present.
Western burrowing owl (burrow sites) *Speotyto cunicularia hypugaea*	CSC, MSCP,HMP	Grassland, agricultural land, coastal dunes. Require rodent burrows. Declining resident.	No suitable habitat present; Low potential to nest on-site.
Southwestern willow flycatcher *Empidonax traillii extimus*	SE, FE, FSS, MSCP	Nesting restricted to willow thickets. Also occupies other woodlands. Rare spring and fall migrant, rare summer resident. Extremely localized breeding.	No suitable habitat present; Low potential to nest on-site.
California horned lark *Eremophila alpestris actia*	CSC	Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.	No suitable habitat present; Low potential to nest on-site.
Coastal cactus wren *Campylorhynchus brunneicapillus couesi*	CSC, MSCP, *	Maritime succulent scrub, coastal sage scrub with *Opuntia* thickets. Rare localized resident.	No suitable habitat present; Low potential to nest on-site.
Coastal California gnatcatcher *Polioptila californica californica*	FT, CSC, MSCP	Coastal sage scrub, maritime succulent scrub. Resident.	No suitable habitat present; Low potential to nest on-site.
Loggerhead shrike *Lanius ludovicianus*	CSC	Open foraging areas near scattered bushes and low trees.	No suitable habitat present.
Least Bell's vireo (nesting) *Vireo bellii pusillus*	SE, FE, MSCP	Willow riparian woodlands. Summer resident.	No suitable habitat present.

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)
(continued)

Species	Status	Habitat	Occurrence/Comments*
Yellow warbler (nesting) *Dendroica petechia brewsteri*	CSC	Breeding restricted to riparian woodland. Spring and fall migrant, localized summer resident, rare winter visitor.	No suitable habitat present.
Yellow-breasted chat (nesting) *Icteria virens*	CSC, MSCP	Dense riparian woodland. Localized summer resident.	No suitable habitat present.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	CSC, MSCP	Coastal sage scrub, grassland. Resident.	No suitable habitat present.
Bell's sage sparrow *Amphispiza belli belli*	CSC, MSCP	Chaparral, coastal sage scrub. Localized resident.	No suitable habitat present.
Tricolored blackbird *Agelaius tricolor*	CSC, MSCP	Freshwater marshes, agricultural areas, lakeshores, parks. Localized resident.	No suitable habitat present; Low to marginal potential to nest on-site.
Blue grosbeak (nesting) *Guiraca caerulea*	*	Riparian woodland edges, mule fat thickets. Summer resident, spring and fall migrant, winter visitor.	No suitable habitat present.
<u>Mammals</u> (Nomenclature from Jones et al. 1982)			
Pale big-eared bat *Corynorhinus townsendii pallescens*	CSC	Caves, mines, buildings. Found in a variety of habitats, arid and mesic.	Individual or colonial. Extremely sensitive to disturbance; marginal roosting habitat present; not expected to occur.

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)
(continued)

Species	Status	Habitat	Occurrence/Comments[*]
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	CSC, MSCP	Caves, mines, buildings. Found in a variety of habitats, arid and mesic.	Individual or colonial. Extremely sensitive to disturbance; marginal roosting habitat present; not expected to occur.
Western mastiff bat *Eumops perotis californicus*	CSC, MSCP	Woodlands, rocky habitat, arid and semiarid lowlands, cliffs, crevices, buildings, tree hollows.	Marginal roosting habitat present; low potential to occur on-site.
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	CSC, MSCP	Open areas of scrub, grasslands, agricultural fields.	No suitable habitat present.
Pacific little pocket mouse *Perognathus longimembris pacificus*	FE, CSC, MSCP	Open coastal sage scrub; fine, alluvial sands near ocean.	No suitable soils; not expected to occur.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	CSC, MSCP	San Diego County west of mountains in sparse, disturbed coastal sage scrub or grasslands with sandy soils.	No suitable habitat present.
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	Coastal sage scrub and chaparral.	No suitable habitat present.

Status Codes

Listed/Proposed
FE = Listed as endangered by the federal government
FT = Listed as threatened by the federal government
SE = Listed as endangered by the state of California

Other
BEPA = Bald and Golden Eagle Protection Act
CFP = California fully protected species
CSC = California Department of Fish and Game species of special concern

TABLE 4
SENSITIVE WILDLIFE SPECIES KNOWN (OR POTENTIALLY OCCURRING)
(continued)

FC = Federal candidate for listing (taxa for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list as endangered or threatened; development and publication of proposed rules for these taxa are anticipated)

FSS = Federal (Bureau of Land Management and U.S. Forest Service) sensitive species

MSCP= Multiple Speciea Conservation Program target species list

* = Taxa listed with an asterisk fall into one or more of the following categories:

- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
- Population(s) in California that may be peripheral to the major portion of a taxon’s range, but which are threatened with extirpation within California
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

Attachment 5

Photograph 1 Looking North; Across the developed site from the south east

Photograph 2 Looking South; From the north west, Developed Area and Eucalyptus Landscaping

Photograph 3 Looking North at North-West corner of the property; Brow ditch and Disturbed/Eucalyptus habitat

Photograph 4 Onsite Eucalyptus and Developed Area

PRELIMINARY GEOTECHNICAL INVESTIGATION

CARROLL CANYON MIXED USE SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

SUDBERRY PROPERTIES, INC.
SAN DIEGO, CALIFORNIA

OCTOBER 12, 2015
PROJECT NO. G1488-42-03

Project No. G1488-42-03
October 12, 2015

Sudberry Properties, Inc.
5465 Morehouse Drive, Suite 260
San Diego, California 92121

Attention: Mr. Jeff Rogers

Subject: PRELIMINARY GEOTECHNICAL INVESTIGATION
CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

Dear Mr. Rodgers:

In accordance with your request, we have prepared this preliminary geotechnical investigation for the subject project. The accompanying report presents the findings of our study, and our conclusions and recommendations pertaining to geotechnical aspects of developing the property as proposed. Based on the results of our study, it is our opinion that the site can be developed as proposed, provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

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(3/del) PLSA
Attention: Mr. Mike Wolfe

TABLE OF CONTENTS

1. PURPOSE AND SCOPE ... 1

2. SITE AND PROJECT DESCRIPTION ... 2

3. SOIL AND GEOLOGIC CONDITIONS ... 2
   - 3.1 Undocumented Fill ... 3
   - 3.2 Very Old Paralic Deposits (Qop) ... 3
   - 3.3. Stadium Conglomerate (Tst) ... 3

4. GROUNDWATER ... 3

5. GEOLOGIC HAZARDS ... 4
   - 5.1 Geologic Hazard Category ... 4
   - 5.2 Seismic Hazard Analysis ... 4
   - 5.3 Ground Rupture ... 6
   - 5.4 Liquefaction ... 6
   - 5.5 Landslides ... 7
   - 5.6 Tsunamis and Seiches ... 7
   - 5.7 Subsidence ... 7
   - 5.8 Flooding ... 7

6. BOREHOLE PERCOLATION TESTING ... 7

7. CONCLUSIONS AND RECOMMENDATIONS ... 9
   - 7.1 General ... 9
   - 7.2 Excavation and Soil Characteristics ... 10
   - 7.3 Slope Stability ... 11
   - 7.4 Grading ... 12
   - 7.5 Settlement Monitoring ... 14
   - 7.6 Seismic Design Criteria ... 14
   - 7.7 Foundations ... 16
   - 7.8 Concrete Slabs-On-Grade ... 17
   - 7.9 Conventional Retaining Walls ... 18
   - 7.10 Preliminary Pavement Recommendations ... 20
   - 7.11 Bio-Retention Basin and Bio-Swale Recommendations ... 23
   - 7.12 Deep Drywell for Infiltration of Storm Water ... 24
   - 7.13 Site Drainage and Moisture Protection ... 24
   - 7.14 Grading and Foundation Plan Review ... 25

LIMITATIONS AND UNIFORMITY OF CONDITIONS

TABLE OF CONTENTS (Concluded)

MAPS AND ILLUSTRATIONS
- Figure 1, Vicinity Map
- Figure 2, Boring Location Map
- Figure 3, Falling Head Percolation Test
- Figures 4 and 5, Slope Stability Analyses
- Figure 6, Slope Stability Analysis (Slope/W)
- Figure 7, Wall/Column Footing Dimension Detail
- Figure 8, Typical Retaining Wall Drainage Detail

APPENDIX A
- FIELD INVESTIGATION
- Figures A-1 – A-19, Logs of Borings
- Figures A-20 – A-21, Logs of Borehole Percolation Tests

APPENDIX B
- LABORATORY TESTING
- Table B-I, Summary of Laboratory Maximum Dry Density and Optimum Moisture Content Test Results
- Table B-II, Summary of Laboratory Expansion Index Test Results
- Table B-III, Summary of Laboratory Direct Shear Test Results
- Table B-IV, Summary of Laboratory Water-Soluble Sulfate Test Results
- Table B-V, Summary of Laboratory Chloride Content Test Results
- Table B-VI, Summary of Laboratory Potential of Hydrogen (pH) and Resistivity Test Results
- Table B-VII, Summary of Laboratory Atterberg Limits Test Results
- Table B-VIII, Summary of Laboratory Resistance Value (R-Value) Test Results
- Table B-IX, Summary of Laboratory One-Dimensional Swell/Consolidation Potential Test Results
- Table B-X, Summary of Laboratory Organic Test Results
- Figures B-1 – B-2, Gradation Curves

APPENDIX C
- BORING LOGS AND LABORATORY TESTING FROM GEOTECHNICS (2006)

APPENDIX D
- RECOMMENDED GRADING SPECIFICATIONS

LIST OF REFERENCES

PRELIMINARY GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of an update geotechnical study for the proposed mixed-use development located at 9850 Carroll Canyon Road northeast of the intersection of Interstate 15 and Carroll Canyon Road in San Diego, California (see Vicinity Map, Figure 1). The purpose of this update report was to evaluate surface and subsurface soil conditions, general site geology, and to identify geotechnical constraints (if any) that may impact development of the property as proposed.

We reviewed the following documents to aid in preparation of this report:

1. *Soil and Geologic Reconnaissance, Carroll Canyon Road Commercial Center, Carroll Canyon Road and I-15, San Diego, California,* prepared by Geocon Incorporated, dated July 11, 2012 (Project No. G1488-42-01).

2. *Initial Geotechnical Investigation, New Store at Carroll Canyon Commercial Center, San Diego, California,* prepared by Geocon Incorporated, dated November 6, 2012 (Project No. 1488-42-02).

3. *Log of Test Borings, Carroll Canyon Road OC (Replace), State of California Department of transportation,* prepared by Kleinfelder Inc., as-built date March 1, 2012.

4. *Geotechnical Investigation, Horizon Corporate Center, 9850 Carroll Canyon Road, San Diego, California,* prepared by Geotechnics Incorporated, dated March 2, 2006 (Project No. 1154-001-00).

5. *Geotechnical Reconnaissance, Proposed Commercial Development, 9850 Carroll Canyon Road, San Diego, California,* prepared by Geotechnics Incorporated, dated March 12, 2007 (Project No. 1071-001-00).

6. *Carroll Canyon Mixed-Use, 9850 Carroll Canyon Road, San Diego, CA,* prepared by Pasco Laret Suiter & Associates, dated February 18, 2015.

Our previous field investigation (see Reference 2) was performed on September 19 through 21, 2012, and consisted of drilling 19, small-diameter borings. Recently, two additional borings were performed on August 28, and September 8, 2015 to perform percolation testing. The approximate locations of the exploratory borings are depicted on the Boring Location Map, Figure 2. Included on Figure 2 are exploratory borings performed by Geotechnics (Reference 4). Exploratory boring logs and other details of the field investigation performed by Geocon are presented in Appendix A. Borings logs and laboratory test results from Reference 4 are included in Appendix B.

We performed laboratory tests on selected soil samples obtained during the field investigation to evaluate pertinent physical properties for engineering analyses and to assist in providing recommendations for site grading and foundation design criteria. Details of the laboratory testing and a summary of the test results are presented in Appendix C.

2. SITE AND PROJECT DESCRIPTION

The site is located northeast of the intersection of Interstate 15 and Carroll Canyon Road in San Diego, California. The site is bound on the north by a natural canyon drainage, east by existing office buildings, south by Carroll Canyon Road, and west by the on-ramp to northbound Interstate 15. Two office buildings occupy the site, a single story office building is situated on the northwest side of the site, and a two-story office building is situated on the southeast side of the site. Paved parking lots and access driveways lie between and to the north of the existing buildings. Numerous eucalyptus trees also occupy the property.

The property slopes gently from southeast to the north/northwest with existing site elevations ranging from near 522 feet Mean Sea Level (MSL) to 510 feet MSL. Natural slopes lie north and west of the property. The slopes are approximately 10 to 45 feet high with inclinations between 1.5:1 and 2:1 (horizontal to vertical).

The proposed new structures will consist of 4 multi-story, multi-family apartment buildings, a recreation center with a gym, pool, leasing and lounge building, and 2 restaurant/retail buildings. A two level park lift is planned at the north end of the property at the top of the existing slope. Ground level parking will occupy the perimeter of the property and areas between buildings. Retaining walls from approximately 5 feet to 12 feet tall are planned along the east and north sides of the site. An 8-oot sound wall will be constructed along the west perimeter of the property. Underground storm water detention vaults are also planned, including possible deep dry wells for storm water infiltration. We expect cuts and fills of less than 5 feet from existing grades will be required to create building pads. Cuts up to approximately 8 feet will be required to construct the proposed park lift at the top of the north slope.

The above locations, site descriptions, and proposed development are based on a site reconnaissance, review of the referenced plans and reports, published geologic literature and our field investigation. If final development plans differ from those described herein, Geocon Incorporated should be contacted for review of the plans and possible revisions to this report.

3. SOIL AND GEOLOGIC CONDITIONS

Based on our exploratory borings, review of the referenced reports, and published geologic literature, the property is underlain by a minor amount of undocumented fill, very old paralic deposits, and Stadium Conglomerate formation. A description of these units is presented below:

3.1 Undocumented Fill

We encountered approximately 1.5 feet of undocumented fill in exploratory boring B-17. The undocumented fill was likely placed for landscaping purposes. We expect isolated areas of fill associated with utility trenches for the existing building may also exist. Where encountered within structural improvement areas, the fill should be removed and recompacted.

3.2 Very Old Paralic Deposits (Qop)

Geologic maps show Pleistocene-aged very old paralic deposits (formerly Lindavista Formation) underlie the site. We encountered very old paralic deposits in the exploratory borings at grade. Based on our investigation, this deposit consists of very dense clayey sand to very stiff/hard sandy clay with varying amounts of gravel and cobbles. Laboratory test results indicate this deposit has a *low* to *medium* expansion potential, with the clayey portions having a moderate potential for swell when saturated. The very old paralic deposits are considered suitable for support of structural fill and settlement-sensitive structures. Special design consideration will be required for flatwork where expansive soils are present within the upper 3 feet of subgrade elevation.

3.3. Stadium Conglomerate (Tst)

The Tertiary-age Stadium Conglomerate Formation was encountered beneath the very old paralic deposits. The Stadium Conglomerate consists of a weakly to well cemented, yellow, fine to medium grained, cobble conglomerate in a silty/clayey sand matrix. Generally, the majority of this formation consists of a cobble conglomerate with discontinuous beds of sandstone. The Stadium Conglomerate is suitable for support of structural fill and/or loading in either a natural or properly compacted condition.

4. GROUNDWATER

Groundwater was not encountered during our investigation. Based on our experience in the area, we expect groundwater do be deeper than 100 feet below the existing ground surface. We do not expect groundwater to adversely impact proposed project development; however, it is not uncommon for seepage conditions to develop where none previously existed. Seepage elevations are dependent on seasonal precipitation, irrigation; land use, among other factors, and vary as a result. Proper surface drainage will be important to future performance of the project.

5. GEOLOGIC HAZARDS

5.1 Geologic Hazard Category

The City of San Diego Seismic Safety Study, Geologic Hazards and Faults, Map Sheet 35 defines the site with a Hazard Category 52*: other level areas – gently sloping to steep terrain, favorable geologic structure, low risk.*

5.2 Seismic Hazard Analysis

It is our opinion, based on a review of published geologic maps and reports, that the site is not located on any known active, potentially active, or inactive fault traces. The California Geological Survey (CGS) defines an active fault as a fault showing evidence for activity within the last 11,000 years. The site is not located within a State of California Earthquake Special Study Zone.

According to the computer program *EZ-FRISK (Version 7.65),* six known active faults are located within a search radius of 50 miles from the property. We used the 2008 USGS fault database that provides several models and combinations of fault data to evaluate the fault information. Based on this database, the Newport-Inglewood/Rose Canyon Fault Zone, located approximately 9 miles west of the site, is the nearest known active fault and is the dominant source of potential ground motion. Earthquakes occurring on the Newport-Inglewood/Rose Canyon Fault Zone or other faults within the southern California and northern Baja California area are potential generators of significant ground motion at the site. The estimated maximum earthquake magnitude and peak ground acceleration for the Newport-Inglewood/Rose Canyon Fault are 7.5 and 0.28g, respectively. Table 5.2.1 lists the estimated maximum earthquake magnitude and peak ground acceleration for the most dominant faults in relation to the site location. We calculated peak ground acceleration (PGA) using Boore-Atkinson (2008) NGA USGS 2008, Campbell-Bozorgnia (2008) NGA USGS 2008, and Chiou-Youngs (2007) NGA USGS 2008acceleration-attenuation relationships.

TABLE 5.2.1
DETERMINISTIC SPECTRA SITE PARAMETERS

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration		
			Boore-Atkinson 2008 (g)	Campbell-Bozorgnia 2008 (g)	Chiou-Youngs 2008 (g)
Newport-Inglewood/Rose Canyon	9	7.5	0.25	0.22	0.28
Rose Canyon	9	6.9	0.21	0.20	0.22
Coronado Bank	22	7.4	0.15	0.11	0.12
Palos Verdes/Coronado Bank	22	7.7	0.16	0.12	0.15
Elsinore	30	7.85	0.14	0.10	0.12
Earthquake Valley	36	6.8	0.07	0.06	0.05

In the event of a major earthquake on the referenced faults or other significant faults in the southern California and northern Baja California area, the site could be subjected to moderate to severe ground shaking. With respect to this hazard, the site is considered comparable to others in the general vicinity.

We performed a site-specific probabilistic seismic hazard analysis using the computer program *EZ-FRISK*. Geologic parameters not addressed in the deterministic analysis are included in this analysis. The program operates under the assumption that the occurrence rate of earthquakes on each mapped Quaternary fault is proportional to the faults slip rate. The program accounts for earthquake magnitude as a function of fault rupture length, and site acceleration estimates are made using the earthquake magnitude and distance from the site to the rupture zone. The program also accounts for uncertainty in each of following: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. By calculating the expected accelerations from considered earthquake sources, the program calculates the total average annual expected number of occurrences of site acceleration greater than a specified value. We utilized acceleration-attenuation relationships suggested by Boore-Atkinson (2008), Campbell-Bozorgnia (2008) and Chiou-Youngs (2007) in the analysis. Table 5.2.2 presents the site-specific probabilistic seismic hazard parameters including acceleration-attenuation relationships and the probability of exceedence.

TABLE 5.2.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson, 2008 (g)	Campbell-Bozorgnia, 2008 (g)	Chiou-Youngs, 2008 (g)
2% in a 50 Year Period	0.37	0.36	0.40
5% in a 50 Year Period	0.27	0.26	0.28
10% in a 50 Year Period	0.20	0.19	0.20

The California Geologic Survey (CGS) provides a program for calculating the ground motion for a 10 percent of probability of exceedence in a 50-year period based on an average of several attenuation relationships. Table 5.2.3 presents the calculated results from the Probabilistic Seismic Hazards Mapping Ground Motion Page from the CGS website.

TABLE 5.2.3
PROBABILISTIC SITE PARAMETERS FOR SELECTED FAULTS
CALIFORNIA GEOLOGIC SURVEY

Calculated Acceleration (g) Firm Rock	Calculated Acceleration (g) Soft Rock	Calculated Acceleration (g) Alluvium
0.24	0.26	0.30

While listing peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including the frequency and duration of motion and the soil conditions underlying the site. Seismic design of the structures should be performed in accordance with the 2010 California Building Code (CBC) guidelines currently adopted by the City of San Diego.

5.3 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects that earth surface. The potential for ground rupture is considered to be very low due to the absence of active faults at the subject site.

5.4 Liquefaction

Liquefaction typically occurs in saturated, cohesionless soils with relative densities are less than about 70 percent. If these criteria are met strong ground motion could result in a rapid increase in pore-water pressure resulting in a significant loss in soil bearing capacity and settlement. If the previous criteria are met, a seismic event could result in a rapid pore-water pressure increase from the earthquake-generated ground accelerations. Seismically induced settlement may occur whether the potential for liquefaction exists or not. The potential for liquefaction and seismically induced settlement occurring within the site soil is considered to be very low due to the dense nature of the formational materials and lack of permanent, shallow groundwater.

5.5 Landslides

Examination of stereoscopic aerial photographs in our files, our geologic reconnaissance, and review of available geotechnical and geologic reports for the site vicinity indicate that landslides are not present at the property or at a location that could impact the site. The risk associated with landsliding hazard is low.

5.6 Tsunamis and Seiches

The site is approximately 8 miles from the Pacific Ocean at an elevation over 400 feet above MSL. The risk associated with inundation hazard due to tsunamis is low.

The site is location approximately 0.8 mile from Miramar Lake; however, there is no direct drainage path between the site and the reservoir. The risk associated with inundation hazard associated with seiche is low.

5.7 Subsidence

Based on the subsurface soil conditions encountered during our field investigation, the risk associated with ground subsidence hazard is low.

5.8 Flooding

The site is not located within a drainage or floodplain; therefore, the risk associated with flooding hazard is low.

6. BOREHOLE PERCOLATION TESTING

Three borehole percolation tests were performed at the two locations shown on Figure 2. The borings were excavated using a Canterra 450 air-percussion drill rig using a 6-inch-diameter bit. The borings were drilled to a depth of approximately 80 feet. No samples were retrieved during drilling due to the rocky nature of the geologic formation (Tertiary-age Stadium Conglomerate).

Two-inch-diameter, PVC casing was installed in the boreholes. Water was injected into the borehole and the rate of change in head over time was measured and recorded using an In-Situ Level TROLL 700 transducer coupled with an In-Situ RuggedReader handheld PC. After initial testing, Boring P-2 was re-drilled to an approximate depth of 100 feet below ground surface and re-tested.

Testing was performed by filling the borehole to a height corresponding to a depth near 50 feet. The drop in water height over a period of 4 to 6 hours was then measured. Figure 3 presents the percolation test results.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 No soil or geologic conditions were encountered during our study that would preclude the development of the property as presently planned, provided the recommendations of this report are followed.

7.1.2 Additional geotechnical drilling should be performed for the southern portion of the property and a final geotechnical investigation prepared prior to City submittal for a grading permit.

7.1.3 Subsurface conditions observed in the borings are expected to be consistent across the site; however, some variation in subsurface conditions may be possible.

7.1.4 The results of our field investigation indicate the site is underlain by very old paralic deposits and the Stadium Conglomerate Formation. A minor amount of undocumented fill was encountered in one boring. The undocumented fill is not suitable for the support of structural improvements and should be removed and recompacted. The very old paralic deposits and Stadium Conglomerate are suitable for support of the proposed development.

7.1.5 Based on our field investigation and laboratory tests results, the upper 4 feet of soil beneath existing grade has a "very low" to "medium" expansion potential. However, highly expansive soils are common in the upper portion of the very old paralic deposits in this area, which will require special design considerations, if present.

7.1.6 We did not encounter groundwater to a depth of 100 feet below existing ground surface. Groundwater is not expected to affect construction as currently proposed.

7.1.7 With the exception of possible strong seismic shaking, no significant geologic hazards were observed or are known to exist on the site that would adversely affect the site. No special seismic design considerations, other than those recommended herein, are required.

7.1.8 The proposed buildings can be supported on conventional shallow foundations bearing on properly compacted fill, very old paralic deposits, or Stadium Conglomerate formation.

7.2 Excavation and Soil Characteristics

7.2.1 Refusal to the drill auger was encountered during the field investigation. Refusal was a result of cemented soils as well as gravel and cobbles within the very old paralic deposits and Stadium Conglomerate. Based on our experience in the area, normal conventional excavating equipment is suitable to excavate on-site soils. However, a very heavy effort will be required with the possibility of rock breaking hammers to facilitate excavation. Excavations could generate oversize cemented chunks that require exporting.

7.2.2 The soil encountered in the field investigation is considered to be “expansive” (expansion index [EI] greater than 20) as defined by 2013 California Building Code (CBC) Section 1803.5.3. Table 7.2.1 presents soil classifications based on the expansion index. We expect a majority of the soil encountered possess a “low” to “medium” expansion potential (expansion index of 90 or less).

TABLE 7.2.1
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

<table>
<tr><th>Expansion Index (EI)</th><th>Expansion Classification</th><th>2013 CBC
Expansion Classification</th></tr>
<tr><td>0 – 20</td><td>Very Low</td><td>Non-Expansive</td></tr>
<tr><td>21 – 50</td><td>Low</td><td rowspan="4">Expansive</td></tr>
<tr><td>51 – 90</td><td>Medium</td></tr>
<tr><td>91 – 130</td><td>High</td></tr>
<tr><td>Greater Than 130</td><td>Very High</td></tr>
</table>

7.2.3 We performed laboratory tests on samples of the site materials to evaluate the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate content tests are presented in Appendix B and indicate that the on-site materials at the locations tested possess “Not Applicable” to “Moderate” sulfate exposure to concrete structures as defined by 2013 CBC Section 1904 and ACI 318-08 Sections 4.2 and 4.3. Table 7.2.2 presents a summary of concrete requirements set forth by 2013 CBC Section 1904 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

TABLE 7.2.2
REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Sulfate Exposure	Exposure Class	Water-Soluble Sulfate Percent by Weight	Cement Type	Maximum Water to Cement Ratio by Weight	Minimum Compressive Strength (psi)
Not Applicable	S0	0.00-0.10	--	--	2,500
Moderate	S1	0.10-0.20	II	0.50	4,000
Severe	S2	0.20-2.00	V	0.45	4,500
Very Severe	S3	> 2.00	V+Pozzolan or Slag	0.45	4,500

7.2.4 We performed laboratory tests on selected samples to check the corrosion potential to subsurface metal structures. A site is considered corrosive if the chloride concentration is 500 part per million (ppm) or greater, sulfate concentration is 2,000 ppm (0.2%) or greater, or the pH is 5.5 or less according to Caltrans *Corrosion Guidelines,* dated September 2003. The laboratory test results are presented in Appendix B. Based on the pH and resistivity test results, the soils may be corrosive to buried metal.

7.2.5 Geocon Incorporated does not practice in the field of corrosion engineering; therefore, further evaluation by a corrosion engineer may be needed to incorporate the necessary precautions to avoid premature corrosion of underground pipes and buried metal in direct contact with soil.

7.2.6 Laboratory organic content test results indicate an organic content ranging from 2.1 percent to 2.7 percent in the samples tested for this study. These values are considered relatively low and should not impact the planned development. The on-site soil is considered suitable for reuse as fill.

7.3 Slope Stability

7.3.1 Based on the referenced grading plan, only minor slopes cut and fill slopes (5 feet high or less) are planned. Planned cut and fill slopes are considered stable with respect to gross and surficial stability.

7.3.2 Along the north side of the site a retaining wall will be constructed in the slope to extend the flat pad. Additionally, cuts into the northern slope will be made to construct the proposed Park Lift structure. Slope stability analyses were performed on the existing native cut slopes along the north and west sides of the property utilizing the proposed grades shown on Reference 6. We used average drained direct shear strength parameters from laboratory tests performed for this study. Based on our analyses, existing native slopes on the north and west sides of the property have calculated factors of safety of at least 1.5 under static conditions for both deep-seated failure and shallow sloughing conditions. Generalized deep-seated and surficial slope stability calculations are presented on Figures 4 and 5.

7.3.3 Slope stability analysis using the computer program SlopeW were performed for the slope at the northwest corner of the property where the retaining wall will be constructed to extend the pad over the slope. The analysis is shown on Figure 6 and indicates the slope under proposed conditions has a factor of safety greater than 1.5.

7.3.4 It is recommended that all new cut slope excavations be observed during grading by an engineering geologist to assess that soil and geologic conditions do not differ significantly from those anticipated.

7.3.5 The outer 15 feet (or a distance equal to the height of the slope, whichever is less) of fill slopes should be composed of properly compacted granular "soil" fill to reduce the potential for surficial sloughing. In general, soils with an Expansion Index of less than 90 with at least 40 percent sand size particles should be acceptable as "granular" fill. Soils of questionable strength to satisfy surficial stability should be tested in the laboratory for acceptable drained shear strength.

7.3.6 All new fill slopes should be overbuilt at least 3 feet horizontally, and then cut to the design finish grade. As an alternative, fill slopes may be compacted by back-rolling at vertical intervals not to exceed 4 feet and then track-walking with a D-8 dozer, or equivalent, such that the fill soils are uniformly compacted to at least 90 percent relative compaction to the face of the finished slope.

7.3.7 All slopes should be landscaped with drought-tolerant vegetation, having variable root depths and requiring minimal landscape irrigation. In addition, all slopes should be drained and properly maintained to reduce erosion.

7.4 Grading

7.4.1 We expect grading for the building pads to consist of cuts and fills of less than 5 feet from existing grades. Grading should be performed in accordance with the *Recommended*

Grading Specifications in Appendix D. Where the recommendations of this report conflict with Appendix D, the recommendations of this section take precedence.

7.4.2 Earthwork should be observed, and compacted fill tested by representatives of Geocon Incorporated.

7.4.3 Grading should commence with the removal of vegetation and existing improvements from areas to be graded. Deleterious debris such as wood, asphalt, brick, plastic, and concrete should be exported from the site and not be mixed with fill soils. Existing underground improvements that will be abandoned should be removed and the resulting depressions properly backfilled in accordance with the procedures described herein.

7.4.4 Undocumented fill should be removed and recompacted prior to placing fill or constructing improvements.

7.4.5 Prior to placing fill, the exposed ground surface should be scarified approximately 12 inches, moisture conditioned as necessary, and compacted to 90 percent of the maximum dry density as determined by ASTM D1557 at optimum moisture content to 3 percent above optimum moisture content. Where expansive clay soils are present, the soils should be moisture conditioned to 3 to 5 percent over optimum moisture content and compacted to 90 percent of the maximum dry density as determined by ASTM D1557.

7.4.6 In cut areas where concrete hardscape will be constructed and expansive soils are present at finish grade, we recommend the upper 12 inches of soil be removed, moisture conditioned to 3 to 5 percent above optimum moisture content and compacted to 90 percent of the maximum dry density as determined by ASTM D1557. Prior to placing fill, the bottom of the overexcavation should be scarified, moisture conditioned to 3 to 5 percent over optimum moisture content and compacted.

7.4.7 Where cut-fill transitions, cemented sandstone (hardrock), or highly expansive soil is present within the upper 3 feet of building pads, the building pads should be undercut to a depth of at least 3 feet, or 1 foot below bottom of footing, whichever is deeper and replaced as compacted fill. The undercut should be sloped at a gradient of 1 percent toward the street to provide drainage for moisture migration along the contact between the native soil and compacted fill. Undercuts should extend to a horizontal distance of at least 5 feet beyond the edge of the building pad.

7.4.8 Soils used as fill should be free of deleterious debris. Fill and backfill soils should be placed in horizontal layers approximately 8 inches thick, moisture conditioned, and compacted to 90 percent relative compaction near to or slightly above optimum moisture content as determined by ASTM D 1557. The upper 12 inches of sandy fill beneath the building pad or subgrade surface should be compacted to at least 95 percent relative compaction, as determined by ASTM D1557. Where clays are present, the soils should be compacted to at least 90 percent of the maximum dry density at 3 to 5 percent above optimum moisture content.

7.4.9 In dry weather, proper moisture conditioning of the soil will be required during building pad grading and prior to placing hardscape improvements. Prior to constructing improvements, subgrade soils should be moisture conditioned to at least optimum moisture content and recompacted. Subgrade moisture content should be maintained until placement of concrete. In wet weather construction, proper mixing of the soils will be required such that the fill and subgrade soils are not excessively wet and generally have moisture content between optimum and 3 percent above optimum moisture content.

7.5 Settlement Monitoring

7.5.1 Due to the shallow depth of planned new fill, settlement monitoring is not required for this project.

7.6 Seismic Design Criteria

7.6.1 We used the computer program *U.S. Seismic Design Maps*, provided by the USGS. Table .6.1 summarizes site-specific design criteria obtained from the 2013 California Building Code (CBC; Based on the 2012 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements should be designed using a Site Class C. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2013 CBC and Table 20.3-1 of ASCE 7-10. The values presented in Table 7.6.1 are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 7.6.1
2013 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2013 CBC Reference
Site Class	C	Table 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	0.913 g	Figure 1613..3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.355 g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.035	Table 1613.3.3(1)
Site Coefficient, F_V	1.445	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	0.944 g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	0.513 g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	0.630 g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.342 g	Section 1613.3.4 (Eqn 16-40)

7.6.2 Table 7.6.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

TABLE 7.6.2
2013 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.350 g	Figure 22-7
Site Coefficient, F_{PGA}	1.050	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.368 g	Section 11.8.3 (Eqn 11.8-1)

7.6.3 Conformance to the criteria in Tables 7.6.1 and 7.6.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

7.7 Foundations

7.7.1 The site is suitable for the use of shallow foundations. To eliminate a cut-fill transition and non-uniform bearing conditions, we recommend all new building footings bear either on the very old paralic deposits or Stadium Conglomerate, or completely on compacted fill where undercuts are performed. As an alternative to undercutting building pads due to cut/fill transitions, footings can be deepened through the fill to the native very old paralic deposits or Stadium Conglomerate. An evaluation of areas where transitions are expected or deepened footings may be possible can be performed once grading plans have been prepared.

7.7.2 Foundations can consist of continuous strip footings and/or isolated spread footings. Continuous footings should be at least 12 inches wide and extend at least 24 inches below lowest adjacent pad grade. Isolated spread footings should have a minimum width and depth of 2 feet. Steel reinforcement for continuous footings should consist of at least four No. 5 steel reinforcing bars placed horizontally in the footings; two near the top and two near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer. A typical wall/column footing dimension detail is presented on Figure 7.

7.7.3 The minimum reinforcement recommended herein is based on soil characteristics only (EI of 90 or less) and is not intended to replace reinforcement required for structural considerations.

7.7.4 Foundations as proportioned above may be designed for an allowable soil bearing pressure of 2,500 pounds per square foot (psf). The recommended allowable soil bearing pressures may be increased by 300 psf and 500 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable soil bearing pressure of 4,000 psf.

7.7.5 The values presented herein are for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

7.7.6 Settlement due to footing loads conforming to the above recommended allowable soil bearing pressures are expected to be less than 1-inch total and ½-inch differential over a span of 40 feet.

7.7.7 The foundation dimensions and minimum reinforcement recommendations presented above are based on soil conditions only and are not intended to be used in lieu of those required for structural purposes.

7.7.8 Footings should not be located within 7 feet of the tops of slopes. Footings that must be located within this zone should be extended in depth such that the outer bottom edge of the footing is at least 7 feet horizontally from the face of the finished slope.

7.7.9 No special subgrade presaturation (i.e., flooding to saturate soils to foundation depths to mitigate highly expansive soils) is deemed necessary prior to placement of concrete. However, the slab and foundation subgrade should be sprinkled as necessary to maintain a moist condition as would be expected in any concrete placement.

7.7.10 Foundation excavations should be observed by the Geotechnical Engineer (a representative of Geocon Incorporated) prior to the placement of reinforcing steel and concrete to verify that the exposed soil conditions are consistent with those expected and have been extended to appropriate bearing strata.

7.8 Concrete Slabs-On-Grade

7.8.1 New concrete slabs-on-grade should be at least 5 inches thick and be reinforced with No. 3 steel, reinforcing bars placed 18 inches on center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slabs for supporting planned loading. Thicker concrete slabs may be required for heavier loads.

7.8.2 A vapor retarder should be placed beneath slabs having moisture-sensitive floor coverings or that may be used to store moisture-sensitive materials. The vapor retarder can placed directly on the slab sub-base. The project architect should specify the type of vapor retarder used based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* (ACI 302.2R-06). As indicated in the ACI guide, reduced joint spacing, a low shrinkage mix design, or other measures to minimize slab curl will be required where the concrete is placed directly on the vapor barrier.

7.8.3 The project foundation engineer or architect should determine the thickness of bedding sand below the slab. In general, 3 to 4 inches of sand bedding is typically used. Geocon should be contacted to provide recommendations if the bedding sand is thicker than 6 inches.

7.8.4 Exterior slabs and hardscape not subject to vehicle loads should be at least 4 inches thick and reinforced No. 3 steel, reinforcing bars placed 24 inches on center in both directions at the slab midpoint. Prior to construction of slabs, the subgrade should be moisture conditioned to at least optimum moisture content and compacted to a dry density of at least 90 percent of the laboratory maximum dry density as determined by the current version of ASTM D1557. Where expansive clay soils are present at finish grade, the subgrade soil should be moisture conditioned to 3 to 5 percent above optimum moisture content and compacted.

7.8.5 The foundation design engineer should provide appropriate concrete mix design criteria and curing measures to assure proper curing of the slab by reducing the potential for rapid moisture loss and subsequent cracking and/or slab curl. We suggest that the foundation design engineer present the concrete mix design and proper curing methods on the foundation plan. It is critical that the foundation contractor understands and follows the specifications presented on the foundation plan.

7.8.6 Concrete slabs should be provided with adequate construction joints and/or expansion joints to control shrinkage cracking. The project structural engineer should determine the spacing of the control joints based on the intended slab usage, type and extent of floor covering materials, slab thickness and reinforcement. The structural engineer should consider using the American Concrete Institute criteria when establishing crack control spacing patterns.

7.8.7 The recommendations presented herein are intended to reduce the potential for cracking of slabs and foundations as a result of differential movement. However, even with the incorporation of the recommendations presented herein, foundations and slabs-on-grade will still exhibit some cracking. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence can be reduced and/or controlled by: (1) limiting the slump of the concrete; (2) the use of crack-control joints; and (3) proper concrete placement and curing. Crack-control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Cement Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

7.9 Conventional Retaining Walls

7.9.1 Retaining walls that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall) at the top of the wall and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 50 pcf. Where the backfill will be inclined at 2:1 (horizontal:vertical), an active soil pressure of 65 pcf is recommended. These pressures assume on-site soils will be utilized as wall backfill. Highly expansive soil should not be used as backfill material behind retaining walls. Soil placed for retaining wall backfill should have an Expansion Index less than 90. Laboratory tests should be performed on soils to be used as wall backfill to assess their suitability for use.

7.9.2 Soil contemplated for use as retaining wall backfill, including import materials, should be identified in the field prior to backfill. At that time Geocon Incorporated should obtain samples for laboratory testing to evaluate its suitability. Modified lateral earth pressures may be necessary if the backfill soil does not meet the required expansion index or shear strength. City or regional standard wall designs, if used, are based on a specific active lateral earth pressure and/or soil friction angle. In this regard, on-site soil to be used as backfill may or may not meet the values for standard wall designs. Geocon Incorporated should be consulted to assess the suitability of the on-site soil for use as wall backfill if standard wall designs will be used.

7.9.3 Where walls are restrained from movement at the top, an active soil pressure equivalent to the pressure exerted by a fluid density of 70 pcf should be used for horizontal backfill. For retaining walls subject to vehicular loads within a horizontal distance equal to two-thirds the wall height, a surcharge equivalent to 2 feet of fill soil should be added to the wall.

7.9.4 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and should be waterproofed as required by the project architect. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The above recommendations assume a properly compacted granular (EI of less than 50) free-draining backfill material with no hydrostatic forces or imposed surcharge load. Figure 8 presents a typical retaining wall drainage detail. If conditions different than those described are expected, or if specific drainage details are desired, Geocon Incorporated should be contacted for additional recommendations.

7.9.5 The structural engineer should determine the seismic design category for the project. If the project possesses a seismic design category of D, E, or F, the proposed retaining walls should be designed with seismic lateral pressure. A seismic load of 19H should be used for design on walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2013 CBC. The seismic load is dependent on the retained height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the base of the wall and zero at the top of the wall. We used the peak site acceleration, PGA_M, of 0.368 g calculated from ASCE 7-10 Section 11.8.3 and applied a pseudo-static coefficient of 0.3.

7.9.6 In general, wall foundations having a minimum depth and width of one foot founded on compacted fill may be designed for an allowable soil bearing pressure of 2,500 psf, provided the soil within 3 feet below the base of the wall consists of compacted fill with an Expansion Index of less than 90. The allowable soil bearing pressures can be increased by an additional 300 and 500 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable bearing capacity of 4,000 psf for compacted fill. The proximity of the foundation to the top of a slope steeper than 3:1 could impact the allowable soil bearing pressure. Therefore, Geocon Incorporated should be consulted where such a condition is anticipated.

7.9.7 For resistance to lateral loads, an allowable passive earth pressure equal to the pressure exerted by a fluid with a density of 300 pcf is recommended for footings or shear keys poured neat against properly compacted granular fill soils or undisturbed native bedrock. The allowable passive pressure assumes that there is a horizontal surface extending at least 5 feet or three times the height of the surface generating the passive pressure, whichever is greater. The upper 12 inches of soil should be excluded from the lateral resistance calculation where the soil is not covered by floor slabs or pavements. Where footings are located on a sloping surface, the recommended lateral earth pressure should be reduced to 150 pcf.

7.9.8 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.35 should be used for design.

7.9.9 The recommendations presented above are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 15 feet. In the event that walls higher than 15 feet are planned, Geocon Incorporated should be consulted for additional recommendations.

7.10 Preliminary Pavement Recommendations

7.10.1 Preliminary pavement recommendations for the streets and parking stalls are provided below. The final pavement sections should be based on the R-Value of the subgrade soil encountered at final subgrade elevation. Based on our experience of soils in the area, we have assumed an R-Value of 5 for the subgrade soil. Preliminary flexible pavement sections are presented in Table 7.10.1. Pavement sections are provided below for varying traffic indices. The project civil engineer or traffic engineer should determine the appropriate Traffic Index (TI) or traffic loading expected on the project for the various pavement areas that will be constructed.

TABLE 7.10.1
PRELIMINARY ASPHALT CONCRETE PAVEMENT SECTIONS

Traffic Index	Pavement Design Section	
	Asphalt Concrete (inches)	Class 2 Base (inches)
5	3	10
5.5	3	12
6	3.5	12.5
6.5	4	13.5
7	4	15.5
7.5	4.5	16.5
8	5	17.4
8.5	5	19.5

7.10.2 Asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction* (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02B of the *Standard Specifications of the State of California, Department of Transportation* (Caltrans).

7.10.3 Prior to placing base material, the subgrade should be scarified, moisture conditioned and recompacted to a minimum of 95 percent relative compaction. The depth of compaction should be at least 12 inches. The base material should be compacted to at least 95 percent relative compaction. Asphalt concrete should be compacted to a density of at least 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.

7.10.4 A rigid Portland Cement concrete (PCC) pavement section should be placed in driveway entrance aprons, trash bin loading/storage areas and loading dock areas. The concrete pad for trash truck areas should be large enough such that the truck wheels will be positioned on the concrete during loading. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R-08 Guide for Design and Construction of Concrete Parking Lots using the parameters presented in Table 7.10.2.

TABLE 7.10.2
PRELIMINARY RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	100 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	A and C
Average daily truck traffic, ADTT	1 and 100

7.10.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 7.10.3.

TABLE 7.10.3
PRELIMINARY RIGID PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Automobile Areas (TC=A, ADTT = 1)	5
Heavy Truck and Fire Lane Areas (TC=C, ADTT = 100)	7

7.10.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. This pavement section is based on a minimum concrete compressive strength of approximately 3,200 psi (pounds per square inch).

7.10.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, at the slab edge and taper back to the recommended slab thickness 3 feet behind the face of the slab (e.g., a 7-inch-thick slab would have a 9-inch-thick edge). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the exception of loading docks, trash bin enclosures, and dowels at construction joints as discussed below.

7.10.8 Loading aprons, such as those used for trash bin enclosures and loading docks, should be constructed using Portland cement concrete as recommended above for heavy truck traffic areas. The pavement should be reinforced with a minimum of No. 3 steel reinforcing bars spaced 24 inches on center in both directions placed at the slab midpoint. The concrete should extend out from the loading dock or trash bin such that both the front and rear wheels of the truck will be located on reinforced concrete pavement when loading.

7.10.9 To control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab. Crack-control joints should not exceed 30 times the slab thickness with a maximum spacing of 15 feet (e.g., a 7-inch-thick slab would have a 15-foot spacing pattern) and should be sealed with an appropriate sealant to prevent the migration of water through the control joint to the subgrade materials. The depth of the crack-control joints should be determined by the referenced ACI report.

7.10.10 To provide load transfer between adjacent pavement slab sections, a trapezoidal-keyed construction joint should be installed. As an alternative to the keyed joint, dowelling is recommended between construction joints. As discussed in the referenced ACI guide, dowels should consist of smooth, ⅞-inch-diameter reinforcing steel 14 inches long embedded a minimum of 6 inches into the slab on either side of the construction joint. Dowels should be located at the midpoint of the slab, spaced at 12 inches on center and lubricated to allow joint movement while still transferring loads. The project structural engineer may provide alternative recommendations for load transfer.

7.10.11 The performance of pavement is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

7.11 Bio-Retention Basin and Bio-Swale Recommendations

7.11.1 The site is underlain by very old paralic deposits and formational soils that are expected to inhibit infiltration due to their dense and fine grained nature. Based on our experience with similar soils, the on-site soils have low permeability and generally low infiltration characteristics. It is our opinion the site in unsuitable for surface infiltration of storm-water runoff.

7.11.2 Any bio-retention basins, bioswales, and bio-remediation areas should be designed by the project civil engineer and reviewed by Geocon Incorporated. Typically, bioswales consist of a surface layer of vegetation underlain by clean sand. A subdrain should be provided beneath the sand layer. Prior to discharging into the storm drain pipe or other approved outlet structure, a seepage cutoff wall should be constructed at the interface between the subdrain and storm drainpipe. The concrete cut-off wall should extend at least 6 inches beyond the perimeter of the gravel-packed subdrain system.

7.11.3 Distress may be caused to existing or planned improvements and properties located hydrologically downgradient or adjacent to these devices. The distress depends on the amount of water to be detained, its residence time, soil permeability, and other factors. We have performed a hydrogeology study at the site. Down-gradient and adjacent properties may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other impacts as a result of water infiltration. Due to site soil and geologic conditions (i.e. compacted fills), permanent bio-retention basins should be lined with an impermeable barrier, such as 15-mil HDPE, to prevent water infiltration into the underlying compacted fill.

7.11.4 The landscape architect should be consulted to provide the appropriate plant recommendations if a vegetated swale is to be implemented. If drought resistant plants are not used, irrigation may be required.

7.12 Deep Drywell for Infiltration of Storm Water

7.12.1 Percolation testing for drywells is provided in Section 6 of this report. If drywells will be used to infiltrate storm water runoff, the zone of infiltration should be at least 50 feet below the existing ground surface (minimum elevation 460 feet MSL) to reduce the potential for seepage water to the face of the slopes, utility trenches, or impacting down gradient properties and improvements. Infiltration into soils above a depth of 50 feet from existing ground surface should not be allowed. In our opinion, infiltration at depths greater than 50 feet below existing grade will not result in slope instability or seepage into utility trenches, adjacent pavement areas, or impact adjacent properties.

7.13 Site Drainage and Moisture Protection

7.13.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2010 CBC 1803.3 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

7.13.2 In the case of basement walls or building walls retaining landscaping areas, a water-proofing system should be used on the wall and joints, and a Miradrain drainage panel (or similar) should be placed over the waterproofing. The project architect or civil engineer should provide detailed specifications on the plans for all waterproofing and drainage.

7.13.3 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

7.14 Grading and Foundation Plan Review

7.14.1 Geocon Incorporated should review the grading and foundation plans for the project prior to final design submittal to determine if additional analysis and/or recommendations are required.

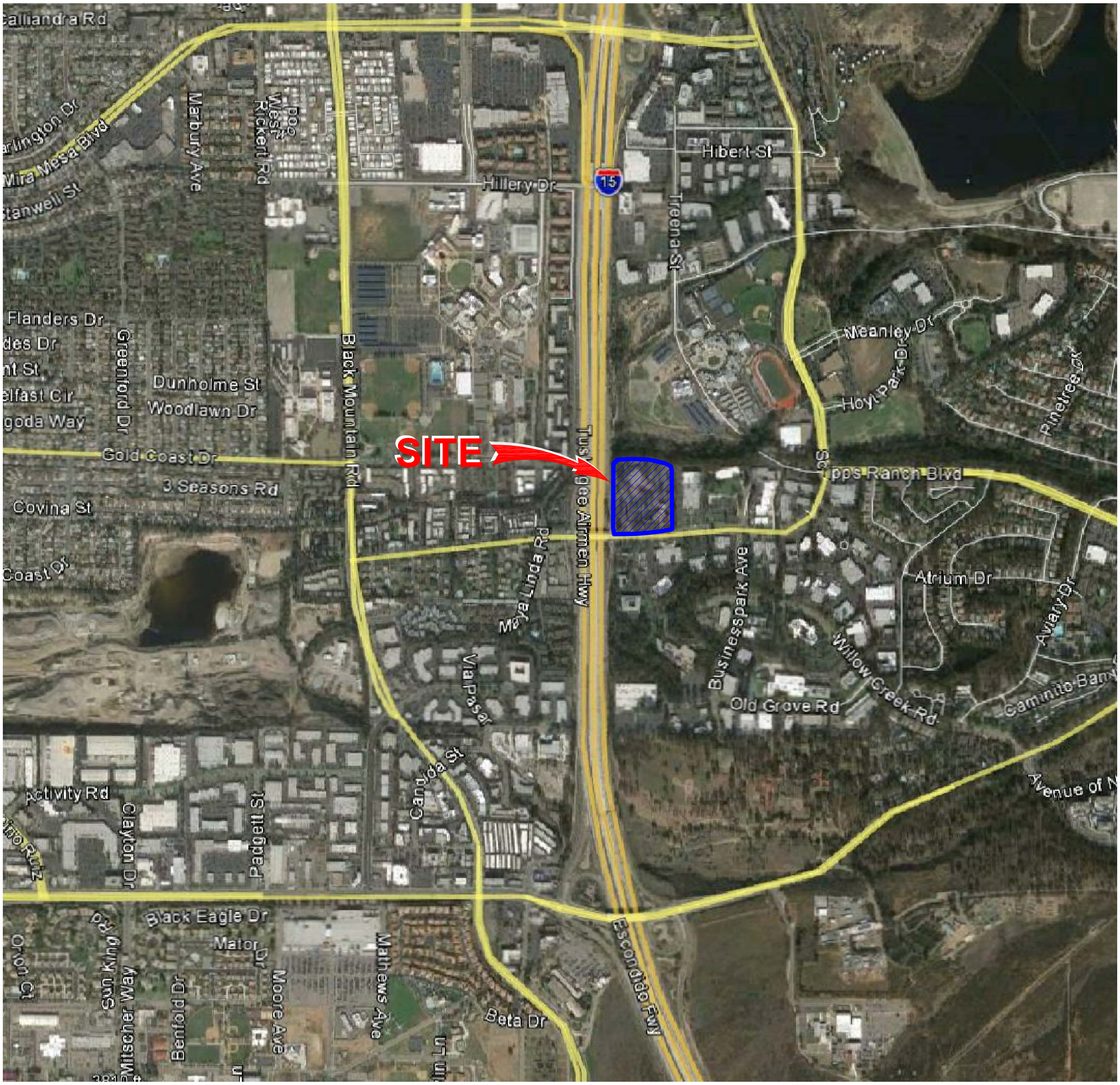
LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.



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N

NO SCALE

VICINITY MAP

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GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

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CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 10 - 12 - 2015	PROJECT NO. G1488 - 42 - 03	FIG. 1

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

GEOCON LEGEND

B-19 ....APPROX. LOCATION OF BORING

GB-8 ....APPROX. LOCATION OF BORING (Geotechnics, 2006)

P-1 ....APPROX. LOCATION OF BOREHOLE PERCOLATION TEST BORING

A —— A' ....APPROX. LOCATION OF SLOPE STABILITY CROSS SECTION

0' 50' 100' 150' 200'

SCALE 1"= 100'

BORING LOCATION MAP

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PROJECT NO. G1488 - 42 - 03

FIGURE 2

DATE 10 - 12 - 2015

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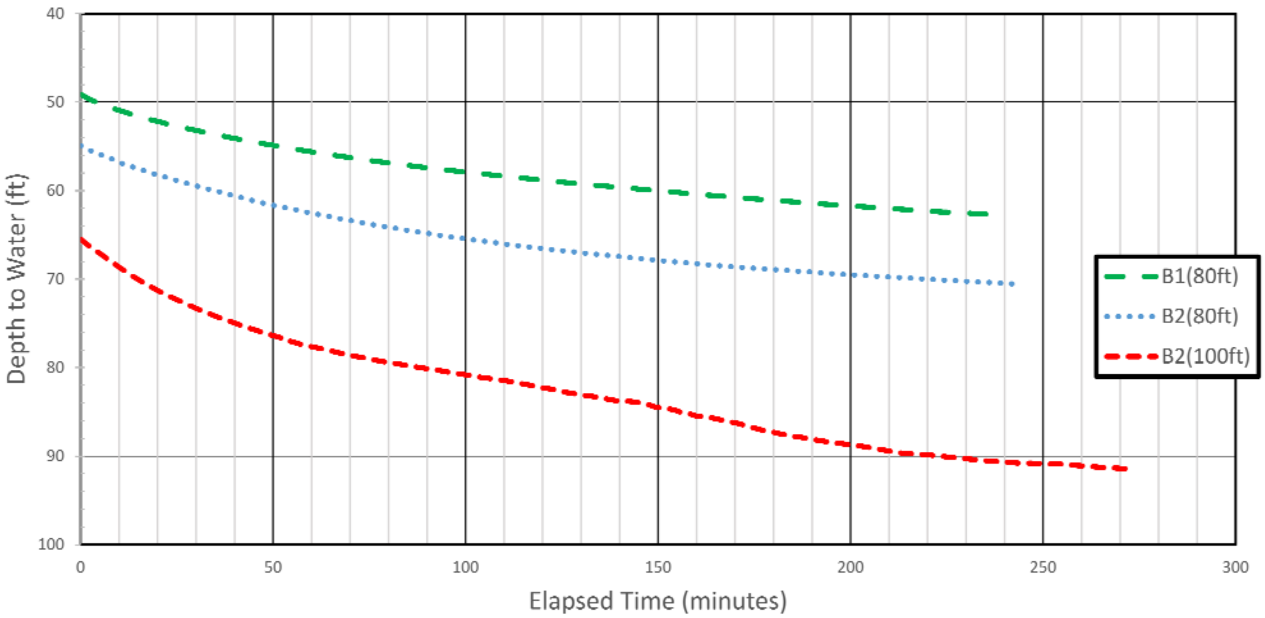
Plotted:10/12/2015 2:11PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1488-42-03 (Carroll Canyon Mix Use)\SHEETS\G1488-42-03 Site Plan.dwg



PERCOLATION TEST

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CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 10 - 12 - 2015	PROJECT NO. G1488 - 42 - 03	FIG. 3

ASSUMED CONDITIONS :

SLOPE HEIGHT	H	= 50 feet
SLOPE INCLINATION	1.5 : 1	(Horizontal : Vertical)
TOTAL UNIT WEIGHT OF SOIL	γ_t	= 130 pounds per cubic foot
ANGLE OF INTERNAL FRICTION	ϕ	= 35 degrees
APPARENT COHESION	C	= 400 pounds per square foot
NO SEEPAGE FORCES		

ANALYSIS :

$\gamma_{c\phi} = \frac{\gamma_t H \tan\phi}{C}$		EQUATION (3-3), REFERENCE 1
$FS = \frac{NcfC}{\gamma_t H}$		EQUATION (3-2), REFERENCE 1
$\lambda_{c\phi}$	= 11.4	CALCULATED USING EQ. (3-3)
Ncf	= 28	DETERMINED USING FIGURE 10, REFERENCE 2
FS	= 1.72	FACTOR OF SAFETY CALCULATED USING EQ. (3-2)

REFERENCES :

1......Janbu, N., Stability Analysis of Slopes with Dimensionless Parameters, Harvard Soil Mechanics, Series No. 46, 1954

2......Janbu, N., Discussion of J.M. Bell, Dimensionless Parameters for Homogeneous Earth Slopes, Journal of Soil Mechanics and Foundation Design, No. SM6, November 1967.

SLOPE STABILITY ANALYSIS

GEOCON INCORPORATED

GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974

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CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 10 - 12 - 2015	PROJECT NO. G1488 - 42 - 03	FIG. 4

ASSUMED CONDITIONS :

SLOPE HEIGHT	H	= Infinite
DEPTH OF SATURATION	Z	= 3 feet
SLOPE INCLINATION	1.5 : 1	(Horizontal : Vertical)
SLOPE ANGLE	i	= 33.8 degrees
UNIT WEIGHT OF WATER	γ_w	= 62.4 pounds per cubic foot
TOTAL UNIT WEIGHT OF SOIL	γ_t	= 130 pounds per cubic foot
ANGLE OF INTERNAL FRICTION	ϕ	= 35 degrees
APPARENT COHESION	C	= 400 pounds per square foot

SLOPE SATURATED TO VERTICAL DEPTH Z BELOW SLOPE FACE

SEEPAGE FORCES PARALLEL TO SLOPE FACE

ANALYSIS :

$$FS = \frac{C + (\gamma_t - \gamma_w)\ Z \cos^2 i \tan \phi}{\gamma_t\ Z \sin i \cos i} = 2.76$$

REFERENCES :

1......Haefeli, R. *The Stability of Slopes Acted Upon by Parallel Seepage*, Proc. Second International Conference, SMFE, Rotterdam, 1948, 1, 57-62

2......Skempton, A. W., and F.A. Delory, *Stability of Natural Slopes in London Clay*, Proc. Fourth International Conference, SMFE, London, 1957, 2, 378-81

SURFICIAL SLOPE STABILITY ANALYSIS

GEOCON INCORPORATED

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CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 10 - 12 - 2015	PROJECT NO. G1488 - 42 - 03	FIG. 5

Project Name: Carroll Canyon Mixed Use
Project No.: G1488-42-03

SLOPE/W: Spencer
Slip Surface Option: Entry and Exit

Qcf	125 pcf	300 psf	30 °
Tst	135 pcf	400 psf	35 °

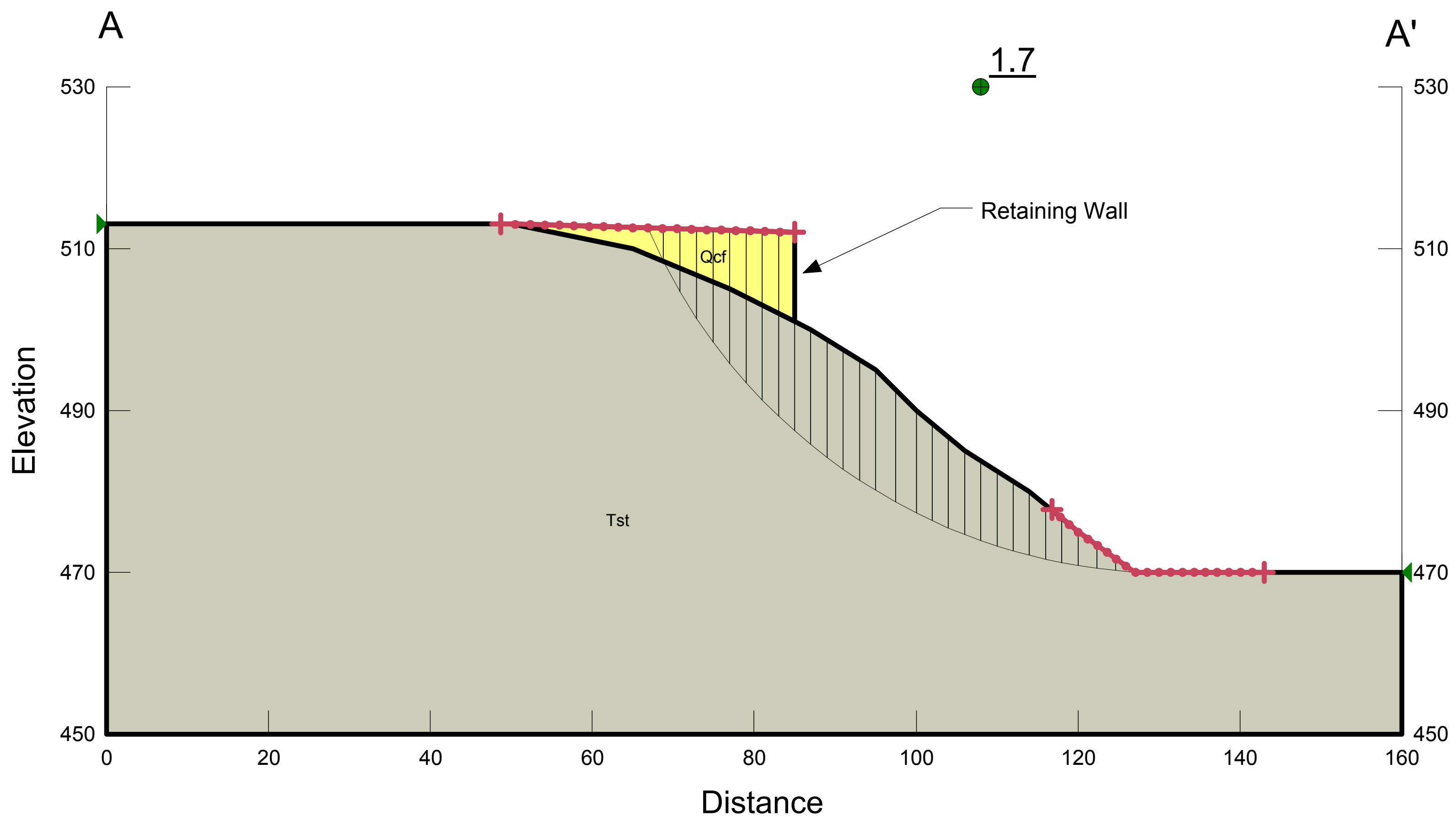
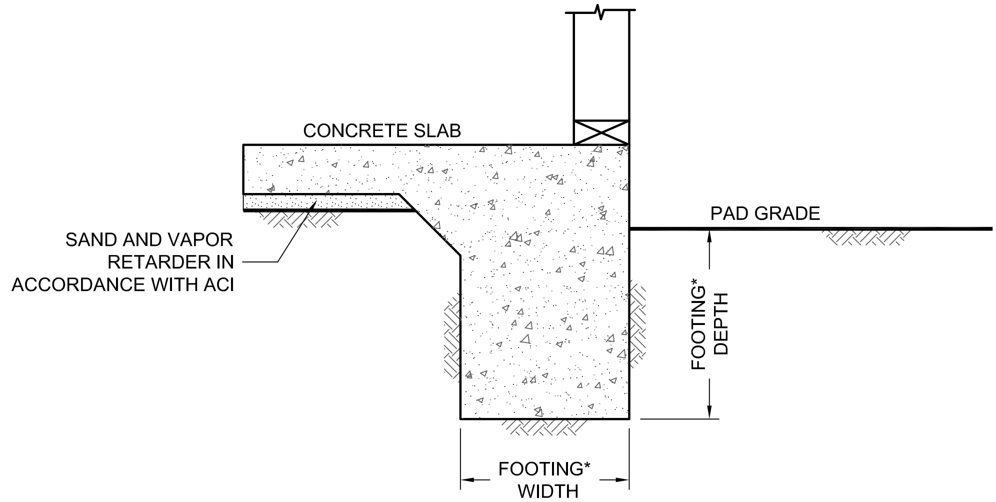
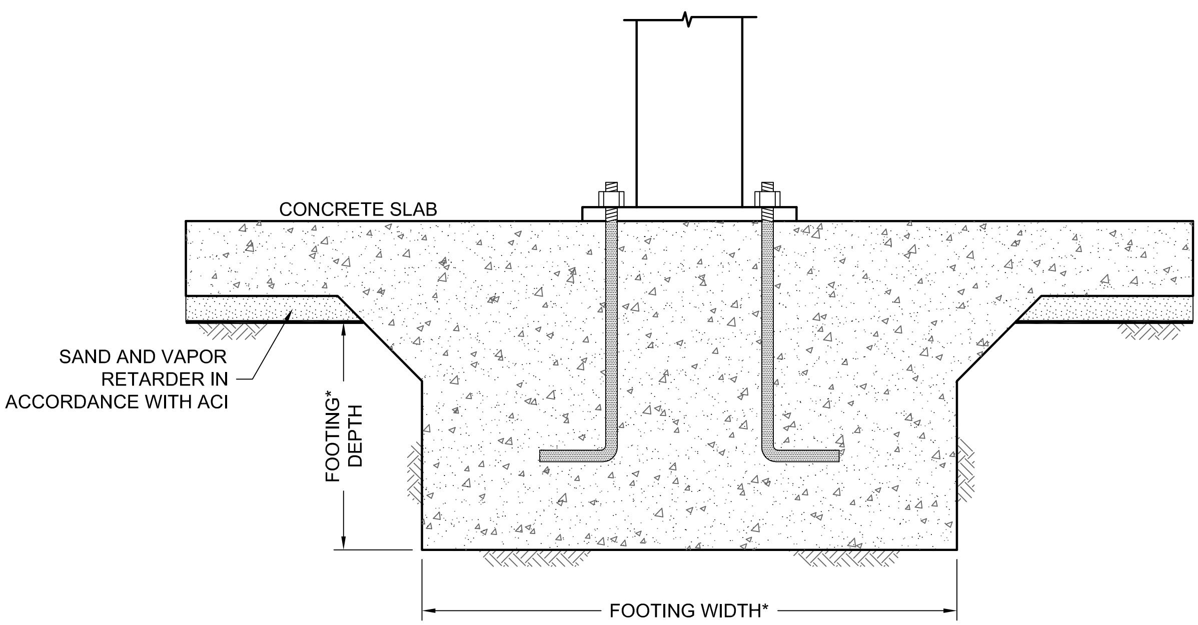


Figure 6

Directory: X:\Engineering and Geology\ENGINEER PROGRAMS, GUIDES, ETC\EngrgPrg\GEO-SLOPE2007\Projects\G1488-42-03 (Carroll Canyon Mixed Use)\
Date: 10/12/2015,





*....SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

WALL / COLUMN FOOTING DIMENSION DETAIL

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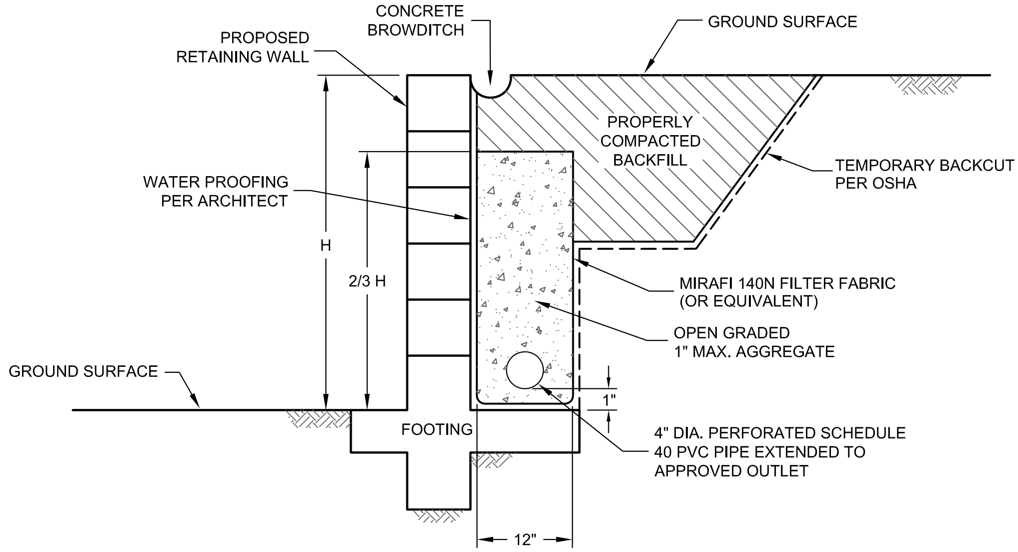
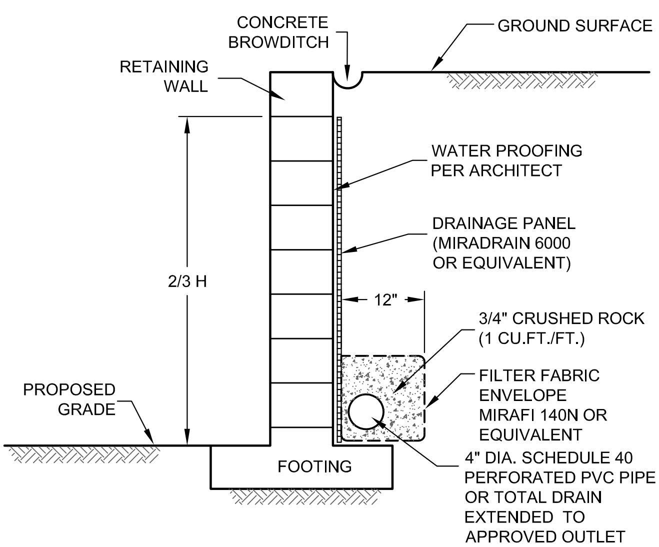
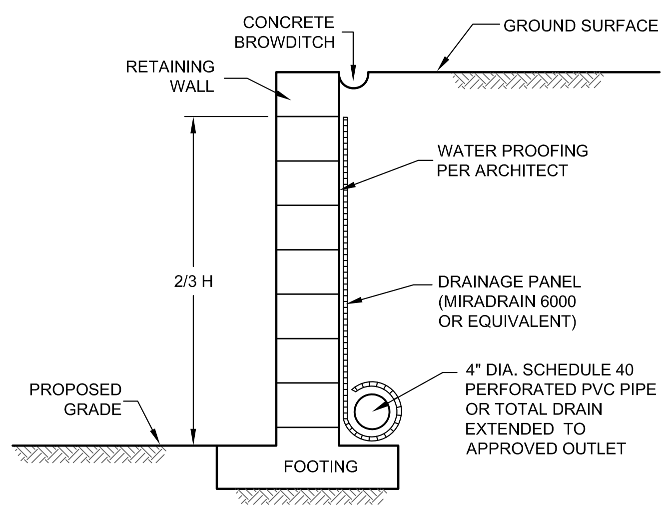
CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 10 - 12 - 2015	PROJECT NO. G1488 - 42 - 03	FIG. 7







NOTE :

DRAIN SHOULD BE UNIFORMLY SLOPED TO GRAVITY OUTLET
OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPING

NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

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CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 10 - 12 - 2015	PROJECT NO. G1488 - 42 - 03	FIG. 8

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

The field investigation was performed on September 19, 20, and 21, 2012, and consisted of a site reconnaissance, and drilling 19, small-diameter borings. The approximate locations of the exploratory borings are shown on the Boring Location Map, Figure 2.

The borings were drilled to depths ranging from 2 feet to 19 feet below existing grade. A CME 75 drill rig equipped with 8-inch-diameter, hollow-stem augers was used for the borings. We obtained relatively undisturbed samples by driving a 3-inch-diameter, split-tube sampler (California Modified sampler) 12 inches into the undisturbed soil mass with blows from a hammer weighing 140 pounds, dropped from a height of 30 inches. The sampler was equipped with 1-inch-by-2.5-inch brass sampler rings to facilitate removal and testing of the soil. Bulk samples were also obtained. Geocon Incorporated will retain the samples obtained from the geotechnical investigation for 6 months.

The soil conditions encountered in the borings were visually examined, classified, and logged in general accordance with American Society for Testing and Materials (ASTM) practice for Description and Identification of Soils (Visual-Manual Procedure D 2488). Logs of borings are presented on Figures A-1 through A-19. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained.

BORING B 1

ELEV. (MSL.) **510'** DATE COMPLETED **09-19-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" **ASPHALT CONCRETE** over 6" **BASE** Large roots at base-fill contact			
	B1-1			CL	**VERY OLD PARALIC DEPOSITS (Qvop)** Weathered, dense to very dense, dry to damp, brown to olive brown, Sandy CLAY to Clayey, fine to medium SAND; little gravel; few roots			
2				SC				
	B1-2				**STADIUM CONGLOMERATE (Tst)** Very dense, dry to damp, yellowish brown, CONGLOMERATE with Clayey, fine to medium SAND to Sandy CLAY matrix	50/1"		
4								
	B1-3					50/3"		
6								
8	B1-4					50/2"		
10	B1-5				BORING TERMINATED AT 10 FEET No groundwater encountered Backfilled on 09-19-2012	50/2"		

Figure A-1,
Log of Boring B 1, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

BORING B 2

ELEV. (MSL.) 513' DATE COMPLETED 09-19-2012

EQUIPMENT CME 75 BY: N. G. BORJA

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B2-1			CL/SC	**VERY OLD PARALIC DEPOSITS (Qvop)** Weathered, very stiff, dense, dry to damp, mottled dark brown to dark grayish brown, black and reddish brown, Sandy CLAY to Clayey SAND; little gravel; little roots			
2								
4								
	B2-2					87/11"	116.9	9.7
6				SC	Very dense, damp, mottled dark brown, gray and reddish brown, Clayey, fine to coarse SAND; few gravel			
8	B2-3					50/3"		
				SM	**STADIUM CONGLOMERATE (Tst)** Very dense, dry to damp, light yellowish brown, CONGLOMERATE with Silty, fine to medium SAND matrix			
10	B2-4					50/2"		

BORING TERMINATED AT 10 FEET
No groundwater encountered
Backfilled on 09-19-2012

Figure A-2,
Log of Boring B 2, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

GEOCON

PROJECT NO. G1488-42-03

BORING B 3

ELEV. (MSL.) 514' DATE COMPLETED 09-19-2012

EQUIPMENT CME 75 BY: N. G. BORJA

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0			4.5" **ASPHALT CONCRETE** over 5" **BASE**			
	B3-1	SC	**VERY OLD PARALIC DEPOSITS (Qvop)** Dense, damp, mottled dark brown and reddish brown, Clayey SAND; little gravel			
2	B3-2	SC	**STADIUM CONGLOMERATE (Tst)** Very dense, dry, light yellowish brown, CONGLOMERATE with Clayey, fine to medium SAND matrix	50/3"		
4						
	B3-3			50/1"		
6						
8	B3-4	SM	Dense, damp, mottled light gray and yellowish brown, Silty, fine- to coarse-grained SANDSTONE; moderately cemented	67/11"	113.2	15.0
10	B3-5		-Becomes dense to very dense; strongly cemented	78/9"	112.1	14.3
12		CL	Hard, damp to moist, yellowish brown to olive brown, Sandy CLAY; trace gravel			
14						
	B3-6			50/3"		
16		SM	Very dense, damp, mottled light yellowish brown to light tan, Silty, fine- to medium-grained SANDSTONE; some gravel; moderately cemented			
18						
	B3-7			77/9"	114.8	12.3

BORING TERMINATED AT 19 FEET
No groundwater encountered
Backfilled on 09-19-2012

Figure A-3,
Log of Boring B 3, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... STANDARD PENETRATION TEST
... DRIVE SAMPLE (UNDISTURBED)
... DISTURBED OR BAG SAMPLE
... CHUNK SAMPLE
... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

BORING B 4

ELEV. (MSL.) **514'** DATE COMPLETED **09-19-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" **ASPHALT CONCRETE** over 6.5" **BASE**			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Weathered, dense, damp, dark brown to brown, Silty to Clayey, fine to medium SAND; few gravel; trace roots			
2								
	B4-1					86	112.9	13.9
				CL	Hard, damp, mottled dark brown, grayish brown, and reddish brown, Sandy CLAY; few gravel			
4								
	B4-2					50/3"		
6				CL	**STADIUM CONGLOMERATE (Tst)** Hard, dry, light yellowish brown to brown, CONGLOMERATE with Sandy CLAY; moderately cemented			
8	B4-3					50/1"		
10	B4-4					50/1"		

BORING TERMINATED AT 10 FEET
No groundwater encountered
Backfilled on 09-19-2012

Figure A-4,
Log of Boring B 4, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B 5 ELEV. (MSL.) 517' DATE COMPLETED 09-19-2012 EQUIPMENT CME 75 BY: N. G. BORJA	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0 2 4	B5-1 B5-2			SC	**OLD PARALIC DEPOSITS (Qop)** Very dense, dry, mottled reddish brown and light yellowish brown, Clayey, fine to medium SAND; strongly cemented; highly to completely weathered in upper 2 feet -Hard drilling below 3 feet			
					REFUSAL AT 4.5 FEET No groundwater encountered Backfilled on 09-19-2012			

Figure A-5,
Log of Boring B 5, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

BORING B 6

ELEV. (MSL.) **518'** DATE COMPLETED **09-19-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					3.5" **ASPHALT CONCRETE** over 5.5" **BASE**			
				SM	**OLD PARALIC DEPOSITS (Qop)** Very dense, dry to damp, reddish brown, Silty, fine to medium SAND; strongly cemented; very hard drilling			
2								
	B6-1					50/3"		
4				CL	**STADIUM CONGLOMERATE (Tst)** Very dense, dry to damp, yellowish brown, CONGLOMERATE with Silty to Clayey, fine to medium SAND matrix			
	B6-2					50/1"		

REFUSAL AT 5 FEET
No groundwater encountered
Backfilled on 09-19-2012

Figure A-6,
Log of Boring B 6, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 7

ELEV. (MSL.) **519.5'** DATE COMPLETED **09-19-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					3" **ASPHALT CONCRETE** over 7" **SAND** with some gravel			
	B7-1			CL	**OLD PARALIC DEPOSITS (Qop)** Hard, dry to damp, mottled brown to light brown and reddish brown, Sandy CLAY; strongly cemented; very hard drilling			
2								
	B7-2					50/2"		

REFUSAL AT 3 FEET
No groundwater encountered
Backfilled on 09-19-2012

Figure A-7,
Log of Boring B 7, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

BORING B 8

ELEV. (MSL.) 520.5 DATE COMPLETED 09-19-2012

EQUIPMENT CME 75 BY: N. G. BORJA

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					3.5" **ASPHALT CONCRETE** over 7" **SAND** with some gravel			
	B8-1			SC	**OLD PARALIC DEPOSITS (Qop)** Very dense, dry, reddish brown to brown, Clayey, fine to medium SAND; little gravel; strongly cemented			
2	B8-2					50/2"		
				SC	**STADIUM CONGLOMERATE (Tst)** Very dense, dry, light yellowish brown, CONGLOMERATE with Clayey SAND to Sandy CLAY matrix			
4								
	B8-3					50/4"		
6								
					-Excavates with silty to clayey sand matrix			
8	B8-4					50/1"		
				SM	Dense, damp, yellowish brown to tan, Silty, fine- to medium-grained SANDSTONE; moderately cemented			
10	B8-5					77/11"	115.7	11.8
	B8-6							
12								
14					-Becomes mottled light gray and light yellowish brown			
	B8-7					74	103.0	25.3
16								
					-Becomes very dense; excavates with little gravel			
18	B8-8					50/1"		
					BORING TERMINATED AT 18.5 FEET No groundwater encountered Backfilled on 09-19-2012			

Figure A-8,
Log of Boring B 8, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

GEOCON

BORING B 9

ELEV. (MSL.) **520'** DATE COMPLETED **09-20-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					3" **ASPHALT CONCRETE** over 6.5" **SAND** with some rounded to sub-angular gravel			
	B9-1			SC	**OLD PARALIC DEPOSITS (Qop)** Very dense, dry, light brown to light reddish brown, Clayey, fine to medium SAND; little gravel; strongly cemented; hard drilling below 2 feet			
2								
	B9-2					50/1"		
4					REFUSAL AT 4 FEET No groundwater encountered Backfilled on 09-20-2012			

Figure A-9,
Log of Boring B 9, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

BORING B 10

ELEV. (MSL.) **519.5'** DATE COMPLETED **09-20-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" **ASPHALT CONCRETE** over 5.5" **SAND** with rounded to sub-angular gravel			
				CL	**OLD PARALIC DEPOSITS (Qop)** Hard, dry, light yellowish brown to brown, and light reddish brown, Sandy CLAY; some gravel; very hard drilling			
2	B10-1					50/2"		
4	B10-2					50/2"		
6	B10-3			SC	**STADIUM CONGLOMERATE (Tst)** Very dense, dry, yellowish brown, CONGLOMERATE with Clayey, fine to medium SAND to Sandy CLAY matrix; weakly cemented			
8	B10-4					50/2"		
10	B10-5			SM	Very dense, dry, mottled light tan to light yellowish brown, brown, and light reddish brown, Silty, fine- to medium-grained SANDSTONE; weakly to moderately cemented; trace gravel	50/5"	109.8	2.0
	B10-6							
12								
14					-Becomes mottled light olive brown, brown			
	B10-7					50/5"		
16								
18								

BORING TERMINATED AT 18.5 FEET
No groundwater encountered
Backfilled on 09-20-2012

Figure A-10,
Log of Boring B 10, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

BORING B 11

ELEV. (MSL.) **521.5'** DATE COMPLETED **09-20-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" **ASPHALT CONCRETE** over 6.5" **SAND** with some rounded to sub-angular gravel			
	B11-1			CL	**OLD PARALIC DEPOSITS (Qop)** Hard, dry, mottled reddish brown, dark grayish brown and light tan, Sandy CLAY; some gravel; few roots			
2								
	B11-2					50/2"		
4								

REFUSAL AT 4.5 FEET
No groundwater encountered
Backfilled on 09-20-2012

Figure A-11,
Log of Boring B 11, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

BORING B 12

ELEV. (MSL.) **521'** DATE COMPLETED **09-21-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4.5" **ASPHALT CONCRETE** over 5.5" **BASE**			
				CL	**OLD PARALIC DEPOSITS (Qop)** Hard, dry, reddish brown, Silty to Sandy CLAY; little gravel; moderately to strongly cemented; hard drilling			
2								

REFUSAL AT 2 FEET
No groundwater encountered
Backfilled on 09-21-2012

Figure A-12,
Log of Boring B 12, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 13

ELEV. (MSL.) **520.5'** DATE COMPLETED **09-21-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					5.5" **ASPHALT CONCRETE** over 6" **BASE**			
	B13-1			SC	**OLD PARALIC DEPOSITS (Qop)** Very dense, dry, mottled light reddish brown and light tan, Clayey, fine to medium SAND to Sandy CLAY; some gravel			
2								
	B13-2					50/2"		
					REFUSAL AT 3.5 FEET No groundwater encountered Backfilled on 09-21-2012			

Figure A-13,
Log of Boring B 13, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 14

ELEV. (MSL.) **518.5'** DATE COMPLETED **09-21-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					5.5" **ASPHALT CONCRETE** over 6" **BASE**			
				CL	**OLD PARALIC DEPOSITS (Qop)** Hard, damp, mottled reddish brown, gray and tan, Sandy CLAY; some gravel; moderately cemented			
2								
					REFUSAL AT 2 FEET No groundwater encountered Backfilled on 09-21-2012			

Figure A-14,
Log of Boring B 14, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G1488-42-03

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING B 15** ELEV. (MSL.) **516.5'** DATE COMPLETED **09-20-2012** EQUIPMENT **CME 75** BY: **N. G. BORJA**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					4.5" **ASPHALT CONCRETE** over 6" **CLASS II BASE**			
				SC	**OLD PARALIC DEPOSITS (Qop)** Very dense, dry, light reddish brown and light tan, Clayey, fine to medium SAND to Sandy CLAY; some gravel; moderately to well cemented			
2								
	B15-1					50/2"		
4								
	B15-2				-Hard drilling below 4.5 feet	50/1"		
					REFUSAL AT 5 FEET No groundwater encountered Backfilled on 09-20-2012			

Figure A-15,
Log of Boring B 15, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 16

ELEV. (MSL.) **515'** DATE COMPLETED **09-20-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4.5" **ASPHALT CONCRETE** over 5.5" **BASE**			
	B16-1			SC	**OLD PARALIC DEPOSITS (Qop)** Stiff to very stiff, damp, mottled brown to dark olive brown, gray and reddish brown, Clayey, fine to coarse SAND; few gravel			
2								
	B16-2					50/2"		
				SC	**STADIUM CONGLOMERATE (Tst)** Hard, dry, yellowish brown, CONGLOMERATE with Clayey, fine to medium SAND; some gravel; moderately cemented			
4								
	B16-3					50/2"		
6								

REFUSAL AT 6 FEET
No groundwater encountered
Backfilled on 09-20-2012

Figure A-16,
Log of Boring B 16, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

BORING B 17

ELEV. (MSL.) **514'** DATE COMPLETED **09-20-2012**

EQUIPMENT **CME 75** BY: **N. G. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B17-1			SM	**UNDOCUMENTED FILL (Qudf)** Loose, dry, brown, Silty to Clayey, fine to medium SAND; few gravel; some roots			
2				CL	**OLD PARALIC DEPOSITS (Qop)** Weathered, stiff to very stiff, moist, mottled grayish brown, dark brown and brown, Sandy CLAY; few roots; trace gravel			
	B17-2			SC	**STADIUM CONGLOMERATE (Tst** Very dense, dry, yellowish brown, CONGLOMERATE with clayey, fine to medium SAND to Sandy CLAY matrix; hard drilling below 4 feet	50/3"		
4								
	B17-3					50/4"		
6					REFUSAL AT 6 FEET No groundwater encountered Backfilled on 09-20-2012			

Figure A-17,
Log of Boring B 17, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 18

ELEV. (MSL.) 515' DATE COMPLETED 09-20-2012

EQUIPMENT CME 75 BY: N. G. BORJA

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	**OLD PARALIC DEPOSITS (Qop)** Very stiff to hard, dry, reddish brown, Sandy to Silty CLAY; moderately cemented; few gravel; some roots			
2	B18-1					50/2"		
4				SC	Dense, dry, yellowish brown to reddish brown, Clayey, fine to medium SAND; some gravel -Increase in gravel content below 4 feet; hard drilling			
	B18-2					50/1"		

REFUSAL AT 5 FEET
No groundwater encountered
Backfilled on 09-20-2012

Figure A-18,
Log of Boring B 18, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING B 19** ELEV. (MSL.) **514'** DATE COMPLETED **09-20-2012** EQUIPMENT **CME 75** BY: **N. G. BORJA**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				CL	**OLD PARALIC DEPOSITS (Qop)** Hard, dry, reddish brown, Silty to Sandy CLAY; little gravel; some roots; very hard drilling below 1.5 feet			
	B19-1							
2					REFUSAL AT 2 FEET No groundwater encountered Backfilled on 09-20-2012			

Figure A-19,
Log of Boring B 19, Page 1 of 1

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

APPENDIX B

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in general accordance with the test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Samples were tested to evaluate maximum density and optimum moisture content, expansion, direct shear strength, soluble sulfate, chloride content, pH and resistivity, Atterberg Limits, resistance value (R-Value), swell potential, and gradation. The results of our laboratory tests are presented in the following tables and graphs. The in-place dry density and moisture content results are presented on the exploratory boring logs in Appendix A.

TABLE B-I
SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS
(ASTM D 1557)

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
B2-1	Dark brown, clayey, fine to medium SAND with trace gravel	122.6	11.1
B8-1	Reddish brown, Clayey, fine tom medium SAND with some gravel	129.2	8.8
B8-6	Yellowish brown, Clayey, fine to coarse SAND with some gravel	134.0	7.0
B16-1	Brown, clayey, fine to coarse SAND with some gravel	127.6	9.5

TABLE B-II
SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
(ASTM D 4829)

Sample No.	Moisture Content (%)		Dry Density (pcf)	Expansion Index	Classification
	Before Test	After Test			
B2-1	10.4	23.8	107.2	54	Medium
B8-1	10.3	18.9	110.2	19	Very Low
B16-1	9.3	21.7	112.5	56	Medium

TABLE B-III
SUMMARY OF LABORATORY DIRECT SHEAR TEST RESULTS
(ASTM D 3080)

Sample No.	Dry Density (pcf)	Moisture Content (%)		Unit Cohesion (psf)	Angle of Shear Resistance (degrees)
		Initial	Final		
B2-2	116.9	9.7	14.8	560	40
B3-4	113.2	15.0	15.0	150	35
B3-5	112.1	14.3	18.1	560	29
B3-7	114.8	12.3	17.2	370	37
B4-1*	112.9	13.9	19.9	950	18

*Ultimate Value

TABLE B-IV
SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water Soluble Sulfate Content (%)	Sulfate Rating
B2-1	0.094	Negligible
B8-1	0.043	Negligible
B16-1	0.155	Moderate

TABLE B-V
SUMMARY OF LABORATORY CHLORIDE TEST RESULTS
AASHTO T 291

Sample No.	Chloride Ion Content (ppm)	Chloride Ion Content (%)
B2-1	294	0.029
B8-1	372	0.037

TABLE B-VI
SUMMARY OF LABORATORY POTENTIAL OF
HYDROGEN (PH) AND RESISTIVITY TEST RESULTS
CALIFORNIA TEST NO. 643

Sample No.	pH	Minimum Resistivity (ohm-centimeters)
B2-1	4.4	580
B8-1	6.81	680
B16-1	6.1	850

TABLE B-VII
SUMMARY OF LABORATORY ATTERBERG LIMITS TEST RESULTS
ASTM D 4318

Sample No.	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index
B2-1	41	14	27
B8-1	34	14	20
B16-1	43	13	30

TABLE B-VIII
SUMMARY OF LABORATORY RESISTANCE VALUE (R-VALUE) TEST RESULTS
ASTM D 2844

Sample No.	R-Value
B2-1	5
B9-1	5

TABLE B-IX
SUMMARY OF ONE-DIMENSIONAL SWELL/CONSOLIDATION POTENTIAL TEST RESULTS
ASTM D 4546 – METHOD B

Sample No.	Depth (feet)	Moisture Content (%)		Dry Density (pcf)	Load Surcharged (ksf)	**Swell/ Consolidation Potential (%)
		Initial	Final			
*B8-1	1 – 5	10.1	16.7	115.4	0.5	+0.6
*B16-1	1 – 5	10.5	18.2	114.6	0.5	+2.7

*Samples remolded to approximately 95 percent relative compaction near optimum moisture content.
**Positive numbers reflect swell. Negative numbers reflect consolidation.

TABLE B-X
SUMMARY OF LABORATORY ORGANIC MATTER TEST RESULTS
ASTM D 2974

Sample No.	Moisture Content (%)	Organic Matter (%)
B17-1	4.9	2.1
B9-1	4.7	2.7

TABLE XI

EDWARD BRAINARD
HORTICULTURAL SPECIALIST
SOIL TESTING

SOIL TEST ANALYSIS

GEOCON INC.
6960 FLANDERS DR.
SAN DIEGO, CA. 92121-2974

10-15-12

SAMPLE LOCATION: PROJECT#G-1488-42-1
COMBINED B1-1, B5-1, B7-1, B11-1, B17-1

PERCOLATION RATE **FAIR-GOOD** ORGANIC MATTER **1%**

LOW= **L** *SLIGHTLY LOW=* **SL.L** *ACCEPTABLE=***A** *SLIGHTLY HIGH=* **SL.H** *HIGH=***H**

SOIL TEXTURE: SAND **59.6** SILT **13.2** CLAY **27.2**

PH LEVEL IS IN THE **ACCEPTABLE** RANGE **7.15**
EC LEVEL IS IN THE **ACCEPTABLE** RANGE **.92 TDS 460**

NUTRIENTS:

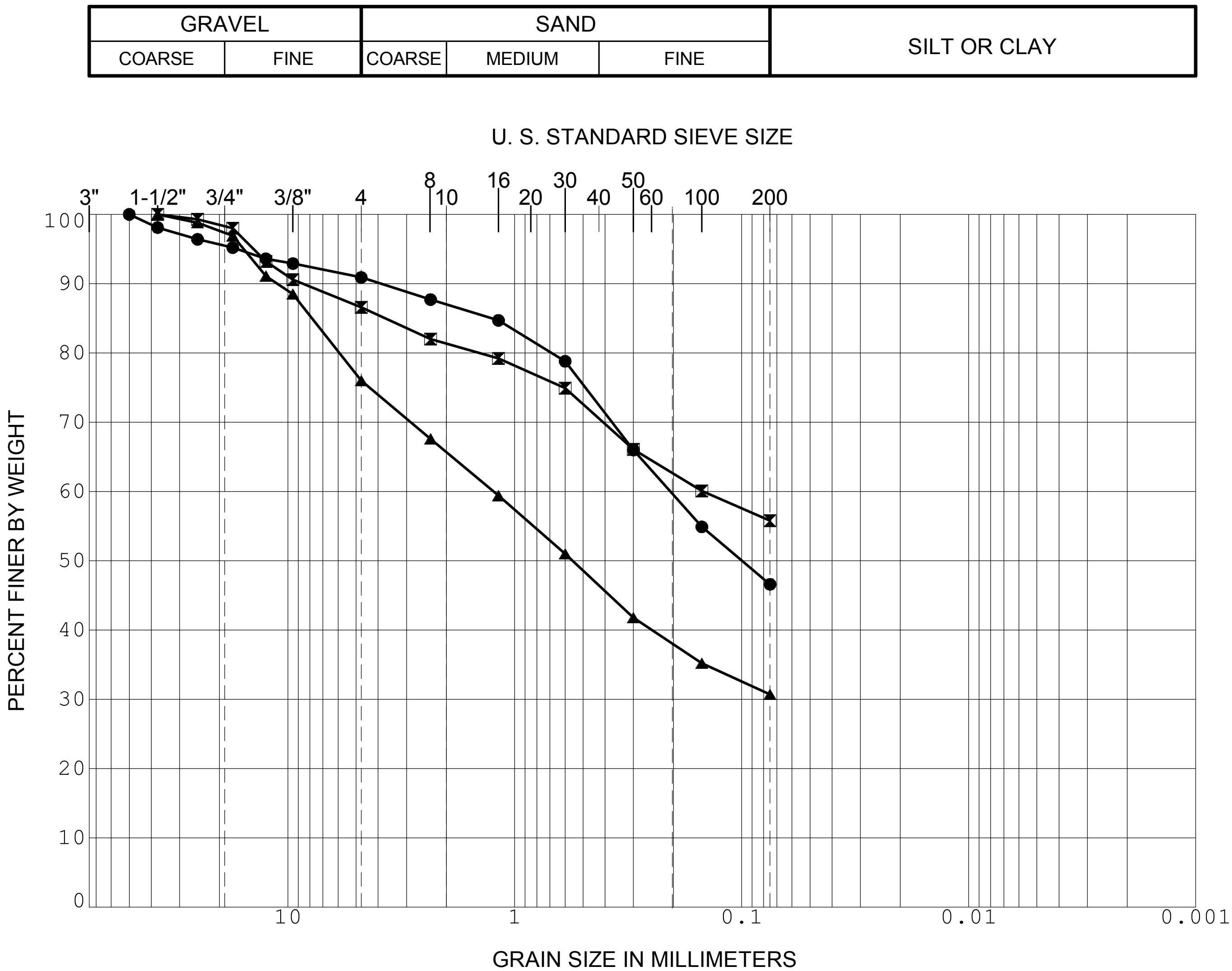
NITRATE LEVEL IS IN THE **LOW** RANGE **0**	RANGE 0.0-300MG/L
PHOSPHOROUS LEVEL IS IN THE **LOW** RANGE **0**	RANGE 0.0-50MG/L
POTASSIUM LEVEL IS IN THE **LOW** RANGE **20**	RANGE 10-100MG/L
IRON LEVEL IS IN THE **LOW** RANGE **.03**	RANGE 0.0-5.00MG/L
MANGANESE LEVEL IS IN THE **LOW** RANGE **0**	RANGE 0.0-20.0MG/L
CALCIUM LEVEL IS IN THE **A** RANGE **125**	RANGE 0-400MG/L

RECOMMENDATIONS; CHECK AND ADJUST IRRIGATION SCHEDULE ACCORDINGLY FOR PLANT MATERIAL, AREA WATER RESTRICTIONS AND SOIL TEXTURE. FOR PLANTING, APPLY THE FOLLOWING MATERIALS PER MANUFACTURER'S RECOMMENDED APPLICATION RATE:
ORGANIC COMPOST OR EQUAL @1 YD. PER 1000 SQ. FT. OR 6CU FT. PER YD OF BACKFILL TREES &SHRUBS
MILORGANITE 6-2-0 OR EQUAL @25# PER 1000 SQ. FT. OR 2.5# PER 100 SQ. FT. TREES & SHRUBS
PLANTING TABLETS 20-10-5, 21GR. OR EQUAL @ MFG. RECOMMENDED RATE FOR TREES & SHRUBS
VITAMIN B-1 OR EQUAL @ MFG. RECOMMENDED RATE PER PLANT FOR TREES & SHRUBS
YUCCA EXTRACT SARVON OR EQUAL @ 1-2OZ PER GAL. OF WATER FOR TREES & SHRUBS
VITAMIN B-1 & SARVON CAN BE MIXED TOGETHER AND POURED AROUND ROOTBALL
SHREDDED BARK OR MULCH OR EQUAL @2-3YDS. PER 1000 SQ. FT. TREES & SHRUBS

8301 MISSION GORGE RD. #77
SANTEE, CA 92701

CELL PHONE 619-244-6994
PHONE 619-938-0915
FAX 619-938-0914

PROJECT NO. G1488-42-03



	SAMPLE	DEPTH (ft)	CLASSIFICATION	NAT WC	LL	PL	PI
●	B2-1	0.0	(SC) Clayey SAND				
⧗	B7-1	1.0	(CL) Sandy, lean CLAY				
▲	B8-1	1.0	(SC) Clayey SAND with gravel				

GRADATION CURVE

CARROLL CANYON MIXED USE

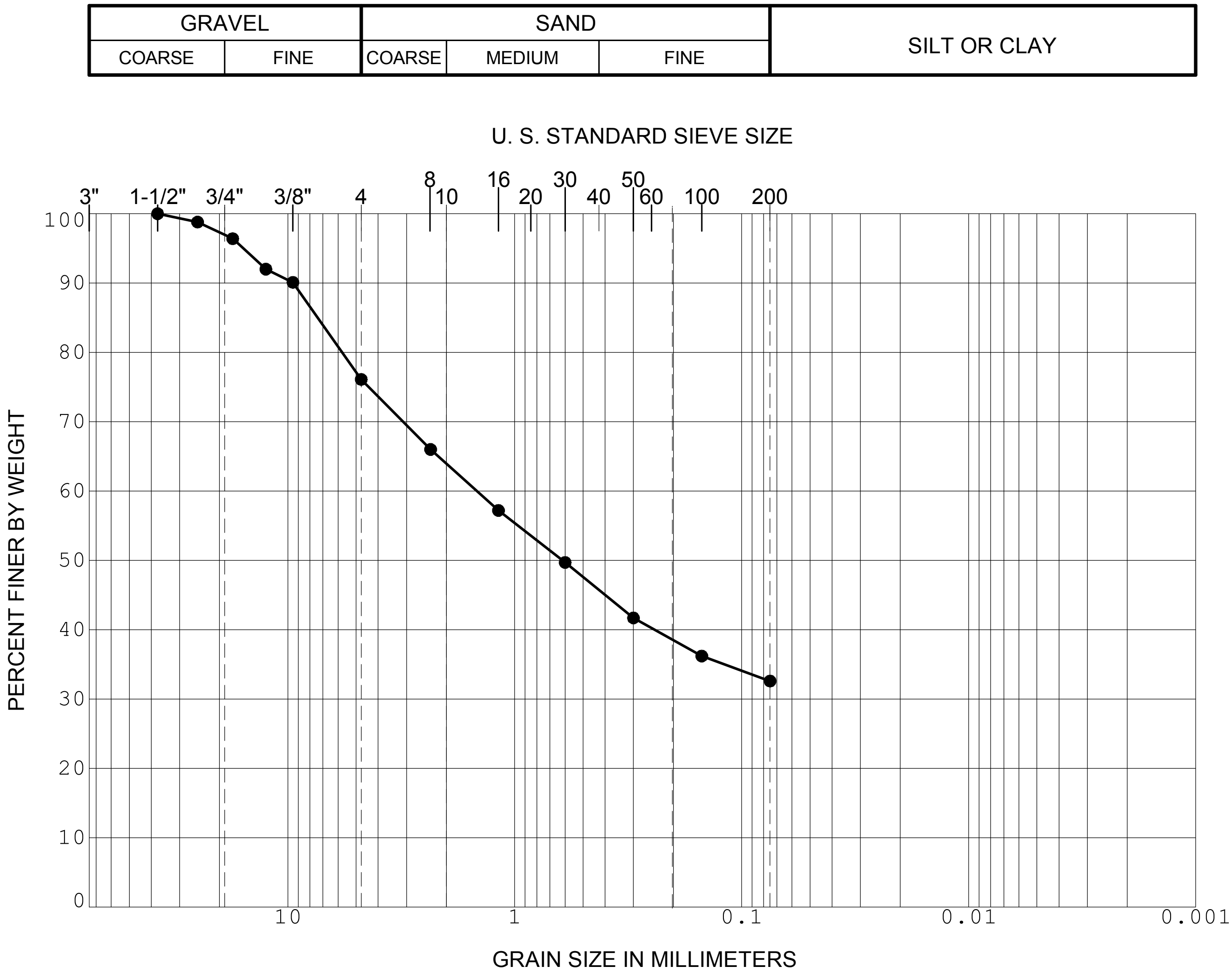
SAN DIEGO, CALIFORNIA

G1488-42-03.GPJ

Figure B-1

GEOCON

PROJECT NO. G1488-42-03



	SAMPLE	DEPTH (ft)	CLASSIFICATION	NAT WC	LL	PL	PI
●	B16-1	1.0	(SC) Clayey SAND with gravel				
⊠							
▲							

GRADATION CURVE

CARROLL CANYON MIXED USE

SAN DIEGO, CALIFORNIA

G1488-42-03.GPJ

Figure B-2

GEOCON

APPENDIX C

APPENDIX C

BORING LOGS AND LABORATORY TESTING
FROM GEOTECHNICS INCORPORATED (2006)

FOR

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

PROJECT NO. G1488-42-03

LOG OF EXPLORATION BORING NO. 1

Logged by: RCF
Method of Drilling: 30" Diameter Bucket Auger
Date Drilled: 2/2/2006
Elevation: 517' MSL

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0–3			1–3			**RESIDUAL SOIL**: Clayey sand/sandy lean clay (SC/CL), reddish brown, medium plasticity, moist, hard. Pocket penetrometer (PP) = 2.25 tsf	Expansion Index
3–3½						**LINDAVISTA FORMATION**: Conglomerate, reddish brown, abundant gravel and cobbles, clayey sandstone matrix, moist, strongly cemented. Refusal at 3½ feet.	

Total depth: 3½ feet
No groundwater encountered

Depth scale (ft): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

PROJECT NO. 1154-001-00 GEOTECHNICS INCORPORATED FIGURE B-1

LOG OF EXPLORATION BORING NO. 4

Logged by: RCF
Method of Drilling: 30" Diameter Bucket Auger

Date Drilled: 2/2/2006
Elevation: 517' MSL

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0–2½						**RESIDUAL SOIL**: Clayey sand/sandy lean clay (SC/CL), reddish brown, medium plasticity, moist, hard. PP = 1.75 tsf	
2½–4½						**LINDAVISTA FORMATION**: Conglomerate, reddish brown, abundant gravel and cobbles, silty sandstone matrix, moist, moderately to strongly cemented. Refusal at 4½ feet.	Expansion Index Corrosivity

Total depth: 4½ feet
No groundwater encountered

Depth scale: 1 – 30 ft

PROJECT NO. 1154-001-00 GEOTECHNICS INCORPORATED FIGURE B-4

LOG OF EXPLORATION BORING NO. 5

Logged by: RCF
Method of Drilling: 30" Diameter Bucket Auger

Date Drilled: 2/2/2006
Elevation: 518' MSL

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						4" Asphalt Concrete over 4" Aggregate Base	
1						RESIDUAL SOIL: Clayey sand/sandy lean clay (SC/CL), reddish brown, medium plasticity, moist, very hard.	
2						PP > 4.5 tsf	
3						LINDAVISTA FORMATION: Conglomerate, reddish brown, abundant gravel and cobbles, clayey sandstone matrix, moist, strongly cemented. Refusal at 3 feet.	
4						Total depth: 3 feet No groundwater encountered	
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

LOG OF EXPLORATION BORING NO. 8

Logged by: RCF
Method of Drilling: 30" Diameter Bucket Auger

Date Drilled: 2/2/2006
Elevation: 520' MSL

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	LAB TESTS
0						3" Asphalt Concrete over 4" Aggregate Base	
1			X			RESIDUAL SOIL: Clayey sand/sandy lean clay (SC/CL), reddish brown, cobbles, medium plasticity, dry to moist, hard.	R-Value
2			X				
3						LINDAVISTA FORMATION: Conglomerate, reddish brown, abundant gravel and cobbles, silty sandstone matrix, moist, strongly cemented.	
4							
5						Refusal at 5 feet.	
6						Total depth: 5 feet No groundwater encountered	
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

R-VALUE
(California Test 301)

SAMPLE	R-VALUE
B-8 at 1' – 3'	<5

EXPANSION INDEX
(ASTM D 4829)

SAMPLE	EXPANSION INDEX	EXPANSION POTENTIAL
B-1 at 1' – 3'	74	Medium
B-4 at 3' – 4½'	0	Very Low

Expansion Index	Expansion Potential
0 to 20	Very Low
21 to 50	Low
51 to 90	Medium
91 to 130	High
Above 130	Very High

Reference: Table 18-I-B, 2001 California Building Code

SULFATE CONTENT, pH, RESISTIVITY, and CHLORIDE CONTENT

SAMPLE	WATER-SOLUBLE SULFATE CONTENT (% of Dry Soil Wt.) (ASTM D 516)	pH (Caltrans 643)	RESISTIVITY (ohm-cm) (Caltrans 643)	WATER-SOLUBLE CHLORIDE CONTENT (% of Dry Soil Wt.) (SMEWW4500CL⁻C)
B-4 at 3' – 4½'	0.10	4.6	790	0.03

Water Soluble Sulfate (SO_4) Content in % of Dry Soil Wt.	General Degree of Reactivity with Concrete
over 2.00	Very Severely Reactive
0.2 to 2.00	Severely Reactive
0.10 to 0.20	Moderately Reactive
0.00 to 0.10	Negligible

Reference: Table 19-A-4, 2001 California Building Code

Soil Resistivity in ohm-cm	General Degree of Corrosivity to Ferrous Metal
0 to 1,000	Very Corrosive
1,000 to 2,000	Corrosive
2,000 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
greater than 10,000	Slightly Corrosive

Water Soluble Chloride (Cl) Content in % of Dry Soil Wt.	General Degree of Corrosivity to Metal
over 0.15	Severely Corrosive
0.03 to 0.15	Corrosive
0.00 to 0.03	Negligible

APPENDIX D

APPENDIX D

RECOMMENDED GRADING SPECIFICATIONS

FOR

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

PROJECT NO. G1488-42-03

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

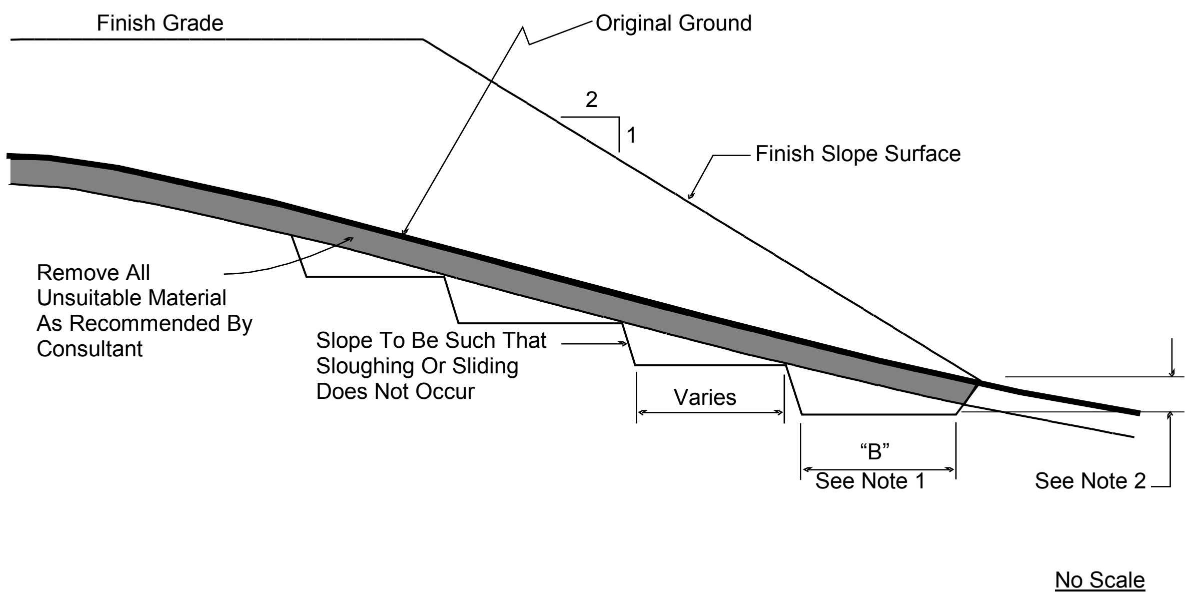
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

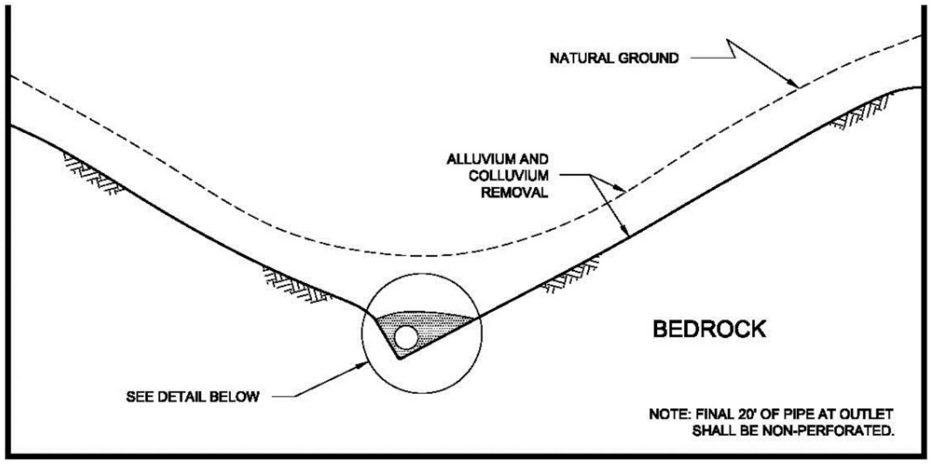
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

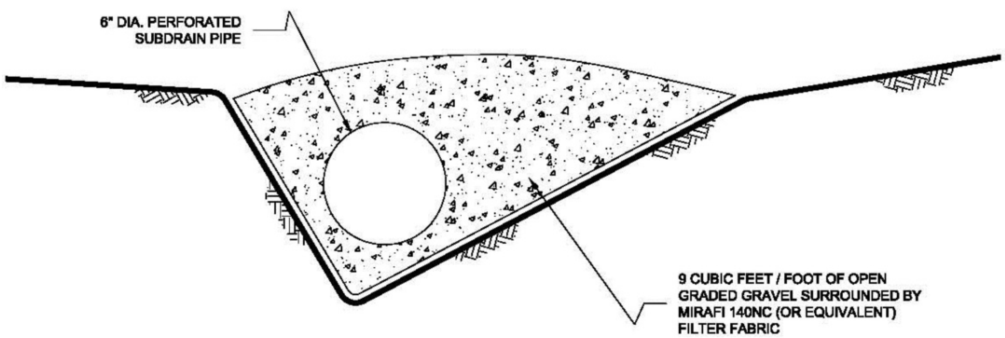
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

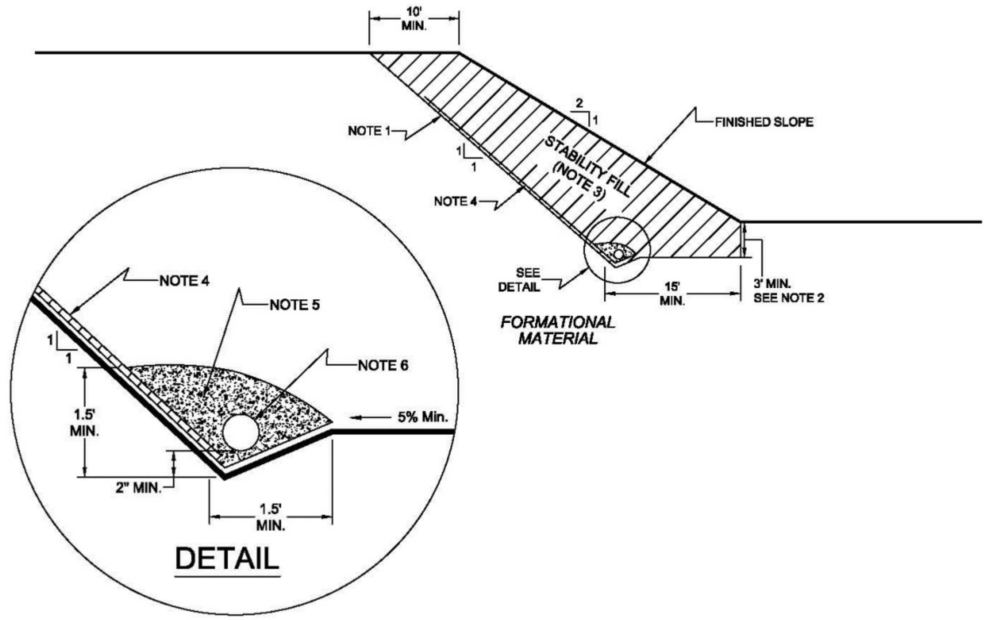
1......6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

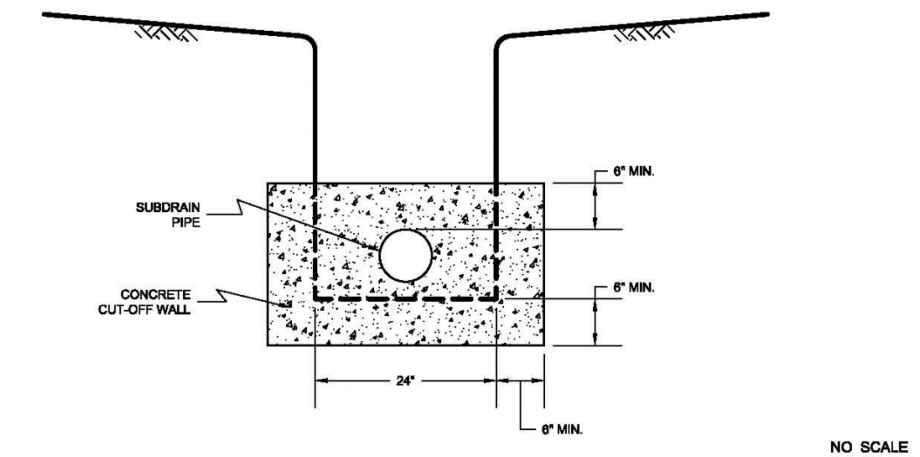
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

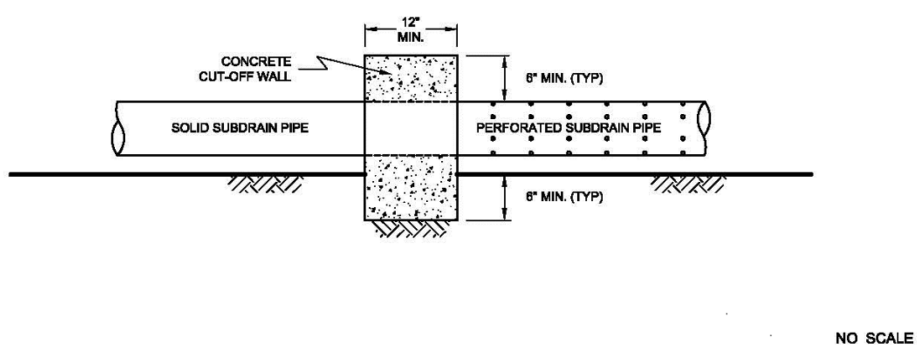
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

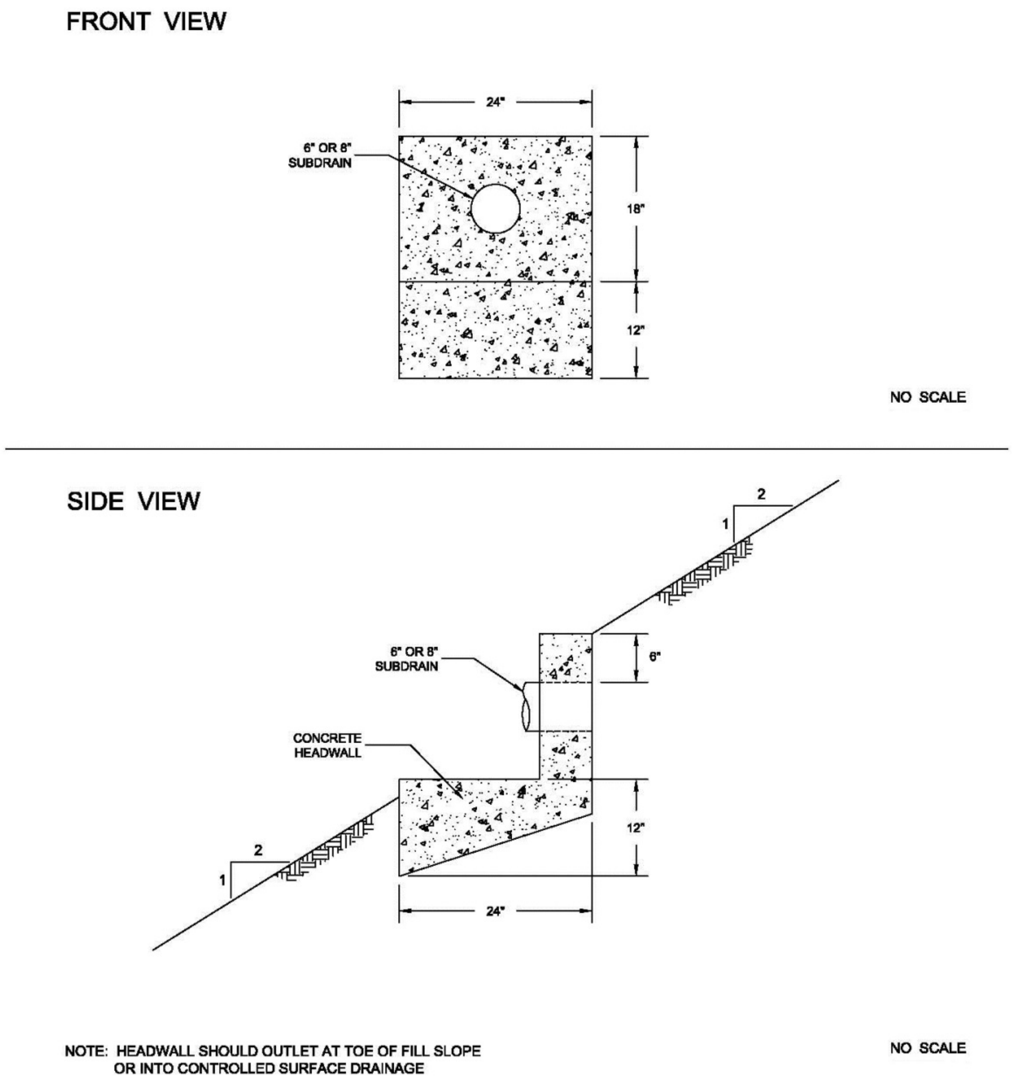


SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL



7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)*.

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

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4. *California Highway Design Manual, State of Californian Department of Transportation,* Fifth Edition, July 1, 1995.

5. California Geological Survey, *Seismic Shaking Hazards in California,* Based on the USGS/CGS Probabilistic Seismic Hazards Assessment (PSHA) Model, 2002 (revised April 2003). 10% probability of being exceeded in 50 years.
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10. Risk Engineering, *EZ-FRISK (version 7.62),* 2011.

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12. USGS computer program, *Seismic Hazard Curves and Uniform Hazard Response Spectra (version 5.1.0,),* February 10, 2011.

GEOCON
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GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

GEOTECHNICAL ANALYSIS FOR DRY-WELL DESIGN

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

PREPARED FOR

SUDBERRY PROPERTIES, INC.
SAN DIEGO, CALIFORNIA

JANUARY 21, 2016
PROJECT NO. G1488-42-03

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G1488-42-03
January 21, 2016

Sudberry Properties, Inc.
5465 Morehouse Drive, Suite 260
San Diego, California 92121

Attention: Mr. Jeff Rogers

Subject: GEOTECHNICAL ANALYSIS FOR DRY WELL DESIGN
CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

Dear Mr. Rogers:

In accordance with your request, we herein submit the results of our geotechnical analysis for the dry well design at the subject site. Our study included exploratory borings, borehole infiltration testing and computer analysis. The accompanying report presents the results of our study and conclusions regarding the use of dry wells for proposed water quality improvements.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Rodney C. Mikesell
GE 2533

REGISTERED PROFESSIONAL ENGINEER RODNEY C. MIKESELL No.2533 GEOTECHNICAL STATE OF CALIFORNIA

Garry W. Cannon
CEG 2201
RCE 5646

REGISTERED PROFESSIONAL ENGINEER GARRY WELLS CANNON No. C 056468 CIVIL STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST GARRY WELLS CANNON No. 2201 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

RCM:GCC:dmc

(1) Addressee
(e-mail) Pasco Laret Suiter & Associates
Attention: Mr. Mike Wolfe

TABLE OF CONTENTS

1. PURPOSE AND SCOPE 1

2. SITE AND PROJECT DESCRIPTION 1

3. SOIL AND GEOLOGIC CONDITIONS 2

4. GROUNDWATER 2

5. HYDRAULIC CONDUCTIVITY AND ESTIMATED PEAK WELL FLOW RATE.. 2

6. CONCLUSIONS AND RECOMMENDATIONS.. 4

LIMITATIONS AND UNIFORMITY OF CONDITIONS

MAPS AND ILLUSTRATIONS
- Figure 1, Vicinity Map
- Figure 2, Geologic Map

APPENDIX A
- FIELD INVESTIGATION
- Figures A-1 and A-2, Logs of Borings

APPENDIX B
- Albus-Keefe & Associates Dry Well Analysis

GEOTECHNICAL ANALYSIS FOR DRY WELL DESIGN

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical analysis for the proposed water-quality dry-wells planned at the subject project located at 9850 Carroll Canyon Road northeast of the intersection of Interstate 15 and Carroll Canyon Road in San Diego, California (see Vicinity Map, Figure 1). The purpose of this study was to evaluate the hydraulic conductivity of the site soils for use in design of deep dry-wells for storm water management.

The scope of this investigation included reviewing geotechnical reports prepared for the site and adjacent projects, performing exploratory drilling, borehole infiltration testing, and engineering analyses.

The field investigation included drilling 2 small diameter borings to depths between 80 and 100 feet and installing wells to perform borehole infiltration testing. Logs of the borings and well construction are provided in Appendix A. The approximate boring locations are shown on Figure 2.

2. SITE AND PROJECT DESCRIPTION

The site is located northeast of the intersection of Interstate 15 and Carroll Canyon Road in San Diego, California. The site is bound on the north by a natural canyon drainage, east by existing office buildings, south by Carroll Canyon Road, and west by the on-ramp to northbound Interstate 15. Two office buildings occupy the site, a single story office building is situated on the northwest side of the site, and a two-story office building is situated on the southeast side of the site. Paved parking lots and access driveways lie between and to the north of the existing buildings. Numerous eucalyptus trees also occupy the property.

The property slopes gently from southeast to the north/northwest with existing site elevations ranging from near 522 feet Mean Sea Level (MSL) to 510 feet MSL. Natural slopes lie north and west of the property. The slopes are approximately 10 to 45 feet high with inclinations between 1.5:1 and 2:1 (horizontal to vertical).

Development will consist of demolition of existing improvements on the property and constructing multi-family apartment buildings and commercial buildings. Underground storm-water detention vaults are planned with deep dry-wells for storm water infiltration.

We understand that MaxWell Plus Drainage systems will be used for storm water collection and infiltration. Two infiltration areas have been identified; one at the northwest corner of the property, the other on the south side. The wells are expected to consist of 4-foot diameter chambers that extend to depths of 50 to 100 feet. We understand that the upper 50 feet of the well will be sleeved such that infiltration does not occur in the near surface soils.

3. SOIL AND GEOLOGIC CONDITIONS

Based on our exploratory borings, review of the referenced reports, and published geologic literature, the bedrock unit underlying the property is the Stadium Conglomerate. Surficial soils consisting of undocumented fill and very old terrace deposits were encountered in the upper approximately 2 to 5 feet across the site. The surficial soils have not been mapped on Figure 2.

The Tertiary-age Stadium Conglomerate Formation was encountered during previous geotechnical investigations performed on the property and in the infiltration test borings performed for this study. The Stadium Conglomerate consists of a weakly to well cemented, fine to medium grained, cobble conglomerate in a silty/clayey sand matrix. Generally, the majority of this formation consists of a cobble conglomerate with discontinuous beds of sandstone.

4. GROUNDWATER

Groundwater was not encountered during our investigation. Based on our experience in the area, we expect groundwater to be deeper than 100 feet below the existing ground surface.

5. HYDRAULIC CONDUCTIVITY AND ESTIMATED PEAK WELL FLOW RATE

The test method employed in this study to estimate hydraulic conductivity consisted of drilling borings, P1 and P2, to an approximate depth of 80 to 100 feet below existing ground surface using a six-inch-diameter, air-percussion drill. No samples were retrieved during drilling due to the rocky nature of the geologic formation (Stadium Conglomerate). Boring logs are provided in Appendix A.

At each well location a 2-inch-diameter, PVC well casing was installed in the boreholes with 30-foot-long screened at the bottom. Water was injected into the well and the rate of change in head over time was measured and recorded using an In-Situ Level TROLL 700 transducer coupled with an In-Situ RuggedReader handheld PC.

Data from the borehole testing was provided to Albus-Keefe & Associates to perform a steady-state analysis to develop the estimated peak flow capacity of the dry well. The report from Albus-Keefe & Associates is provided in Appendix B. The following table provides a summary of their calculated hydraulic conductivity, average infiltration rate, and estimated peak flow assuming a 100-foot deep well with a 50-foot upper non-infiltrating chamber. These values are unfactored. The project civil engineer should use an appropriate factor of safety in the design of the well system.

TABLE 5
ESTIMATED UNFACTORED INFILTRATION RATE AND PEAK FLOW

Boring/(Wells)	Depth (feet)	Hydraulic Conductivity (in/hr)	Effective Average Well Infiltration Rate (in/hr)	Well Peak Flow (cfs)
P-1 and P-2	0 – 40	0.2	4.9	0.07
	< 40	0.38		

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 The values provided in Table 5 can be used to design the water quality improvements. The well peak flow is based on a 100-foot deep well with the upper 50 feet cased. The values are unfactored, therefore, an appropriate factor of safety should be incorporated in the design.

6.2 Based on information provided by the dry-well manufacture (Torrent Resources), the proposed MaxWell Plus Drainage system will have a primary settling chamber that will remove sediment such that siltation in the well should be negligible, therefore, no reduction in the effective infiltration rate as a result of siltation has been recommended.

6.3 Based on analysis prepared by Albus-Keefe & Associates (see Appendix B), it is our opinion the site is suitable for the proposed dry wells provided they are designed appropriately for the estimated well peak flow volume.

6.4 Considering infiltration from the proposed dry wells will not occur in the upper 50 feet below pad grade, it is our opinion that the dry wells will not result in daylight water seepage or impact adjacent properties, utilities, or cause slope instability.

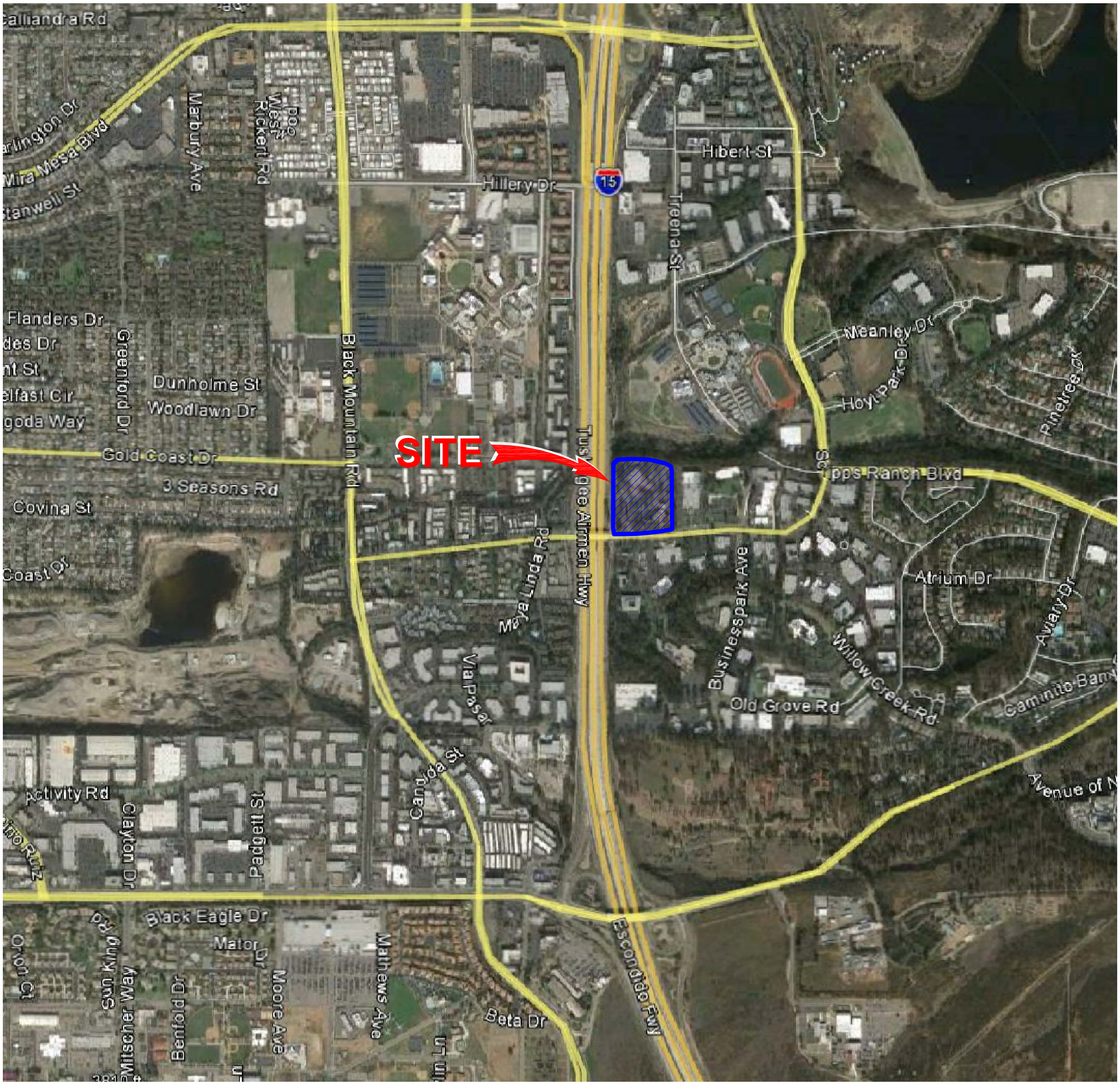
LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.



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N

NO SCALE

VICINITY MAP

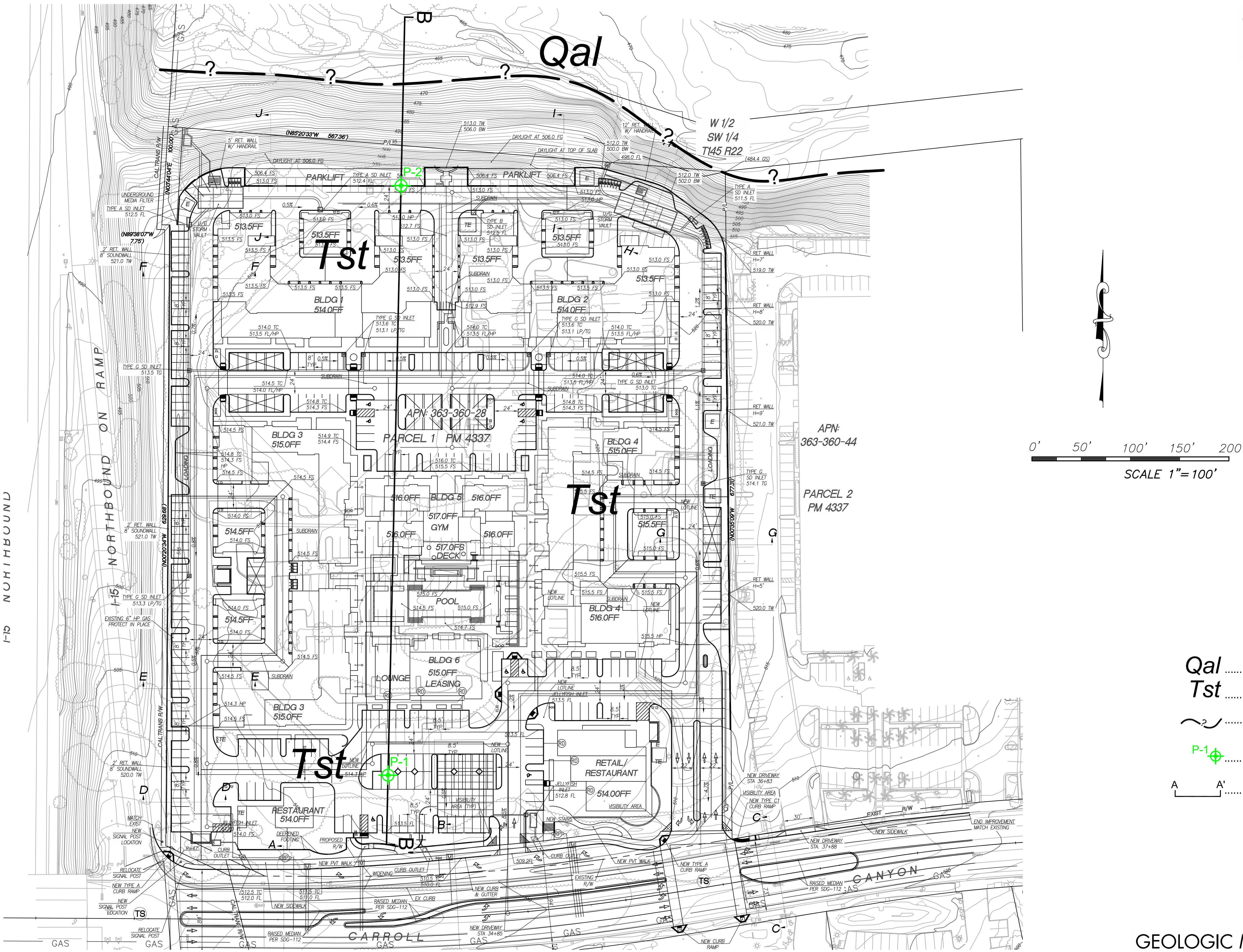
GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 01 - 21 - 2016	PROJECT NO. G1488 - 42 - 03	FIG. 1

Plotted:01/21/2016 9:15AM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1488-42-03 (Carroll Canyon)\DETAILS\G1488-42-03 Vic Map.dwg

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA



GEOCON LEGEND

Qal ....ALLUVIUM

Tst ....STADIUM CONGLOMERATE

........APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)

P-1 ....APPROX. LOCATION OF BOREHOLE PERCOLATION TEST BORING

A — A' ....APPROX. LOCATION OF GEOLOGIC CROSS SECTION

GEOCON INCORPORATED

GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974

PHONE 858 558-6900 - FAX 858 558-6159

GEOLOGIC MAP

PROJECT NO. G1488 - 42 - 03

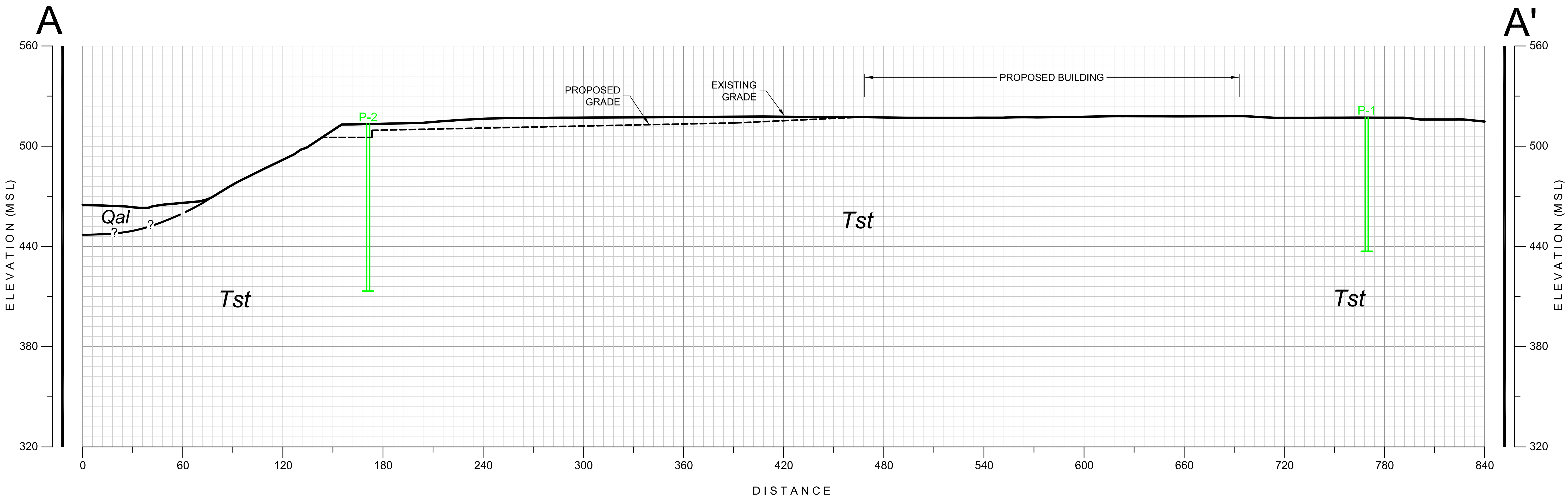
FIGURE 2

DATE 01 - 21 - 2016

Ladrillono

Plotted:01/21/2016 10:47AM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1488-42-03 (Carroll Canyon)\SHEETS\G1488-42-03 Site Plan.dwg

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA



GEOLOGIC CROSS-SECTION A-A'

SCALE: 1" = 60' (Vert. = Horiz.)

GEOCON LEGEND

Qal ....ALLUVIUM

Tst ....STADIUM CONGLOMERATE

........APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)

P-2 ....APPROX. LOCATION OF BOREHOLE PERCOLATION TEST BORING

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GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

PROJECT NO. G1488 - 42 - 03
FIGURE 3
DATE 01 - 21 - 2016

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

We performed the field investigation on August 28, 2015. The field investigation consisted of drilling two exploratory borings for percolation testing. The approximate locations of our exploratory borings are shown on the geologic map, Figure 2. The borings were excavated to depths of 80 feet to100 feet below existing grade using a Canterra 450 air percussion drill rig with 6-inch diameter bit.

Boring logs are presented on Figures A-1 and A-2. The boring logs depict the general soil and geologic conditions encountered.

PROJECT NO. G1488-42-03

PERCOLATION TEST P 1

ELEV. (MSL.) 517' DATE COMPLETED 08-28-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL/SC	**VERY OLD PARALIC DEPOSITS** Very dense, dry, light reddish brown, Clayey, fine to medium SAND to Sandy CLAY			
5				GP	**STADIUM CONGLOMERATE** Very dense, dry to damp, yellowish brown CONGLOMERATE with cobbles and Clayey, fine to medium SAND and gravel			
16					-Becomes sandy			
22					-Becomes clayey sand with gravel and cobbles			
40					-Becomes silty sand with gravel and cobbles			

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54

Figure A-1,
Log of PERCOLATION TEST P 1, Page 1 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

GEOCON

PERCOLATION TEST P 1

ELEV. (MSL.) 517' DATE COMPLETED 08-28-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
56					-Gravel and cobbles in silty sand matrix			
58								
60								
62								
64								
66								
68								
70								
72								
74								
76								
78								
80					BORING TEST TERMINATED AT 80 FEET No groundwater encountered			

Figure A-1,
Log of PERCOLATION TEST P 1, Page 2 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST P 2

ELEV. (MSL.)________ DATE COMPLETED 09-08-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL/SC	**VERY OLD PARALIC DEPOSITS** Dense and very stiff, dry to damp, dark brown to grayish brown, Sandy CLAY to Clayey SAND			
8				GP	**STADIUM CONGLOMERATE** Very dense, dry, light yellowish brown, CONGLOMERATE with cobbles, Clayey SAND, and gravel			
20					-Clayey sand with cobbles and gravel			
50					-Gravel with silt, sand, and cobbles			

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54

Figure A-2,
Log of PERCOLATION TEST P 2, Page 1 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PERCOLATION TEST P 2

ELEV. (MSL.)________ DATE COMPLETED **09-08-2015**

EQUIPMENT **CANTERRA 450 AIR PERCISSION-6"** BY: **G. CANNON**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
56								
58								
60								
62					-Gravel and cobbles with silt and sand			
64								
66								
68								
70								
72								
74								
76								
78					-Sand with gravel and cobbles			
80								
82								
84								
86								
88								
90								
92								
94								
96								
98								
100					BORING TERMINATED AT 100 FEET No groundwater encountered			

Figure A-2,
Log of PERCOLATION TEST P 2, Page 2 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

APPENDIX B

APPENDIX B

GEOTECHNICAL ANALYSES FOR PROPOSED WATER QUALITY IMPROVEMENTS

PREPARED BY **ALBUS-KEEFE & ASSOCIATES, INC.**

FOR

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

PROJECT NO. G1488-42-03

ALBUS-KEEFE & ASSOCIATES, INC
GEOTECHNICAL CONSULTANTS

January 19, 2016
J.N.: 2459.00

Mr. Rod Mikesell
Geocon Incorporated
6960 Flanders Drive
San Diego, CA 92121

Subject: **Preliminary Geotechnical Analyses for Proposed Water Quality Improvements, Carroll Canyon Road Project, San Diego, California.**

Dear Mr. Mikesell,

Pursuant to your request, ***Albus-Keefe & Associates, Inc***. has completed the analyses of percolation data you have provided for the subject site. The scope of this investigation consisted of the following:

- Detailed review of the percolation test data and boring logs provided
- Engineering analysis of the data
- Preparation of this report

ANALYSIS OF DATA

Subsurface Conditions

Descriptions of the earth materials encountered during Geocon Incorporated's (Geocon) investigation are presented in detail on the Exploration Logs presented in Appendix A. From these logs, a general lithology profile was developed for well flow modeling. The model consists of two zones having unique infiltration properties. The upper zone is assumed to be 40 feet thick. The second zone was assumed to extend infinitely below the first zone. Both zones are essentially sandy materials with varying amounts of fine contents that affect the permeability characteristics.

Ground Water

Groundwater was not encountered during GEOCON's subsurface exploration to a maximum depth of 100 feet below the existing ground surface. Groundwater was assumed to be present a significant depth such that it does not impact the analyses.

Percolation Data

Analyses were performed to evaluate permeability using the data obtained by Geocon's field percolation testing. The composite permeability of the infiltration zone was back-calculated using the Porchet equation and the results are summarized in Table 1 below.

TABLE 1
Summary of Back-Calculated Permeability Coefficient

Location	Depth of Well (ft)	Time interval, Δt (min.)	Initial Depth to Water, D_o (ft)	Final Depth to Water, D_f (ft)	Change in Water level, ΔD (in)	Infiltration Rate, It (in/hr)
B-1	80	25	49.1	52.704	43.21	0.38
	80	25	52.81	54.88	24.83	0.24
	80	10	54.96	55.61	7.76	0.20
	80	10	55.68	56.27	7.03	0.18
	80	10	56.33	56.87	6.43	0.17
	80	10	56.91	57.41	5.92	0.16
	80	10	57.46	57.91	5.4	0.15
	80	10	57.95	58.38	5.18	0.14
	80	10	58.42	58.83	4.91	0.14
	80	10	58.86	59.23	4.44	0.13
	80	10	59.28	59.64	4.32	0.13
	80	10	59.67	60.02	4.2	0.12
	80	10	60.05	60.39	4.08	0.12
	80	10	60.43	60.76	3.96	0.12
	80	10	60.79	61.1	3.72	0.12
	80	10	61.13	61.41	3.36	0.11
	80	10	61.45	61.72	3.24	0.10
	80	10	61.75	62.02	3.24	0.10
	80	10	62.04	62.3	3.12	0.10
	80	10	62.34	62.55	2.52	0.08
	80	18	62.57	62.74	2.04	0.04
B-2	80	25	54.91	58.839	47.21	0.50
	80	25	58.98	61.66	32.11	0.39
	80	10	61.75	62.54	9.54	0.31
	80	10	62.63	63.39	9.1	0.31
	80	10	63.47	64.14	8.05	0.28
	80	10	64.21	64.83	7.39	0.27
	80	10	64.9	65.45	6.67	0.25
	80	10	65.51	66.02	6.07	0.24
	80	10	66.07	66.53	5.52	0.22
	80	10	66.59	67	4.99	0.2
	80	10	67.05	67.45	4.8	0.2
	80	10	67.5	67.86	4.43	0.19
	80	10	67.91	68.26	4.15	0.18
	80	10	68.31	68.62	3.73	0.17

Location	Depth of Well (ft)	Time interval, Δt (min.)	Initial Depth to Water, D_o (ft)	Final Depth to Water, D_f (ft)	Change in Water level, ΔD (in)	Infiltration Rate, It (in/hr)
B-2	80	10	68.65	68.92	3.24	0.15
	80	10	68.94	69.22	3.31	0.15
	80	10	69.25	69.51	3.18	0.15
	80	10	69.53	69.75	2.62	0.13
	80	10	69.77	70	2.78	0.14
	80	10	70.03	70.25	2.63	0.13
	80	10	70.26	70.47	2.59	0.13
	80	3	70.49	70.54	0.59	0.10
	100	25	65.47	72.331	82.36	0.79
	100	25	72.51	76.37	46.32	0.54
	100	10	76.5	77.52	12.24	0.40
	100	10	77.64	78.5	10.32	0.35
	100	10	78.6	79.34	8.94	0.32
	100	10	79.41	80.04	7.57	0.28
	100	10	80.12	80.74	7.49	0.29
	100	10	80.81	81.4	7.03	0.28
	100	10	81.45	82.21	9.11	0.37
	100	10	82.29	83	8.53	0.37
	100	10	83.06	83.73	8.14	0.36
	100	10	83.78	84.42	7.67	0.36
	100	10	84.51	85.34	9.98	0.49
	100	10	85.46	86.13	8.04	0.42
	100	10	86.24	87.23	11.87	0.66
	100	10	87.3	88.01	8.57	0.52
	100	10	88.09	88.78	8.3	0.53
	100	10	88.79	88.9	1.32	0.09
	100	10	88.98	89.65	8.03	0.56
	100	10	89.7	90.03	3.89	0.28
	100	10	90.03	90.42	4.58	0.35
	100	10	90.46	90.77	3.77	0.30
	100	10	90.79	90.92	1.49	0.12
	100	10	90.89	91.19	3.61	0.30
	100	10	91.23	91.47	2.82	0.24

Design of Dry Well

Infiltration in a dry well was modeled using the software Seep/W, version 2007, by Geo-Slope International. The program allows for modeling of both partially-saturated and saturated porous medium using a finite element approach to solve Darcy's Law. The program can evaluate both steady-state and transient flow in planer and axisymmetric cases. Boundaries of the model can be identified with various conditions including fix total head, fix pressure head, fix flow rate, and head as a function of flow. Soil conductivity properties can be modeled with either Fredlund et al (1994), Green and Corey (1971), or Van Genuchten (1980). The Van Genuchten parameters were selected for use in our models and were based on test results of particle-size analyses and estimated in-place densities. The saturated conductivities for the infiltration zones are set to the values obtained from back-calculation of the percolation tests.

From the 3 well tests, we identified two different zones with unique permeability characteristics. A model was setup with two zones of material to represent the general soil profile at each of the two boring locations. A summary of the well profiles are provided in Tables 2.

TABLE 2
Summary of Characteristic Curve Parameters

Material No.	Depth (ft)	Ks (in/hr)	Van Genuchten Parameters				
			a (1/cm)	n	m	Sat. Water Content	Residual Water Content
1	0-40	0.20	0.023	1.11	0.10	0.34	0.01
2	+40	0.38	0.012	1.13	0.12	0.33	0.01

Steady state analysis was performed to estimate the maximum inflow that the wells could accommodate. The water head was set at a depth of 5 feet below ground level and water was not allowed to infiltrate in the upper 50 feet. Using a well that is 4 feet in diameter and 100 feet in depth, we obtain a static total flow of 0.07 ft /sec. An effective percolation surface area (wetted surface) of 640.89 ft^2 was determined for the zone from 50 to 100 feet. The static flow divided by the effective surface area (Q/A) would then yield an average peak infiltration rate of 4.9 in/hr. A Plot depicting the resulting pressure head contours and flow vectors for the model are provided on Plate B-1 in Appendix B.

To evaluate the time required to empty the well once no more water is introduced, the model was reanalyzed with a variable head condition that was dependent upon the volume of water leaving the well. As water infiltrates into the surrounding soil, the volume of water remaining in the well is reduced as well as the resulting water head. A graph of the well head versus exit volume for a depth of 100 feet is provided in Figure 3. The models are based on an upper chamber that is 20 feet long and 4 feet in diameter set in a shaft 6 feet in diameter. The remainder of the well is assumed to be 4 feet in diameter below the chamber section. Gravel is assumed to occupy the annular space between the outer and inner diameters and the lower shaft section. The function assumes a void ratio of 0.4

within the zones occupied by gravel. If some other well configuration is used, then the analyses may require updating. A more detailed model of the dry well design is attached as Plate 1.

Analysis was performed as a transient case over a total time of 30 hours. The condition in the model was evaluated in 30 minute increments of time over the total duration. The water was completely evacuated in less than 27 hours for a 100 foot deep well. Plots depicting the resulting pressure head contours and flow vectors are provided in Appendix B on Plates B-2 through B-6. A plot of time versus water height in the well is shown on Figure 4.

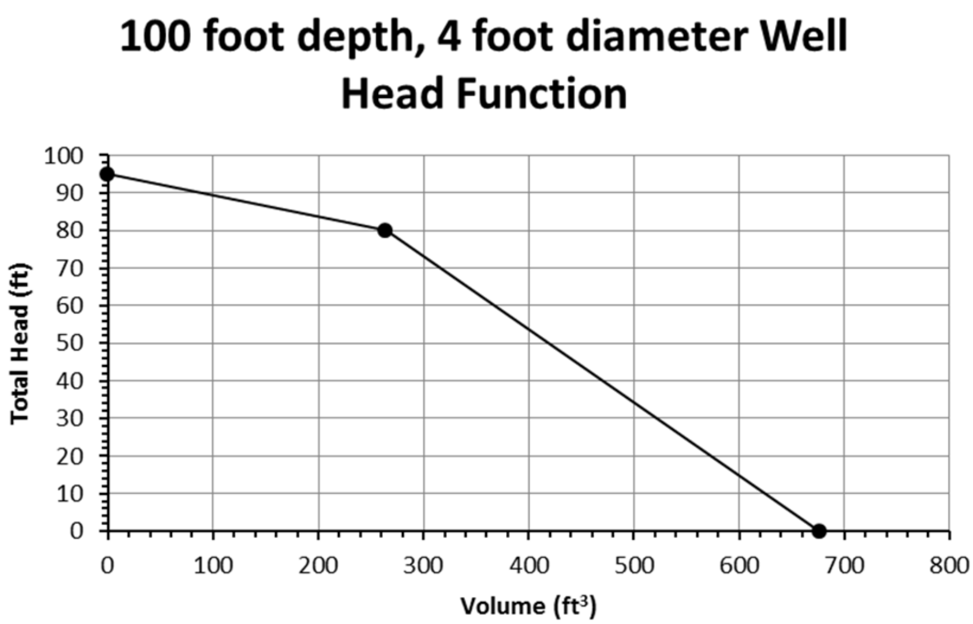


FIGURE 3

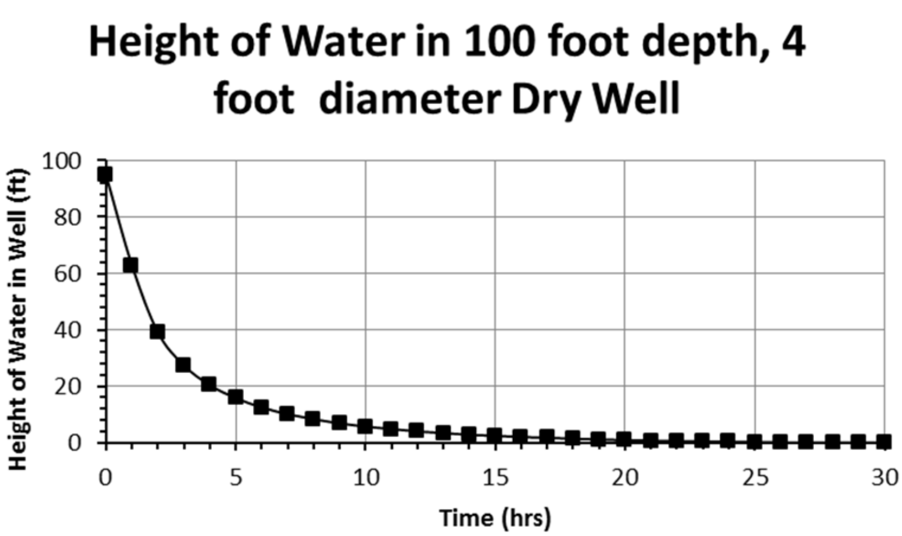


FIGURE 4

CONCLUSIONS AND RECOMMENDATIONS

Results of our work indicate a storm water disposal system consisting of a dry well is feasible at the site. Based on results of percolation testing and analyses, the percolation rate for a 4-foot-diameter dry well with a total depth of at least 100 feet may utilize an unfactored peak flow rate of 0.07 ft /sec. At this flow rate, an average measured peak infiltration rate of 4.9 in is achieved by the dry well system when applied to the wetted surface area from 50 to 100 feet.

An appropriate factor of safety should be applied to these values as required by the appropriate governmental authority. The project geotechnical consultant should observe the drilling to confirm the intent of this report.

Should you require multiple dry wells across the site, the wells should be spaced at least 60 feet center to center for a 4-foot-diameter dry well with a total depth of at 100 feet to avoid cross influence. Wells spaced closer than 60 feet will require a reduction factor to account for cross influence. The dry wells should be setback from structures, slopes, streets, and property lines as recommended by the geotechnical engineer of record.

The actual flow capacity of the dry well could be more or less than the estimated value. As such, provisions should be made to accommodate excess flow quantities in the event the dry well does not infiltrate the anticipated amount. The design also assumes that sediments will be removed from the inflowing water. Sediments that are allowed to enter the dry well will tend to degrade the flow capacity by plugging up the infiltration surfaces.

The dry well should be constructed as indicated on Plate 1. A cement slurry should be used around the concrete chamber to prevent infiltration within the upper 20 feet. Additional provisions will be require to prevent infiltration between the depths of 20 and 50 feet such as slurry backfill, a casing, or waterproof membrane. Specific recommendations should be provided by the contractor as approved by the project geotechnical consultant.

The dry well shaft may be adequately stable under temporary construction conditions for uncased drilling. However, most of the site soils are granular and may be prone to sloughing and caving shortly after drilling. The contractor should be prepared to provide casing to maintain stability of the shaft in the event of caving. Workers should not enter the shaft unless the excavation is laid back or shored in accordance with OSHA requirements. The placement and compaction of backfill materials, including the gravel, should be observed by the project geotechnical consultant.

LIMITATIONS

This report is based on the geotechnical data as described herein. The materials encountered in Geocon's boring excavations and utilized in the laboratory testing as part of their investigation are believed representative of the project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observations by a geotechnical consultant during the construction phase of the storm water infiltration systems are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **Geocon Incorporated** to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call.
Sincerely,

ALBUS-KEEFE & ASSOCIATES, INC.

Andrew J. Atry
Project Engineer
P.E. C84728

REGISTERED PROFESSIONAL ENGINEER ANDREW J. ATRY C 84728 CIVIL STATE OF CALIFORNIA

Reviewed by:

David E. Albus
Principal Engineer
G.E. 2455

REGISTERED PROFESSIONAL ENGINEER DAVID E. ALBUS No. 2455 Exp. 12/31/16 GEOTECHNICAL STATE OF CALIFORNIA

Enclosures: Plate 1– Diagram of Dry Well
Appendix A – Previous Data by Geocon
Appendix B - Percolation Analyses

REFERENCES

Reports

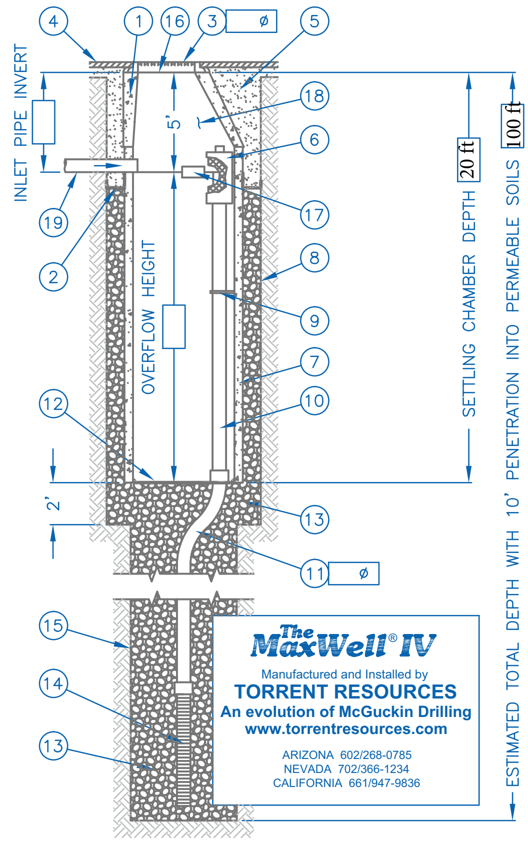
Log of Percolation Test's, Carroll Canyon Road, San Diego, County of San Diego, California, prepared by Geocon Inc. (P.N. G1488-42-03).

MAXWELL® IV DRAINAGE SYSTEM DETAIL AND SPECIFICATIONS

ITEM NUMBERS

1. **Manhole Cone** - Modified Flat Bottom.
2. **Moisture Membrane** - 6 Mil. Plastic. Applies only when native material is used for backfill. Place membrane securely against eccentric cone and hole sidewall.
3. **Bolted Ring & Grate** - Diameter as shown. Clean cast iron with wording **"Storm Water Only"** in raised letters. **Bolted in 2 locations** and secured to cone with mortar. Rim elevation ±0.02' of plans.
4. **Graded Basin or Paving** (by Others).
5. **Compacted Base Material** - 1-Sack Slurry except in landscaped installtions with no pipe connections.
6. **PureFlo® Debris Shield** - Rolled 16 ga. steel X 24" length with vented anti-siphon and Internal .265" Max. SWO flattened expanded steel screen X 12" length. **Fusion bonded epoxy coated.**
7. **Pre-cast Liner** - 4000 PSI concrete 48" ID. X 54" OD. **Center in hole** and align sections **to maximize bearing surface.**
8. **Min. 6' Ø Drilled Shaft.**
9. **Support Bracket** - Formed 12 Ga. steel. **Fusion bonded epoxy coated.**
10. **Overflow Pipe** - Sch. 40 PVC mated to drainage pipe at base seal.
11. **Drainage Pipe** - ADS highway grade with TRI-A coupler. **Suspend pipe** during backfill operations to prevent buckling or breakage. Diameter as noted.
12. **Base Seal** - Geotextile or concrete slurry.
13. **Rock** - Washed, sized between 3/8" and 1-1/2" to **best complement soil conditions.**
14. **FloFast® Drainage Screen** - Sch. 40 PVC 0.120" slotted well screen with 32 slots per row/ft.Diameter varies 120" overall length with TRI-B coupler.
15. **Min. 4' Ø Shaft** - Drilled to **maintain permeability** of drainage soils.
16. **Fabric Seal** - U.V. resistant geotextile - **to be removed by customer** at project completion.
17. **Absorbent** – Hydrophobic Petrochemical Sponge. Min. to 128 oz. capacity.
18. **Freeboard Depth** Varies with inlet pipe elevation. Increase settling chamber depth as needed to maintain all inlet pipe elevations above overflow pipe inlet.
19. **Optional Inlet Pipe** (Maximum 4", by Others). Extend moisture membrane and compacted base material or 1 sack slurry backfill below pipe invert.

The referenced drawing and specifications are available on CAD either through our office or web site. This detail is copyrighted (2004) but may be used as is in construction plans without further release. For information on product application, individual project specifications or site evaluation, contact our Design Staff for no-charge assistance in any phase of your planning.



AZ Lic. ROC070465 A, ROC047067 B-4, ADWR 363
CA Lic. 528080, C-42, HAZ
NV Lic. 0035350 A - NM Lic. 90504 GF04

U.S. Patent No. 4,923,330 - TM Trademark 1974, 1990, 2004

CALCULATING MAXWELL IV REQUIREMENTS

The type of property, soil permeability, rainfall intensity and local drainage ordinances determine the number and design of MaxWell Systems. For general applications draining retained stormwater, use one standard **MaxWell IV** per the instructions below for up to 3 acres of landscaped contributory area, and up to 1 acre of paved surface. For larger paved surfaces, subdivision drainage, nuisance water drainage, connecting pipes larger than 4" Ø from catch basins or underground storage, or other demanding applications, refer to our **MaxWell® Plus** System. For industrial drainage, including gasoline service stations, our **Envibro® System** may be recommended. For additional considerations, please refer to **"Design Suggestions For Retention And Drainage Systems"** or consult our Design Staff.

COMPLETING THE MAXWELL IV DRAWING

To apply the **MaxWell IV** drawing to your specific project, simply fill in the blue boxes per instructions below. For assistance, please consult our Design Staff.

100 feet ESTIMATED TOTAL DEPTH

The Estimated Total Depth is the approximate depth required to achieve 10 continuous feet of penetration into permeable soils. Torrent utilizes specialized **"crowd"** equipped drill rigs to penetrate difficult, cemented soils and to reach permeable materials at depths up to **180 feet.** Our extensive database of drilling logs and soils information is available for use as a reference. Please contact our Design Staff for site-specific information on your project.

20 feet SETTLING CHAMBER DEPTH

On MaxWell IV Systems of over 30 feet overall depth and up to 0.25cfs design rate, the **standard** Settling Chamber Depth is **18 feet.** For systems exposed to greater contributory area than noted above, extreme service conditions, or that require higher design rates, chamber depths up to 25 feet are recommended.

' OVERFLOW HEIGHT

The Overflow Height and Settling Chamber Depth determine the effectiveness of the settling process. The higher the overflow pipe, the deeper the chamber, the greater the settling capacity. For normal drainage applications, an overflow height of **13 feet** is used with the standard settling chamber depth of **18 feet**. Sites with higher design rates than noted above, heavy debris loading or unusual service conditions require greater settling capacities

"Ø DRAINAGE PIPE

This dimension also applies to the **PureFlo®** Debris Shield, the **FloFast®** Drainage Screen, and fittings. The size selected is based upon system design rates, soil conditions, and the need for adequate venting. Choices are 6", 8", or 12" diameter. Refer to "Design Suggestions for Retention and Drainage Systems" for recommendations on which size best matches your application.

"Ø BOLTED RING & GRATE

Standard models are quality cast iron and available to fit 24" Ø or 30" Ø manhole openings. All units are bolted in two locations with wording "Storm Water Only" in raised letters. For other surface treatments, please refer to "Design Suggestions for Retention and Drainage Systems."

"Ø INLET PIPE INVERT

Pipes up to 4" in diameter from catch basins, underground storage, etc. may be connected into the settling chamber. Inverts deeper than 5 feet will require additional settling chamber depth to maintain effective overflow height.

TORRENT RESOURCES INCORPORATED

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TORRENT RESOURCES (CA) INCORPORATED

phone 661~947~9836

CA Lic. 886759 A, C-42

www.TorrentResources.com

An evolution of McGuckin Drilling

The watermark for drainage solutions.®

Plate 1

TORRENT® RESOURCES

APPENDIX A

PREVIOUS DATA BY GEOCON

PERCOLATION TEST P 1

ELEV. (MSL.) 517' DATE COMPLETED 08-28-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL/SC	**VERY OLD PARALIC DEPOSITS** Very dense, dry, light reddish brown, Clayey, fine to medium SAND to Sandy CLAY			
5				GP	**STADIUM CONGLOMERATE** Very dense, dry to damp, yellowish brown CONGLOMERATE with cobbles and Clayey, fine to medium SAND and gravel			
16					-Becomes sandy			
22					-Becomes clayey sand with gravel and cobbles			

Figure A-20,
Log of PERCOLATION TEST P 1, Page 1 of 3

G1488-42-03.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1488-42-03

PERCOLATION TEST P 1

ELEV. (MSL.) **517'** DATE COMPLETED **08-28-2015**

EQUIPMENT **CANTERRA 450 AIR PERCISSION-6"** BY: **G. CANNON**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30								
32								
34								
36								
38								
40					-Becomes silty sand with gravel and cobbles			
42								
44								
46								
48								
50								
52								
54								
56					-Gravel and cobbles in silty sand matrix			
58								

Figure A-20,
Log of PERCOLATION TEST P 1, Page 2 of 3

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST P 1

ELEV. (MSL.) 517' DATE COMPLETED 08-28-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
60								
62								
64								
66								
68								
70								
72								
74								
76								
78								
80					BORING TEST TERMINATED AT 80 FEET No groundwater encountered			

Figure A-20,
Log of PERCOLATION TEST P 1, Page 3 of 3

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST P 2

ELEV. (MSL.)________ DATE COMPLETED 09-08-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL/SC	**VERY OLD PARALIC DEPOSITS** Dense and very stiff, dry to damp, dark brown to grayish brown, Sandy CLAY to Clayey SAND			
2								
4								
6								
8				GP	**STADIUM CONGLOMERATE** Very dense, dry, light yellowish brown, CONGLOMERATE with cobbles, Clayey SAND, and gravel			
10								
12								
14								
16								
18								
20					-Clayey sand with cobbles and gravel			
22								
24								
26								
28								

Figure A-21,
Log of PERCOLATION TEST P 2, Page 1 of 4

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◣ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	PERCOLATION TEST P 2 ELEV. (MSL.)________ DATE COMPLETED 09-08-2015 EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
30								
32								
34								
36								
38								
40								
42								
44								
46								
48								
50					-Gravel with silt, sand, and cobbles			
52								
54								
56								
58								

Figure A-21,
Log of PERCOLATION TEST P 2, Page 2 of 4

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST P 2

ELEV. (MSL.)________ DATE COMPLETED 09-08-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
60								
62					-Gravel and cobbles with silt and sand			
64								
66								
68								
70								
72								
74								
76								
78					-Sand with gravel and cobbles			
80								
82								
84								
86								
88								

Figure A-21,
Log of PERCOLATION TEST P 2, Page 3 of 4

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

PERCOLATION TEST P 2

ELEV. (MSL.)________ DATE COMPLETED **09-08-2015**

EQUIPMENT **CANTERRA 450 AIR PERCISSION-6"** BY: **G. CANNON**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
90								
92								
94								
96								
98								
100					BORING TERMINATED AT 100 FEET No groundwater encountered			

Figure A-21,
Log of PERCOLATION TEST P 2, Page 4 of 4

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Carroll Canyon Road Percolation Data

B1(80ft)			
T(min)	Head(ft)	Depth(ft)	EL(msl)
0	28.897	49.103	470.897
1	28.653	49.347	470.653
2	28.396	49.604	470.396
3	28.192	49.808	470.192
4	27.999	50.001	469.999
5	27.823	50.177	469.823
6	27.665	50.335	469.665
7	27.512	50.488	469.512
8	27.362	50.638	469.362
9	27.219	50.781	469.219
10	27.076	50.924	469.076
11	26.936	51.064	468.936
12	26.801	51.199	468.801
13	26.661	51.339	468.661
14	26.534	51.466	468.534
15	26.418	51.582	468.418
16	26.297	51.703	468.297
17	26.169	51.831	468.169
18	26.054	51.946	468.054
19	25.941	52.059	467.941
20	25.834	52.166	467.834
21	25.715	52.285	467.715
22	25.606	52.394	467.606
23	25.501	52.499	467.501
24	25.392	52.608	467.392
25	25.296	52.704	467.296
26	25.188	52.812	467.188
27	25.093	52.907	467.093
28	24.993	53.007	466.993
29	24.894	53.106	466.894
30	24.795	53.205	466.795
31	24.707	53.293	466.707
32	24.614	53.386	466.614
33	24.524	53.476	466.524
34	24.43	53.57	466.43
35	24.345	53.655	466.345
36	24.247	53.753	466.247
37	24.159	53.841	466.159
38	24.076	53.924	466.076
39	23.988	54.012	465.988
40	23.919	54.081	465.919
41	23.826	54.174	465.826
42	23.735	54.265	465.735
43	23.658	54.342	465.658

Carroll Canyon Road Percolation Data

B1(80ft)			
T(min)	Head(ft)	Depth(ft)	EL(msl)
44	23.569	54.431	465.569
45	23.504	54.496	465.504
46	23.424	54.576	465.424
47	23.347	54.653	465.347
48	23.273	54.727	465.273
49	23.199	54.801	465.199
50	23.119	54.881	465.119
51	23.039	54.961	465.039
52	22.971	55.029	464.971
53	22.889	55.111	464.889
54	22.821	55.179	464.821
55	22.741	55.259	464.741
56	22.671	55.329	464.671
57	22.599	55.401	464.599
58	22.528	55.472	464.528
59	22.461	55.539	464.461
60	22.392	55.608	464.392
61	22.32	55.68	464.32
62	22.252	55.748	464.252
63	22.19	55.81	464.19
64	22.125	55.875	464.125
65	22.056	55.944	464.056
66	21.99	56.01	463.99
67	21.924	56.076	463.924
68	21.859	56.141	463.859
69	21.797	56.203	463.797
70	21.734	56.266	463.734
71	21.671	56.329	463.671
72	21.606	56.394	463.606
73	21.543	56.457	463.543
74	21.482	56.518	463.482
75	21.429	56.571	463.429
76	21.361	56.639	463.361
77	21.296	56.704	463.296
78	21.245	56.755	463.245
79	21.19	56.81	463.19
80	21.135	56.865	463.135
81	21.087	56.913	463.087
82	21.026	56.974	463.026
83	20.961	57.039	462.961
84	20.914	57.086	462.914
85	20.853	57.147	462.853
86	20.803	57.197	462.803
87	20.748	57.252	462.748

Carroll Canyon Road Percolation Data

B1(80ft)			
T(min)	Head(ft)	Depth(ft)	EL(msl)
88	20.696	57.304	462.696
89	20.64	57.36	462.64
90	20.594	57.406	462.594
91	20.539	57.461	462.539
92	20.484	57.516	462.484
93	20.427	57.573	462.427
94	20.382	57.618	462.382
95	20.331	57.669	462.331
96	20.282	57.718	462.282
97	20.236	57.764	462.236
98	20.186	57.814	462.186
99	20.139	57.861	462.139
100	20.089	57.911	462.089
101	20.055	57.945	462.055
102	20.007	57.993	462.007
103	19.956	58.044	461.956
104	19.911	58.089	461.911
105	19.873	58.127	461.873
106	19.817	58.183	461.817
107	19.773	58.227	461.773
108	19.725	58.275	461.725
109	19.677	58.323	461.677
110	19.623	58.377	461.623
111	19.584	58.416	461.584
112	19.539	58.461	461.539
113	19.484	58.516	461.484
114	19.441	58.559	461.441
115	19.402	58.598	461.402
116	19.356	58.644	461.356
117	19.31	58.69	461.31
118	19.26	58.74	461.26
119	19.222	58.778	461.222
120	19.175	58.825	461.175
121	19.138	58.862	461.138
122	19.094	58.906	461.094
123	19.049	58.951	461.049
124	19.006	58.994	461.006
125	18.973	59.027	460.973
126	18.919	59.081	460.919
127	18.889	59.111	460.889
128	18.849	59.151	460.849
129	18.815	59.185	460.815
130	18.768	59.232	460.768
131	18.724	59.276	460.724

Carroll Canyon Road Percolation Data

B1(80ft)			
T(min)	Head(ft)	Depth(ft)	EL(msl)
132	18.687	59.313	460.687
133	18.641	59.359	460.641
134	18.597	59.403	460.597
135	18.557	59.443	460.557
136	18.523	59.477	460.523
137	18.481	59.519	460.481
138	18.433	59.567	460.433
139	18.399	59.601	460.399
140	18.36	59.64	460.36
141	18.326	59.674	460.326
142	18.289	59.711	460.289
143	18.257	59.743	460.257
144	18.217	59.783	460.217
145	18.172	59.828	460.172
146	18.142	59.858	460.142
147	18.101	59.899	460.101
148	18.062	59.938	460.062
149	18.022	59.978	460.022
150	17.985	60.015	459.985
151	17.946	60.054	459.946
152	17.919	60.081	459.919
153	17.883	60.117	459.883
154	17.829	60.171	459.829
155	17.803	60.197	459.803
156	17.762	60.238	459.762
157	17.706	60.294	459.706
158	17.684	60.316	459.684
159	17.639	60.361	459.639
160	17.611	60.389	459.611
161	17.571	60.429	459.571
162	17.531	60.469	459.531
163	17.494	60.506	459.494
164	17.459	60.541	459.459
165	17.417	60.583	459.417
166	17.386	60.614	459.386
167	17.361	60.639	459.361
168	17.311	60.689	459.311
169	17.276	60.724	459.276
170	17.241	60.759	459.241
171	17.212	60.788	459.212
172	17.172	60.828	459.172
173	17.133	60.867	459.133
174	17.11	60.89	459.11
175	17.071	60.929	459.071

Carroll Canyon Road Percolation Data

B1(80ft)			
T(min)	Head(ft)	Depth(ft)	EL(msl)
176	17.03	60.97	459.03
177	17	61	459
178	16.96	61.04	458.96
179	16.928	61.072	458.928
180	16.904	61.096	458.904
181	16.868	61.132	458.868
182	16.84	61.16	458.84
183	16.809	61.191	458.809
184	16.772	61.228	458.772
185	16.745	61.255	458.745
186	16.703	61.297	458.703
187	16.678	61.322	458.678
188	16.645	61.355	458.645
189	16.613	61.387	458.613
190	16.586	61.414	458.586
191	16.55	61.45	458.55
192	16.515	61.485	458.515
193	16.485	61.515	458.485
194	16.453	61.547	458.453
195	16.422	61.578	458.422
196	16.39	61.61	458.39
197	16.362	61.638	458.362
198	16.336	61.664	458.336
199	16.307	61.693	458.307
200	16.278	61.722	458.278
201	16.249	61.751	458.249
202	16.22	61.78	458.22
203	16.189	61.811	458.189
204	16.165	61.835	458.165
205	16.127	61.873	458.127
206	16.104	61.896	458.104
207	16.071	61.929	458.071
208	16.043	61.957	458.043
209	16.01	61.99	458.01
210	15.978	62.022	457.978
211	15.96	62.04	457.96
212	15.929	62.071	457.929
213	15.889	62.111	457.889
214	15.873	62.127	457.873
215	15.837	62.163	457.837
216	15.809	62.191	457.809
217	15.789	62.211	457.789
218	15.75	62.25	457.75
219	15.731	62.269	457.731

Carroll Canyon Road Percolation Data

B1(80ft)			
T(min)	Head(ft)	Depth(ft)	EL(msl)
220	15.704	62.296	457.704
221	15.665	62.335	457.665
222	15.643	62.357	457.643
223	15.61	62.39	457.61
224	15.591	62.409	457.591
225	15.567	62.433	457.567
226	15.541	62.459	457.541
227	15.518	62.482	457.518
228	15.5	62.5	457.5
229	15.476	62.524	457.476
230	15.447	62.553	457.447
231	15.433	62.567	457.433
232	15.398	62.602	457.398
233	15.37	62.63	457.37
234	15.359	62.641	457.359
235	15.332	62.668	457.332
236	15.305	62.695	457.305
237	15.282	62.718	457.282
238	15.261	62.739	457.261

Carroll Canyon Road Percolation Data

B2(80ft)			
T(min)	Head(ft)	Depth(ft)	El (msl)
0	23.095	54.905	461.095
1	22.86	55.14	460.86
2	22.656	55.344	460.656
3	22.451	55.549	460.451
4	22.277	55.723	460.277
5	22.103	55.897	460.103
6	21.926	56.074	459.926
7	21.761	56.239	459.761
8	21.591	56.409	459.591
9	21.413	56.587	459.413
10	21.227	56.773	459.227
11	21.045	56.955	459.045
12	20.89	57.11	458.89
13	20.746	57.254	458.746
14	20.604	57.396	458.604
15	20.463	57.537	458.463
16	20.316	57.684	458.316
17	20.182	57.818	458.182
18	20.042	57.958	458.042
19	19.905	58.095	457.905
20	19.78	58.22	457.78
21	19.649	58.351	457.649
22	19.515	58.485	457.515
23	19.402	58.598	457.402
24	19.279	58.721	457.279
25	19.161	58.839	457.161
26	19.019	58.981	457.019
27	18.895	59.105	456.895
28	18.768	59.232	456.768
29	18.649	59.351	456.649
30	18.541	59.459	456.541
31	18.425	59.575	456.425
32	18.309	59.691	456.309
33	18.197	59.803	456.197
34	18.089	59.911	456.089
35	17.985	60.015	455.985
36	17.872	60.128	455.872
37	17.758	60.242	455.758
38	17.641	60.359	455.641
39	17.524	60.476	455.524
40	17.412	60.588	455.412
41	17.288	60.712	455.288
42	17.181	60.819	455.181
43	17.073	60.927	455.073

Carroll Canyon Road Percolation Data

B2(80ft)			
T(min)	Head(ft)	Depth(ft)	El (msl)
44	16.965	61.035	454.965
45	16.856	61.144	454.856
46	16.752	61.248	454.752
47	16.648	61.352	454.648
48	16.543	61.457	454.543
49	16.441	61.559	454.441
50	16.343	61.657	454.343
51	16.254	61.746	454.254
52	16.163	61.837	454.163
53	16.078	61.922	454.078
54	15.995	62.005	453.995
55	15.91	62.09	453.91
56	15.831	62.169	453.831
57	15.735	62.265	453.735
58	15.645	62.355	453.645
59	15.555	62.445	453.555
60	15.459	62.541	453.459
61	15.37	62.63	453.37
62	15.288	62.712	453.288
63	15.21	62.79	453.21
64	15.122	62.878	453.122
65	15.036	62.964	453.036
66	14.956	63.044	452.956
67	14.871	63.129	452.871
68	14.778	63.222	452.778
69	14.69	63.31	452.69
70	14.612	63.388	452.612
71	14.535	63.465	452.535
72	14.455	63.545	452.455
73	14.382	63.618	452.382
74	14.303	63.697	452.303
75	14.222	63.778	452.222
76	14.145	63.855	452.145
77	14.071	63.929	452.071
78	14.006	63.994	452.006
79	13.939	64.061	451.939
80	13.864	64.136	451.864
81	13.79	64.21	451.79
82	13.72	64.28	451.72
83	13.645	64.355	451.645
84	13.581	64.419	451.581
85	13.507	64.493	451.507
86	13.444	64.556	451.444
87	13.379	64.621	451.379

Carroll Canyon Road Percolation Data

B2(80ft)			
T(min)	Head(ft)	Depth(ft)	El (msl)
88	13.307	64.693	451.307
89	13.24	64.76	451.24
90	13.174	64.826	451.174
91	13.103	64.897	451.103
92	13.035	64.965	451.035
93	12.974	65.026	450.974
94	12.906	65.094	450.906
95	12.834	65.166	450.834
96	12.774	65.226	450.774
97	12.71	65.29	450.71
98	12.67	65.33	450.67
99	12.61	65.39	450.61
100	12.547	65.453	450.547
101	12.488	65.512	450.488
102	12.435	65.565	450.435
103	12.387	65.613	450.387
104	12.326	65.674	450.326
105	12.272	65.728	450.272
106	12.218	65.782	450.218
107	12.155	65.845	450.155
108	12.104	65.896	450.104
109	12.049	65.951	450.049
110	11.982	66.018	449.982
111	11.927	66.073	449.927
112	11.872	66.128	449.872
113	11.822	66.178	449.822
114	11.763	66.237	449.763
115	11.716	66.284	449.716
116	11.663	66.337	449.663
117	11.617	66.383	449.617
118	11.563	66.437	449.563
119	11.513	66.487	449.513
120	11.467	66.533	449.467
121	11.412	66.588	449.412
122	11.368	66.632	449.368
123	11.316	66.684	449.316
124	11.263	66.737	449.263
125	11.223	66.777	449.223
126	11.174	66.826	449.174
127	11.128	66.872	449.128
128	11.09	66.91	449.09
129	11.042	66.958	449.042
130	10.996	67.004	448.996
131	10.95	67.05	448.95

Carroll Canyon Road Percolation Data

B2(80ft)			
T(min)	Head(ft)	Depth(ft)	El (msl)
132	10.906	67.094	448.906
133	10.863	67.137	448.863
134	10.815	67.185	448.815
135	10.771	67.229	448.771
136	10.719	67.281	448.719
137	10.675	67.325	448.675
138	10.632	67.368	448.632
139	10.596	67.404	448.596
140	10.55	67.45	448.55
141	10.505	67.495	448.505
142	10.463	67.537	448.463
143	10.422	67.578	448.422
144	10.381	67.619	448.381
145	10.333	67.667	448.333
146	10.301	67.699	448.301
147	10.264	67.736	448.264
148	10.221	67.779	448.221
149	10.17	67.83	448.17
150	10.136	67.864	448.136
151	10.087	67.913	448.087
152	10.052	67.948	448.052
153	10.005	67.995	448.005
154	9.964	68.036	447.964
155	9.923	68.077	447.923
156	9.883	68.117	447.883
157	9.854	68.146	447.854
158	9.816	68.184	447.816
159	9.783	68.217	447.783
160	9.741	68.259	447.741
161	9.694	68.306	447.694
162	9.662	68.338	447.662
163	9.624	68.376	447.624
164	9.588	68.412	447.588
165	9.549	68.451	447.549
166	9.518	68.482	447.518
167	9.48	68.52	447.48
168	9.454	68.546	447.454
169	9.412	68.588	447.412
170	9.383	68.617	447.383
171	9.351	68.649	447.351
172	9.321	68.679	447.321
173	9.294	68.706	447.294
174	9.26	68.74	447.26
175	9.232	68.768	447.232

Carroll Canyon Road Percolation Data

B2(80ft)			
T(min)	Head(ft)	Depth(ft)	El (msl)
176	9.205	68.795	447.205
177	9.167	68.833	447.167
178	9.133	68.867	447.133
179	9.111	68.889	447.111
180	9.081	68.919	447.081
181	9.059	68.941	447.059
182	9.025	68.975	447.025
183	9.004	68.996	447.004
184	8.975	69.025	446.975
185	8.939	69.061	446.939
186	8.913	69.087	446.913
187	8.88	69.12	446.88
188	8.842	69.158	446.842
189	8.809	69.191	446.809
190	8.783	69.217	446.783
191	8.755	69.245	446.755
192	8.717	69.283	446.717
193	8.689	69.311	446.689
194	8.657	69.343	446.657
195	8.625	69.375	446.625
196	8.594	69.406	446.594
197	8.568	69.432	446.568
198	8.543	69.457	446.543
199	8.52	69.48	446.52
200	8.49	69.51	446.49
201	8.469	69.531	446.469
202	8.445	69.555	446.445
203	8.417	69.583	446.417
204	8.389	69.611	446.389
205	8.367	69.633	446.367
206	8.345	69.655	446.345
207	8.316	69.684	446.316
208	8.294	69.706	446.294
209	8.264	69.736	446.264
210	8.252	69.748	446.252
211	8.228	69.772	446.228
212	8.209	69.791	446.209
213	8.181	69.819	446.181
214	8.153	69.847	446.153
215	8.129	69.871	446.129
216	8.102	69.898	446.102
217	8.077	69.923	446.077
218	8.046	69.954	446.046
219	8.02	69.98	446.02

Carroll Canyon Road Percolation Data

B2(80ft)			
T(min)	Head(ft)	Depth(ft)	El (msl)
220	7.996	70.004	445.996
221	7.973	70.027	445.973
222	7.949	70.051	445.949
223	7.922	70.078	445.922
224	7.896	70.104	445.896
225	7.874	70.126	445.874
226	7.85	70.15	445.85
227	7.829	70.171	445.829
228	7.807	70.193	445.807
229	7.784	70.216	445.784
230	7.754	70.246	445.754
231	7.743	70.257	445.743
232	7.71	70.29	445.71
233	7.696	70.304	445.696
234	7.669	70.331	445.669
235	7.643	70.357	445.643
236	7.623	70.377	445.623
237	7.597	70.403	445.597
238	7.576	70.424	445.576
239	7.555	70.445	445.555
240	7.527	70.473	445.527
241	7.506	70.494	445.506
242	7.476	70.524	445.476
243	7.457	70.543	445.457

Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
0	31.532	65.468	450.532
1	31.16	65.84	450.16
2	30.817	66.183	449.817
3	30.506	66.494	449.506
4	30.213	66.787	449.213
5	29.91	67.09	448.91
6	29.59	67.41	448.59
7	29.274	67.726	448.274
8	28.969	68.031	447.969
9	28.666	68.334	447.666
10	28.36	68.64	447.36
11	28.057	68.943	447.057
12	27.765	69.235	446.765
13	27.484	69.516	446.484
14	27.218	69.782	446.218
15	26.946	70.054	445.946
16	26.683	70.317	445.683
17	26.491	70.509	445.491
18	26.187	70.813	445.187
19	25.97	71.03	444.97
20	25.731	71.269	444.731
21	25.502	71.498	444.502
22	25.287	71.713	444.287
23	25.079	71.921	444.079
24	24.88	72.12	443.88
25	24.669	72.331	443.669
26	24.487	72.513	443.487
27	24.27	72.73	443.27
28	24.083	72.917	443.083
29	23.892	73.108	442.892
30	23.688	73.312	442.688
31	23.518	73.482	442.518
32	23.336	73.664	442.336
33	23.165	73.835	442.165
34	22.997	74.003	441.997
35	22.818	74.182	441.818
36	22.649	74.351	441.649
37	22.471	74.529	441.471
38	22.362	74.638	441.362
39	22.206	74.794	441.206
40	22.04	74.96	441.04
41	21.874	75.126	440.874
42	21.704	75.296	440.704
43	21.567	75.433	440.567

Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
44	21.431	75.569	440.431
45	21.3	75.7	440.3
46	21.162	75.838	440.162
47	21.012	75.988	440.012
48	20.876	76.124	439.876
49	20.755	76.245	439.755
50	20.627	76.373	439.627
51	20.503	76.497	439.503
52	20.378	76.622	439.378
52	20.37	76.63	439.37
53	20.248	76.752	439.248
54	20.132	76.868	439.132
55	20.025	76.975	439.025
56	19.924	77.076	438.924
57	19.801	77.199	438.801
58	19.672	77.328	438.672
59	19.588	77.412	438.588
60	19.483	77.517	438.483
61	19.362	77.638	438.362
62	19.281	77.719	438.281
63	19.178	77.822	438.178
64	19.083	77.917	438.083
65	18.992	78.008	437.992
66	18.882	78.118	437.882
67	18.789	78.211	437.789
68	18.68	78.32	437.68
69	18.598	78.402	437.598
70	18.502	78.498	437.502
71	18.401	78.599	437.401
72	18.32	78.68	437.32
73	18.232	78.768	437.232
74	18.155	78.845	437.155
75	18.07	78.93	437.07
76	17.98	79.02	436.98
77	17.894	79.106	436.894
78	17.804	79.196	436.804
79	17.738	79.262	436.738
80	17.656	79.344	436.656
81	17.588	79.412	436.588
82	17.527	79.473	436.527
83	17.457	79.543	436.457
84	17.385	79.615	436.385
85	17.302	79.698	436.302
86	17.234	79.766	436.234

Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
87	17.154	79.846	436.154
88	17.079	79.921	436.079
89	17.023	79.977	436.023
90	16.957	80.043	435.957
91	16.885	80.115	435.885
92	16.845	80.155	435.845
93	16.766	80.234	435.766
94	16.685	80.315	435.685
95	16.612	80.388	435.612
96	16.529	80.471	435.529
97	16.457	80.543	435.457
98	16.394	80.606	435.394
99	16.328	80.672	435.328
100	16.261	80.739	435.261
101	16.187	80.813	435.187
102	16.128	80.872	435.128
103	16.058	80.942	435.058
104	15.968	81.032	434.968
105	15.91	81.09	434.91
106	15.838	81.162	434.838
107	15.78	81.22	434.78
108	15.725	81.275	434.725
109	15.65	81.35	434.65
110	15.601	81.399	434.601
111	15.549	81.451	434.549
112	15.481	81.519	434.481
113	15.411	81.589	434.411
114	15.317	81.683	434.317
115	15.232	81.768	434.232
116	15.16	81.84	434.16
117	15.07	81.93	434.07
118	14.986	82.014	433.986
119	14.886	82.114	433.886
120	14.79	82.21	433.79
121	14.714	82.286	433.714
122	14.664	82.336	433.664
123	14.604	82.396	433.604
124	14.522	82.478	433.522
125	14.435	82.565	433.435
126	14.336	82.664	433.336
127	14.216	82.784	433.216
128	14.145	82.855	433.145
129	14.077	82.923	433.077
130	14.003	82.997	433.003

Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
131	13.944	83.056	432.944
132	13.869	83.131	432.869
133	13.813	83.187	432.813
134	13.743	83.257	432.743
135	13.681	83.319	432.681
136	13.597	83.403	432.597
137	13.516	83.484	432.516
138	13.422	83.578	432.422
139	13.347	83.653	432.347
140	13.266	83.734	432.266
141	13.219	83.781	432.219
142	13.218	83.782	432.218
143	13.197	83.803	432.197
144	13.163	83.837	432.163
145	13.106	83.894	432.106
146	13.05	83.95	432.05
147	12.946	84.054	431.946
148	12.857	84.143	431.857
149	12.74	84.26	431.74
150	12.58	84.42	431.58
151	12.491	84.509	431.491
152	12.436	84.564	431.436
153	12.347	84.653	431.347
154	12.311	84.689	431.311
155	12.244	84.756	431.244
156	12.105	84.895	431.105
157	11.931	85.069	430.931
158	11.901	85.099	430.901
159	11.814	85.186	430.814
160	11.659	85.341	430.659
161	11.54	85.46	430.54
162	11.488	85.512	430.488
163	11.461	85.539	430.461
164	11.392	85.608	430.392
165	11.31	85.69	430.31
166	11.225	85.775	430.225
167	11.138	85.862	430.138
168	11.048	85.952	430.048
169	10.967	86.033	429.967
170	10.87	86.13	429.87
171	10.759	86.241	429.759
172	10.667	86.333	429.667
173	10.554	86.446	429.554
174	10.42	86.58	429.42

Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
175	10.267	86.733	429.267
176	10.183	86.817	429.183
177	10.065	86.935	429.065
178	9.947	87.053	428.947
179	9.847	87.153	428.847
180	9.77	87.23	428.77
181	9.702	87.298	428.702
182	9.598	87.402	428.598
183	9.497	87.503	428.497
184	9.416	87.584	428.416
185	9.314	87.686	428.314
186	9.234	87.766	428.234
187	9.204	87.796	428.204
188	9.143	87.857	428.143
189	9.058	87.942	428.058
190	8.988	88.012	427.988
191	8.915	88.085	427.915
192	8.833	88.167	427.833
193	8.766	88.234	427.766
194	8.697	88.303	427.697
195	8.612	88.388	427.612
196	8.544	88.456	427.544
197	8.468	88.532	427.468
198	8.378	88.622	427.378
199	8.295	88.705	427.295
200	8.223	88.777	427.223
201	8.207	88.793	427.207
202	8.25	88.75	427.25
203	8.385	88.615	427.385
204	8.416	88.584	427.416
205	8.388	88.612	427.388
206	8.334	88.666	427.334
207	8.286	88.714	427.286
208	8.212	88.788	427.212
209	8.158	88.842	427.158
210	8.097	88.903	427.097
211	8.023	88.977	427.023
212	7.955	89.045	426.955
213	7.9	89.1	426.9
214	7.83	89.17	426.83
215	7.747	89.253	426.747
216	7.67	89.33	426.67
217	7.584	89.416	426.584
218	7.466	89.534	426.466

Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
219	7.417	89.583	426.417
220	7.354	89.646	426.354
221	7.299	89.701	426.299
222	7.278	89.722	426.278
223	7.248	89.752	426.248
224	7.226	89.774	426.226
225	7.22	89.78	426.22
226	7.174	89.826	426.174
227	7.14	89.86	426.14
228	7.111	89.889	426.111
229	7.057	89.943	426.057
230	6.975	90.025	425.975
231	6.966	90.034	425.966
232	6.911	90.089	425.911
233	6.876	90.124	425.876
234	6.839	90.161	425.839
235	6.791	90.209	425.791
236	6.747	90.253	425.747
237	6.692	90.308	425.692
238	6.663	90.337	425.663
239	6.626	90.374	425.626
240	6.584	90.416	425.584
241	6.544	90.456	425.544
242	6.499	90.501	425.499
243	6.462	90.538	425.462
244	6.436	90.564	425.436
245	6.397	90.603	425.397
246	6.364	90.636	425.364
247	6.329	90.671	425.329
248	6.297	90.703	425.297
249	6.267	90.733	425.267
250	6.23	90.77	425.23
251	6.207	90.793	425.207
252	6.2	90.8	425.2
253	6.202	90.798	425.202
254	6.198	90.802	425.198
255	6.179	90.821	425.179
256	6.168	90.832	425.168
257	6.147	90.853	425.147
258	6.117	90.883	425.117
259	6.099	90.901	425.099
260	6.083	90.917	425.083
261	6.107	90.893	425.107
262	6.089	90.911	425.089

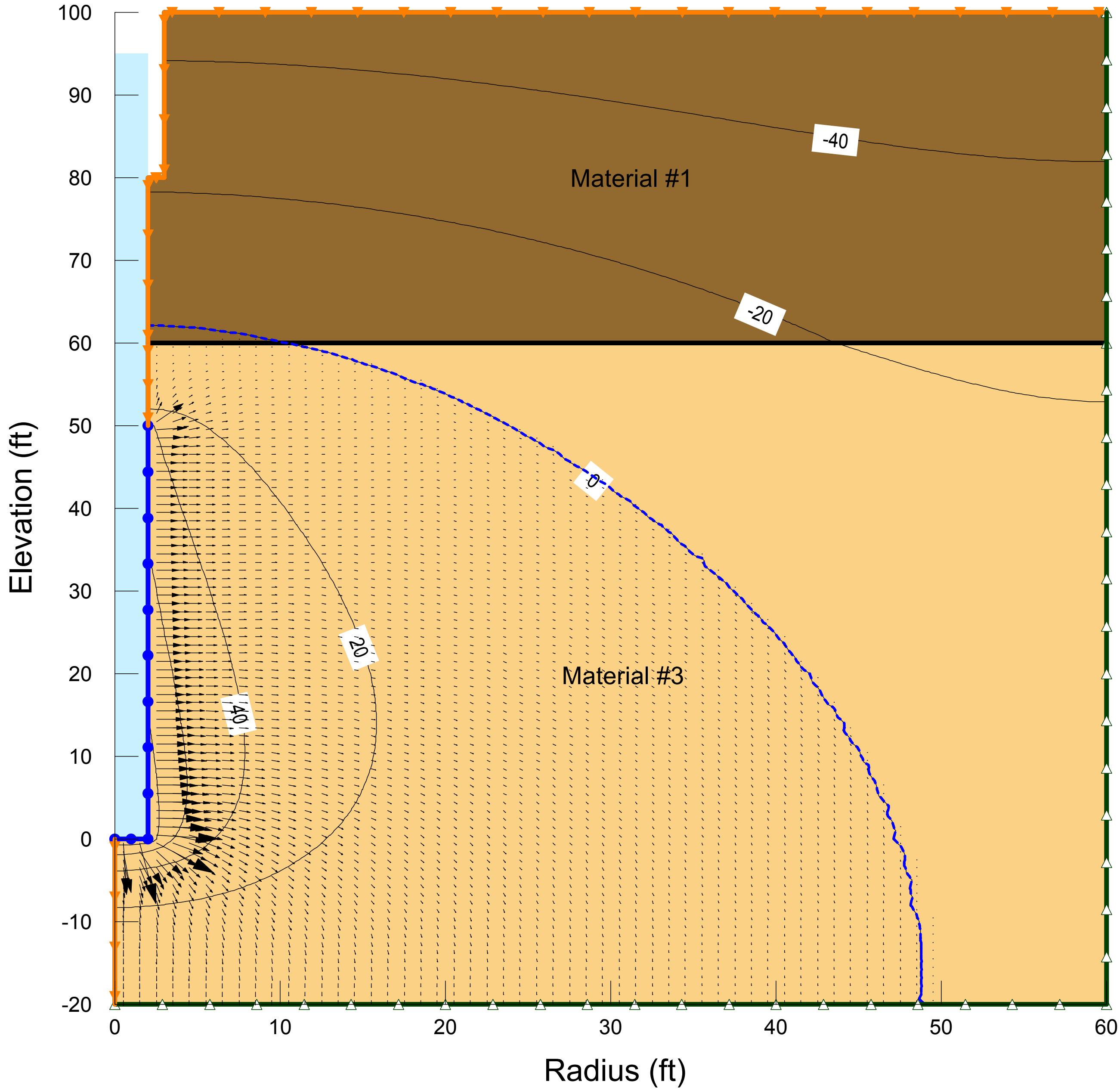
Carroll Canyon Road Percolation Data

B2(100ft)			
T(min)	Head(ft)	Depth	EL (msl)
263	6.049	90.951	425.049
264	6.006	90.994	425.006
265	5.964	91.036	424.964
266	5.944	91.056	424.944
267	5.91	91.09	424.91
268	5.873	91.127	424.873
269	5.84	91.16	424.84
270	5.806	91.194	424.806
271	5.77	91.23	424.77
272	5.737	91.263	424.737
273	5.709	91.291	424.709
274	5.682	91.318	424.682
275	5.666	91.334	424.666
276	5.635	91.365	424.635
277	5.608	91.392	424.608
278	5.586	91.414	424.586
279	5.558	91.442	424.558
280	5.535	91.465	424.535

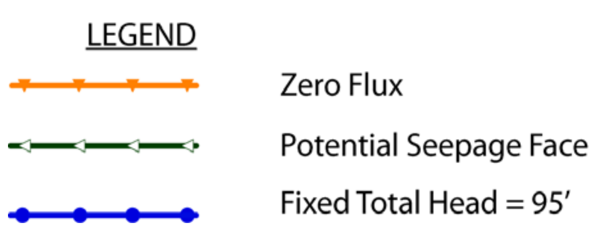
APPENDIX B

PERCOLATION ANALYSES

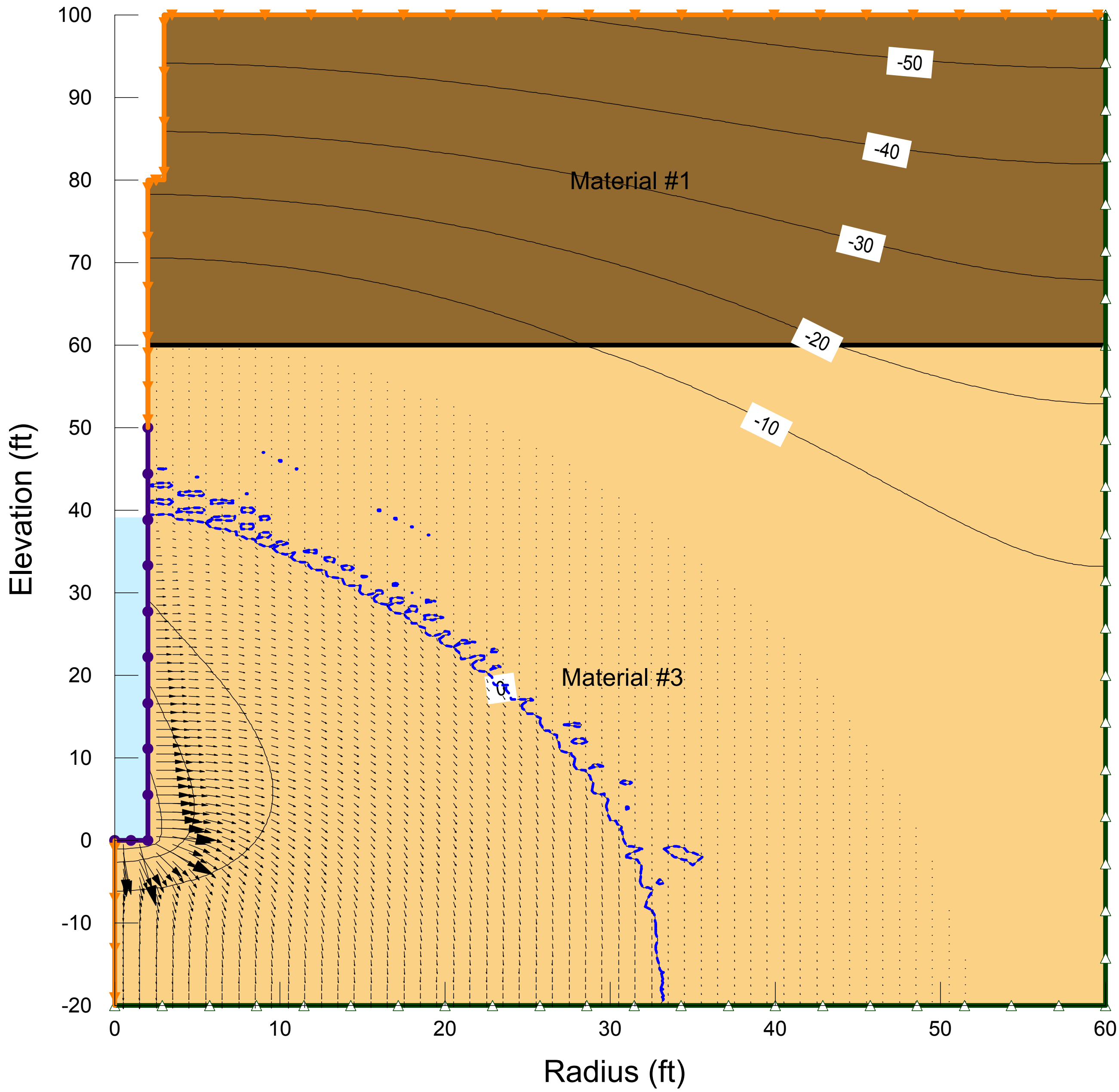
STEADY STATE
FLOW ANALYSIS OF 100 ft DEEP, 4 ft DIAMETER DRY WELL



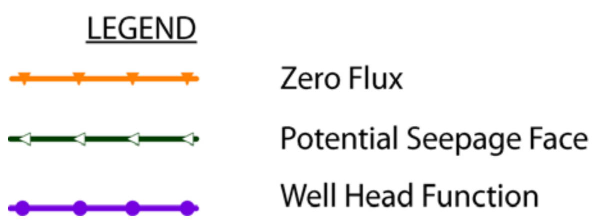
Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.



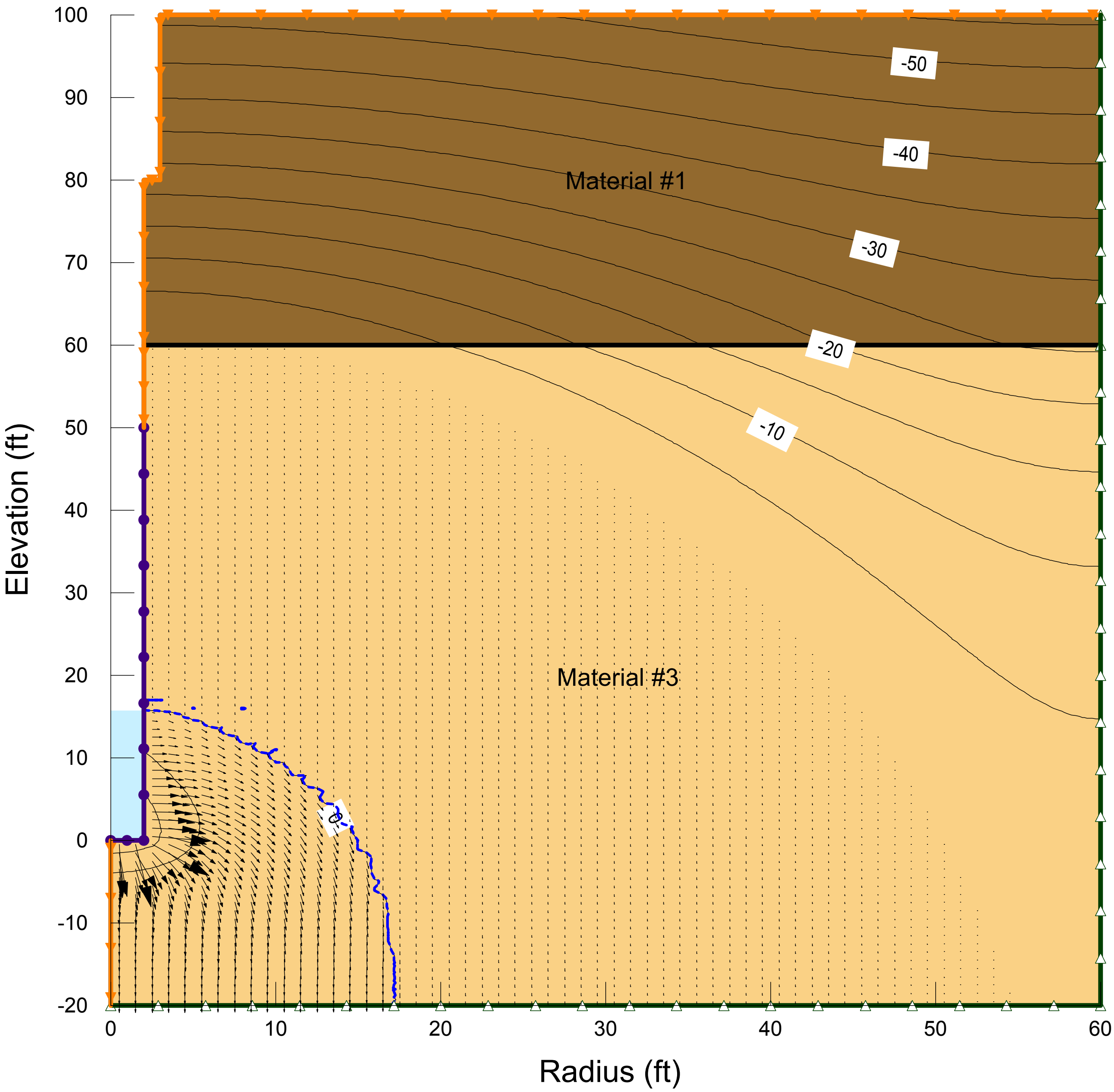
TRANSIENT @ 2 Hours
FLOW ANALYSIS OF 100 ft DEEP, 4 ft DIAMETER DRY WELL



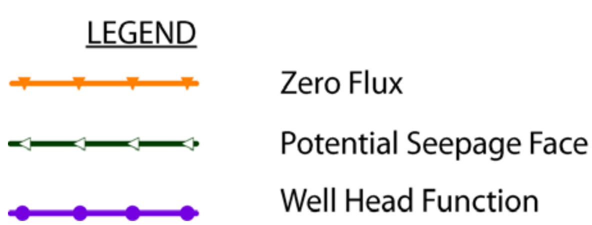
Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.



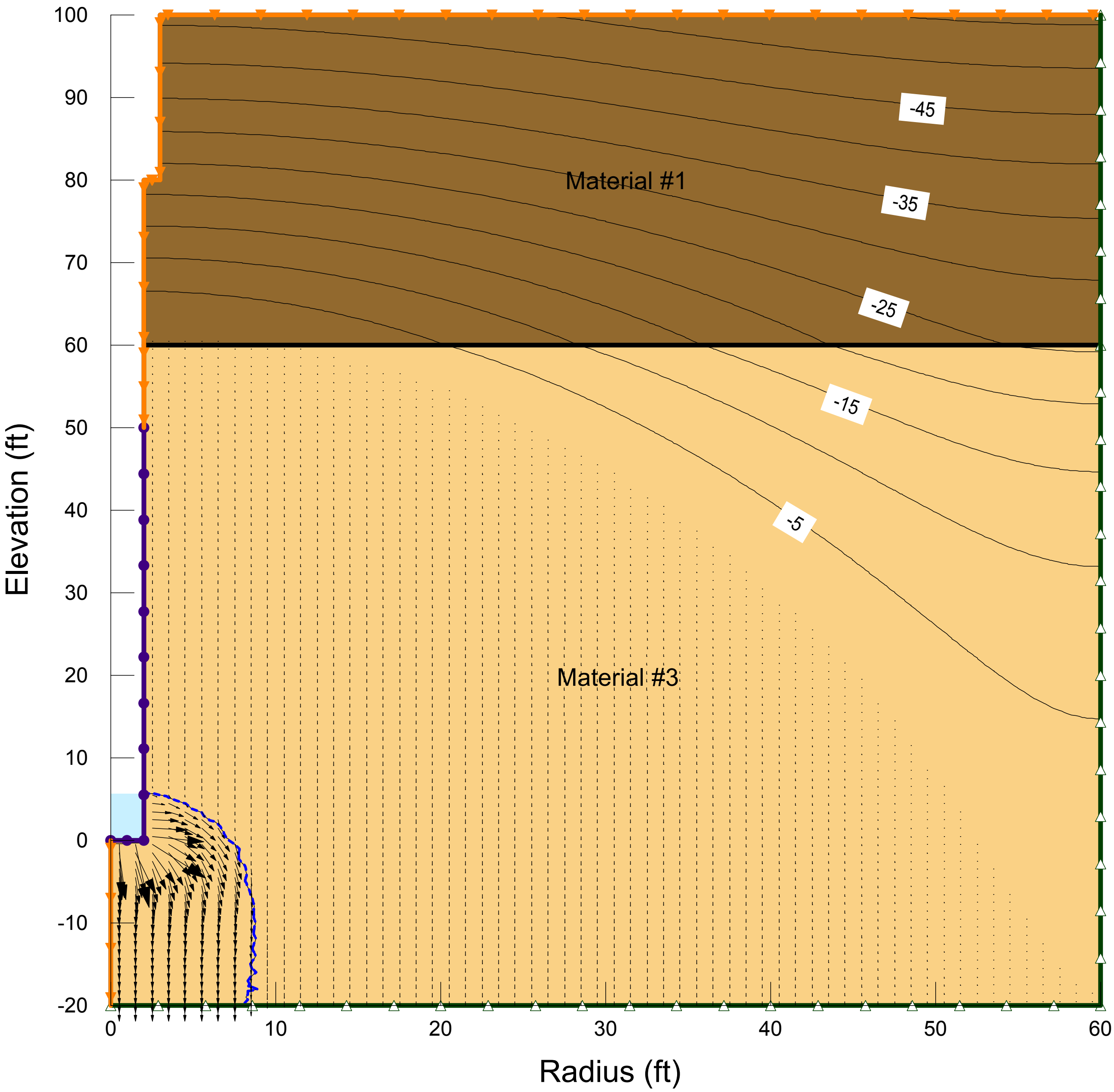
TRANSIENT @ 5 Hours
FLOW ANALYSIS OF 100 ft DEEP, 4 ft DIAMETER DRY WELL



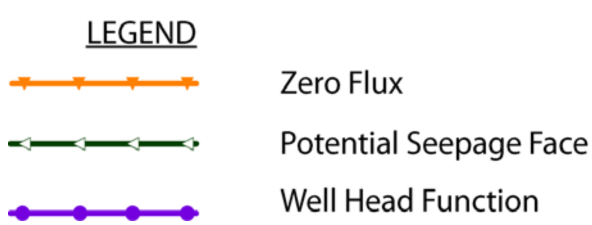
Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.



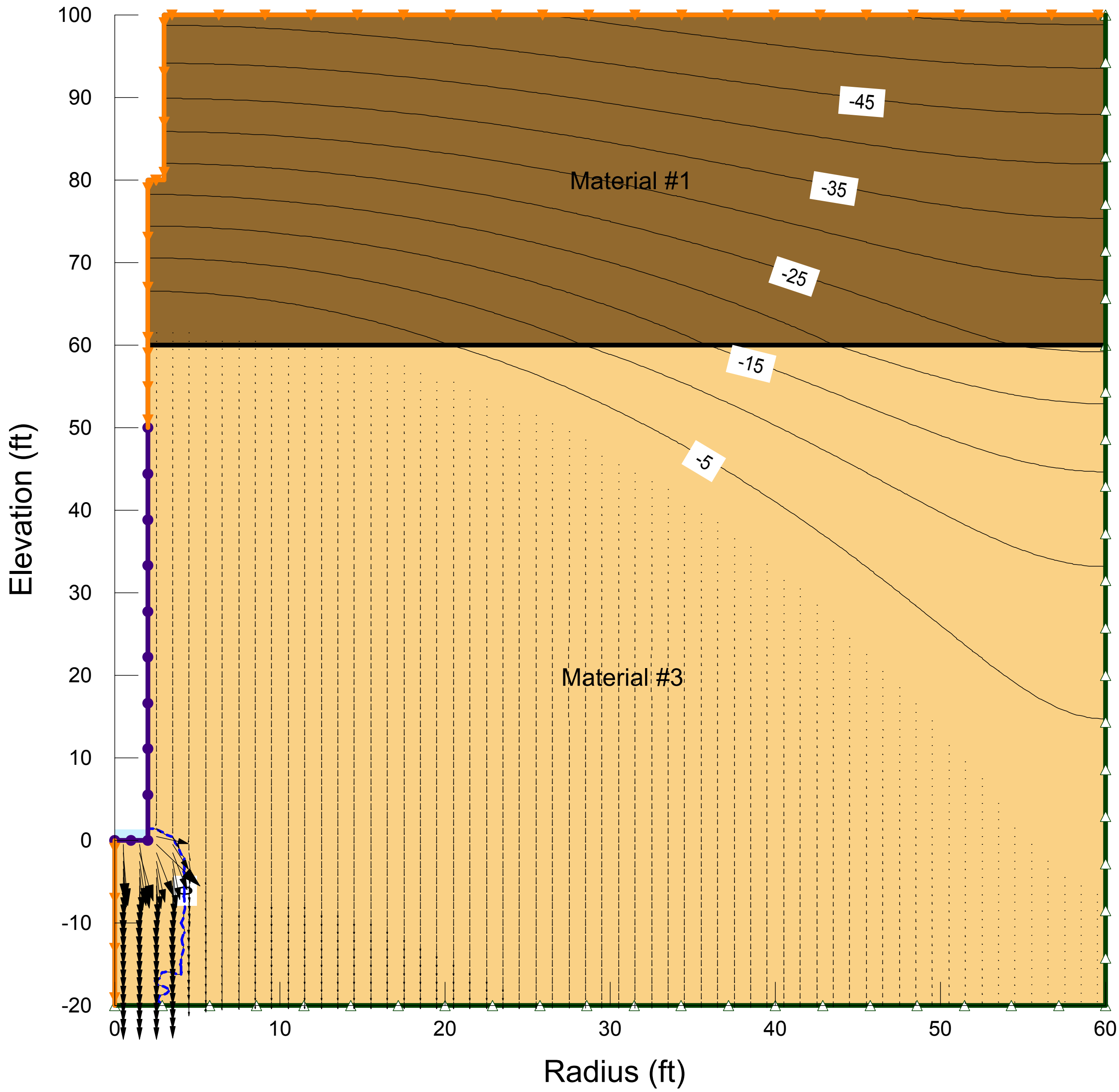
TRANSIENT @ 10 Hours
FLOW ANALYSIS OF 100 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.



TRANSIENT @ 18 Hours
FLOW ANALYSIS OF 100 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.

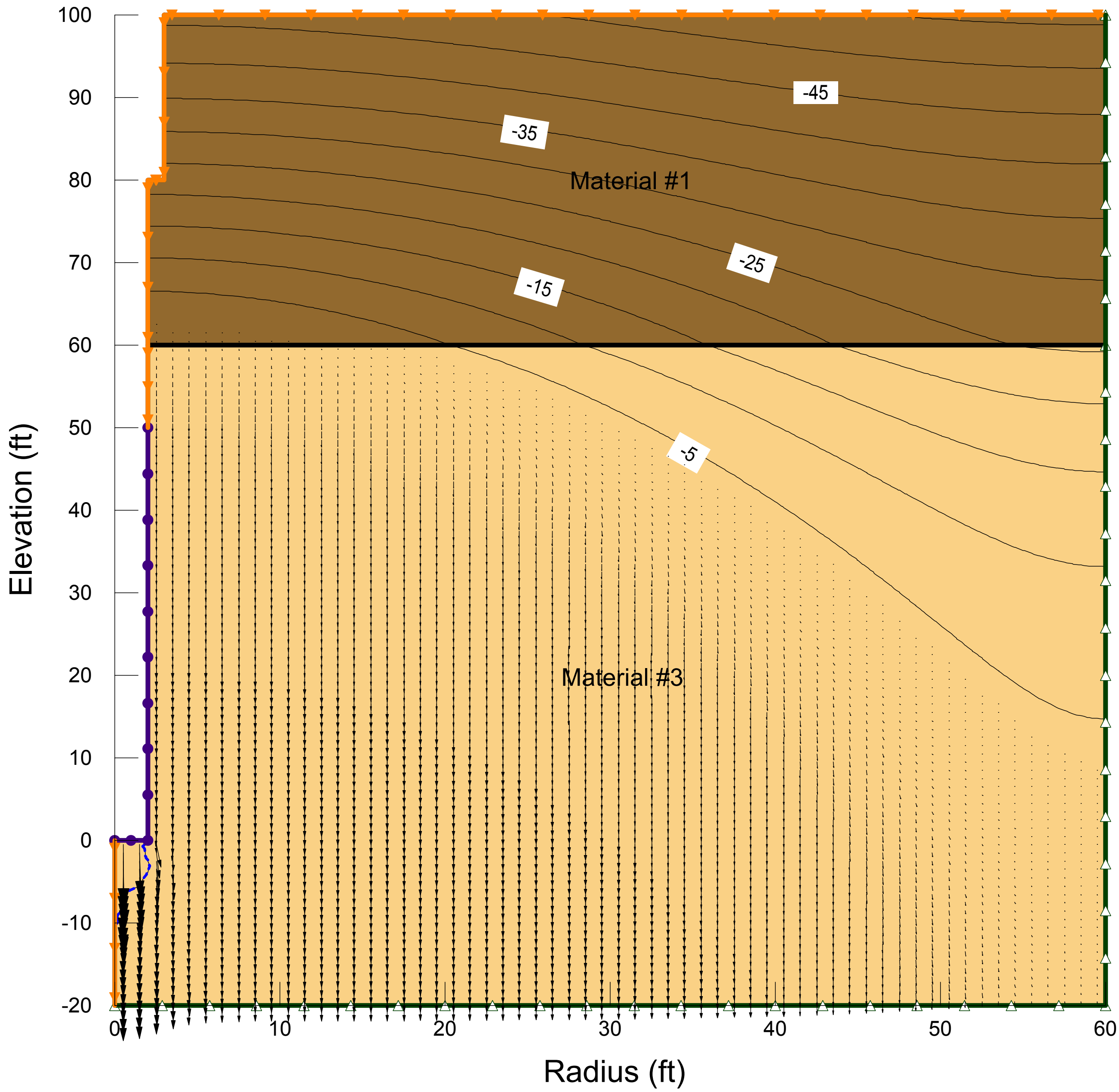
LEGEND

Zero Flux

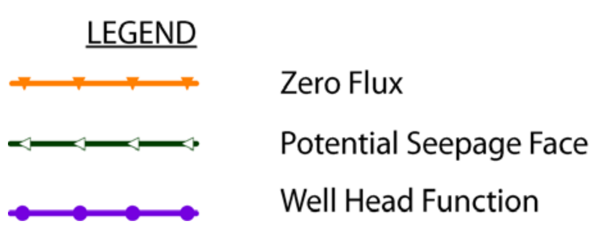
Potential Seepage Face

Well Head Function

TRANSIENT @ 27 Hours
FLOW ANALYSIS OF 100 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.



GEOCON
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GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G1488-42-03
August 9, 2016

Sudberry Properties, Inc.
5465 Morehouse Drive, Suite 260
San Diego, California 92121

Attention: Mr. Jeff Rogers

Subject: STORM WATER MANAGEMENT RECOMMENDATIONS
CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

References:

1. *Geotechnical Analysis for Dry-Well Design, Carroll Canyon Mixed Use, San Diego, California,* prepared by Geocon Incorporated, dated January 21, 2016 (Project No. G1488-42-03).
2. *Preliminary Geotechnical Investigation, Carroll Canyon Mixed Use, San Diego, California*, prepared by Geocon Incorporated, dated October 12, 2015 (Project No. G1488-42-03).

Dear Mr. Rogers:

In accordance with your authorization, we have prepared this letter to provide recommendations regarding storm water management for the subject project. The field investigation included drilling 2 small diameter borings to depths between 80 and 100 feet and installing wells to perform borehole infiltration testing. Logs of the borings are provided in References 1 and 2. The approximate boring locations are shown on Figure 2 of References 1 and 2. For your convenience, we have attached Figure 2 and the boring logs (P-1 and P-2) from Reference 1. The results of the infiltration testing and information relating to geotechnical aspects of storm water management are provided herein.

STORM WATER MANAGEMENT

If storm water management devices are not properly designed and constructed, there is a risk for distress to improvements and properties located hydrologically down gradient or adjacent to these devices. Factors such as the amount of water being detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeological study at the site. If infiltration of storm water runoff into the subsurface occurs, downstream improvements may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other undesirable impacts as a result of water infiltration.

Hydrologic Soil Group

The United States Department of Agriculture (USDA), Natural Resources Conservation Services, provides general information regarding soil conditions for areas within the United States. The USDA website also provides the Hydrologic Soil Group. Table 1 presents the descriptions of the hydrologic soil groups. If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

TABLE 1
HYDROLOGIC SOIL GROUP DEFINITIONS

Soil Group	Soil Group Definition
A	Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
B	Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
C	Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
D	Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The subject property is underlain by: undocumented fill, Very Old Paralic Deposits, and Stadium Conglomerate. The subject site falls within Hydraulic Soil Group D, which has a very slow infiltration rating. Table 2 presents the information from the USDA website for the property.

TABLE 2
USDA WEB SOIL SURVEY – HYDROLOGIC SOIL GROUP

Map Unit Name	Map Unit Symbol	Approximate Percentage of Property	Hydrologic Soil Group
Redding gravelly loam 2 to 9 percent slopes	RdC	90	D
Redding cobbly loam, 9 to 30 percent slopes	ReE	10	D

Infiltration Testing and Estimated Peak Well Flow Rate

The test method employed in this study to estimate infiltration rate consisted of drilling borings, P1 and P2, to an approximate depth of 80 to 100 feet below existing ground surface using a six-inch-diameter, air-percussion drill. No samples were retrieved during drilling due to the rocky nature of the geologic formation (Stadium Conglomerate). Boring logs are attached.

At each well location a 2-inch-diameter, PVC well casing was installed in the boreholes with 30-foot-long screened at the bottom. Water was injected into the well and the rate of change in head over time was measured and recorded using an In-Situ Level TROLL 700 transducer coupled with an In-Situ RuggedReader handheld PC.

Data from the borehole testing was provided to Albus-Keefe & Associates to perform a steady-state analysis to develop the estimated peak flow capacity of the dry well. The report from Albus-Keefe & Associates is provided in Appendix B of Reference 1. The following table provides a summary of their calculated hydraulic conductivity, average infiltration rate, and estimated peak flow assuming a 100-foot deep well with a 50-foot upper non-infiltrating chamber. These values are unfactored. The project civil engineer should use an appropriate factor of safety in the design of the well system.

TABLE 5
ESTIMATED UNFACTORED INFILTRATION RATE AND PEAK FLOW

<table>
<tr><th>Boring/(Wells)</th><th>Depth (feet)</th><th>Hydraulic Conductivity (in/hr)</th><th>Effective Average Well Infiltration Rate (in/hr)</th><th>Well Peak Flow (cfs)</th></tr>
<tr><td rowspan="2">P-1 and P-2</td><td>0 – 40</td><td>0.2</td><td rowspan="2">4.9</td><td rowspan="2">0.07</td></tr>
<tr><td>< 40</td><td>0.38</td></tr>
</table>

With respect to infiltration rates for use in establishing full and partial infiltration, Table 1 of Albus-Keefe report (Appendix B of Reference 1) provides the infiltration rate calculated from the field percolation testing utilizing the Porchet equation.

Soil permeability values from in-situ tests can vary significantly from one location to another due to the non-homogeneous characteristics inherent to most soil. However, if a sufficient amount of field and laboratory test data is obtained, a general trend of soil permeability can usually be evaluated. For this project and for storm water purposes, the test results presented herein should be considered approximate values.

STORM WATER MANAGEMENT CONCLUSIONS

1.0 Soil Types

1.1 **Fill** – A minor amount of undocumented fill exists at some locations on the property. The undocumented fill was observed to be less than 2 feet deep at the location encountered. The undocumented fill in structural improvement areas will be removed and replaced as compacted fill during grading. We expect there will be minor thicknesses of compacted fill on the property at the completion of grading. The proposed dry well system will not impact the fill as the infiltration zone will be at a depth of 50 feet or greater below existing ground surface.

1.2 **Very Old Paralic Deposits** – Very Old Paralic Deposits underlies the site. The Very Old Paralic Deposits were found to be approximately 2 to 9 feet thick. Based on boring logs, the Very Old Paralic Deposits are comprised of stiff to very stiff, sandy clay and medium dense to very dense clayey sand. The proposed dry well will be located below the very old paralic deposits.

1.3 **Stadium Conglomerate Formation** – The Stadium Conglomerate Formation underlies the Very Old Paralic Deposits. The Stadium Conglomerate Formation consists of a weakly to well cemented, yellow, fine to medium grained, cobble conglomerate in a silty/clayey sand matrix. Generally, the majority of this formation consists of a cobble conglomerate with beds of sandstone. Based on the in-situ testing, some layers within the formational units have moderately good infiltration characteristics. Other layers have slow infiltration characteristics. The results of the infiltration tests are not high enough to support full infiltration. Partial infiltration at a depth of 50 feet or deeper is considered feasible on the property.

2.0 Infiltration and Hydraulic Conductivity Rates

2.1 The results of the testing show infiltration rates ranging from approximately 0.04 to 0.5 inches per hour. These values are not high enough to support full infiltration. It is our opinion that due to the high probability for lateral water migration because of the variable soil conditions, partial infiltration is considered feasible provided infiltration occurs at depths of at least 50 feet below the existing ground surface.

3.0 Existing and Proposed Foundations and Retaining Walls

3.1 Provided infiltration occurs at a depth of 50 feet or greater below existing grading, there are no existing or proposed foundations or retaining walls that will be impacted from infiltration of storm water using the dry well system.

4.0 Groundwater

4.1 Groundwater was not encountered during our geotechnical investigation to a depth of at least 100 feet. We expect groundwater is at a depth greater than 100 feet below current grades. Groundwater is not a constraint for storm water infiltration.

5.0 Existing and New Utilities

5.1 Provided infiltration occurs at a depth of 50 feet or greater below existing grading, there are no existing or proposed utilities that will be impacted from infiltration of storm water using the dry well system.

6.0 Soil or Groundwater Contamination

6.1 We are unaware of contaminated soil or groundwater on the property. Therefore, infiltration associated with this risk is considered feasible.

7.0 Slopes

7.1 Existing cut slopes are present along the perimeter of the property. Provided infiltration occurs at a depth of 50 feet or greater below existing grading, which is below the toe of the existing cut slope, we do not expect slopes will be impacted from infiltration of storm water using the dry well system.

8.0 Storm Water Management Devices

8.1 We recommend a dry well system be utilized for storm water management. Infiltration should occur at a depth of at least 50 feet below the existing ground surface. The upper 50 feet of the dry well should be sleeved to prevent infiltration from occurring in the upper soils.

9.0 Storm Water Standard Worksheets

9.1 The SWS requests the geotechnical engineer complete the *Categorization of Infiltration Feasibility Condition* (Worksheet C.4-1 or I-8) worksheet information to help evaluate the potential for infiltration on the property. The attached Worksheet C.4-1 presents the completed information for the submittal process.

9.2 The regional storm water standards also have a worksheet (Worksheet D.5-1 or Form I-9) that helps the project civil engineer estimate the factor of safety based on several factors. Table 9.1 describes the suitability assessment input parameters related to the geotechnical engineering aspects for the factor of safety determination.

TABLE 9.1
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	High Concern – 3 Points	Medium Concern – 2 Points	Low Concern – 1 Point
Assessment Methods	Use of soil survey maps or simple texture analysis to estimate short-term infiltration rates. Use of well permeameter or borehole methods without accompanying continuous boring log. Relatively sparse testing with direct infiltration methods	Use of well permeameter or borehole methods with accompanying continuous boring log. Direct measurement of infiltration area with localized infiltration measurement methods (e.g., infiltrometer). Moderate spatial resolution	Direct measurement with localized (i.e. small-scale) infiltration testing methods at relatively high resolution or use of extensive test pit infiltration measurement methods.
Predominant Soil Texture	Silty and clayey soils with significant fines	Loamy soils	Granular to slightly loamy soils
Site Soil Variability	Highly variable soils indicated from site assessment or unknown variability	Soil boring/test pits indicate moderately homogenous soils	Soil boring/test pits indicate relatively homogenous soils
Depth to Groundwater/ Impervious Layer	<5 feet below facility bottom	5-15 feet below facility bottom	>15 feet below facility bottom

9.3 Table 9.2 presents the estimated factor values for the evaluation of the factor of safety. The factor of safety is determined using the information contained in Table 9.1 and the results of our geotechnical investigation. Table 9.2 only presents the suitability assessment safety factor (Part A) of the worksheet. The project civil engineer should evaluate the safety factor for design (Part B of Worksheet D.5-1) and use the combined safety factor for the design infiltration rate.

TABLE 9.2
FACTOR OF SAFETY WORKSHEET D.5-1 DESIGN VALUES – PART A[1]

Suitability Assessment Factor Category	Assigned Weight (w)	Factor Value (v)	Product (p = w x v)
Assessment Methods	0.25	3	0.75
Predominant Soil Texture	0.25	2	0.5
Site Soil Variability	0.25	2	0.5
Depth to Groundwater/Impervious Layer	0.25	1	0.25
Suitability Assessment Safety Factor, $S_A = \Sigma p$			2

1. The project civil engineer should complete Part B of Worksheet D.5-1 or Form I-9 to determine the overall factor of safety.

CONCLUSIONS AND RECOMMENDATIONS

It is our opinion that partial infiltration is feasible in a dry well system between depths of approximately 50 to 100 feet below existing grade. Our evaluation included the soil and geologic conditions, settlement and volume change of the underlying soil, slope stability, utility considerations, groundwater mounding, retaining walls, foundations and existing groundwater elevations.

Our results indicate the site has variable sub-surface permeability conditions and infiltration characteristics. Because of these site conditions, it is our opinion that there is a probability for lateral water migration. As such, we recommend infiltration occur at a depth of at least 50 feet below grade and that the upper 50 feet of the proposed dry well system be sleeved to prevent infiltration from occurring in the upper soils.

Should you have any questions regarding the letter, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Rodney C. Mikesell
GE 2533

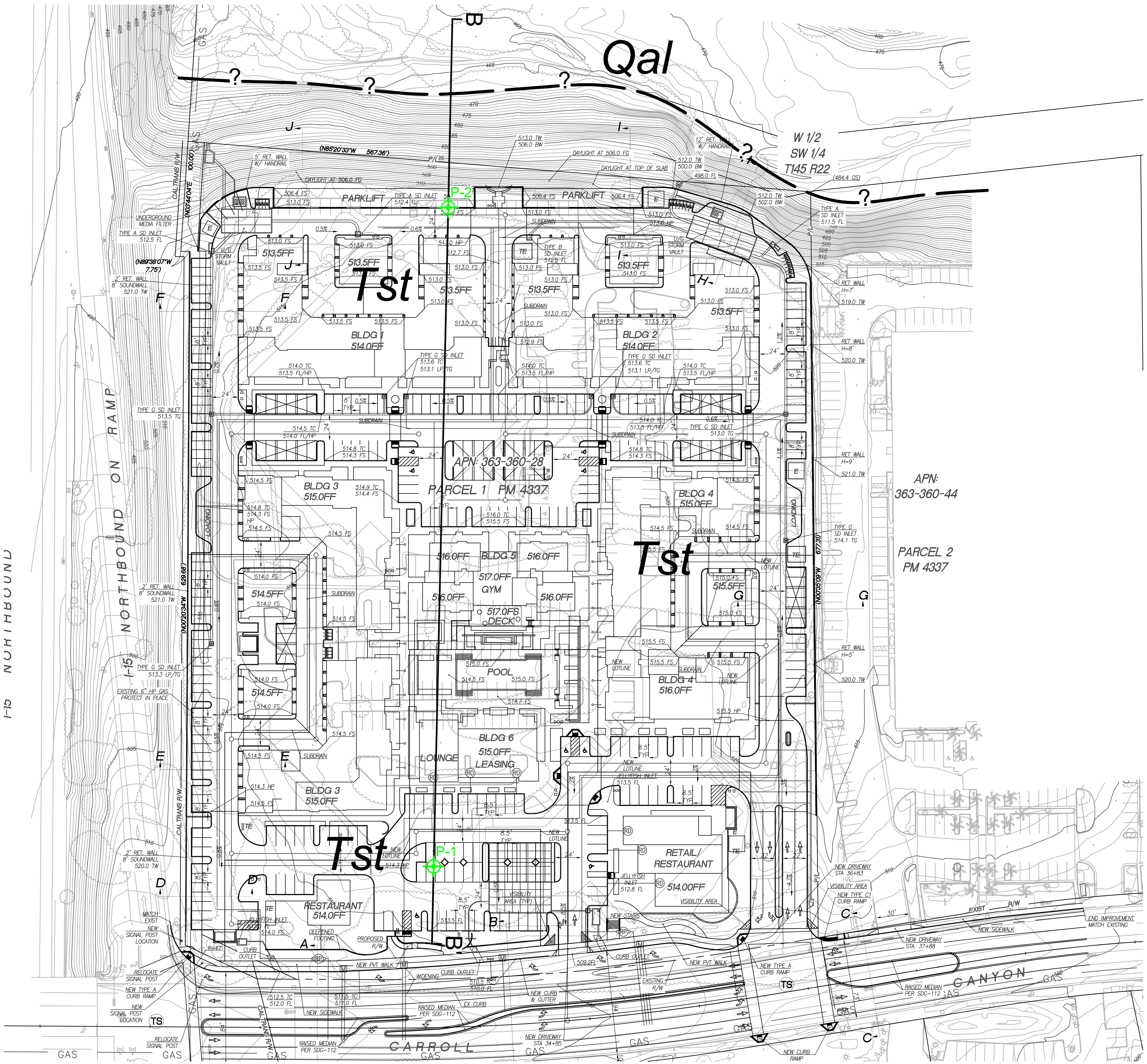
REGISTERED PROFESSIONAL ENGINEER
RODNEY C. MIKESELL
No.2533
GEOTECHNICAL
STATE OF CALIFORNIA

RCM:ejc

Attachments: Worksheet C.4.1
Figure 2 and Borings Logs P-1 and P-2 from Geocon (1/21/16)

(1) Addressee
(e-mail) PLSA
Attention: Mr. Greg Lang

CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA



0' 50' 100' 150' 200'

SCALE 1"=100'

GEOCON LEGEND

Qal ....ALLUVIUM

Tst ....STADIUM CONGLOMERATE

........APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)

P-1 ....APPROX. LOCATION OF BOREHOLE PERCOLATION TEST BORING

A — A' ....APPROX. LOCATION OF GEOLOGIC CROSS SECTION

GEOCON INCORPORATED

GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974

PHONE 858 558-6900 - FAX 858 558-6159

GEOLOGIC MAP

PROJECT NO. G1488 - 42 - 03

FIGURE 2

DATE 01 - 21 - 2016

Ladrillono

Plotted:01/21/2016 10:47AM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1488-42-03 (Carroll Canyon)\SHEETS\G1488-42-03 Site Plan.dwg

PERCOLATION TEST P 1

ELEV. (MSL.) 517' DATE COMPLETED 08-28-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0 – 5				CL/SC	**VERY OLD PARALIC DEPOSITS** Very dense, dry, light reddish brown, Clayey, fine to medium SAND to Sandy CLAY			
5 – 55				GP	**STADIUM CONGLOMERATE** Very dense, dry to damp, yellowish brown CONGLOMERATE with cobbles and Clayey, fine to medium SAND and gravel			
16					-Becomes sandy			
22					-Becomes clayey sand with gravel and cobbles			
40					-Becomes silty sand with gravel and cobbles			

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54

Figure A-1,
Log of PERCOLATION TEST P 1, Page 1 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST P 1

ELEV. (MSL.) 517' DATE COMPLETED 08-28-2015

EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
56					-Gravel and cobbles in silty sand matrix			
58								
60								
62								
64								
66								
68								
70								
72								
74								
76								
78								
80					BORING TEST TERMINATED AT 80 FEET No groundwater encountered			

Figure A-1,
Log of PERCOLATION TEST P 1, Page 2 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	PERCOLATION TEST P 2 ELEV. (MSL.)_______ DATE COMPLETED 09-08-2015 EQUIPMENT CANTERRA 450 AIR PERCISSION-6" BY: G. CANNON	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0 – 8				CL/SC	**VERY OLD PARALIC DEPOSITS** Dense and very stiff, dry to damp, dark brown to grayish brown, Sandy CLAY to Clayey SAND			
8 – 54				GP	**STADIUM CONGLOMERATE** Very dense, dry, light yellowish brown, CONGLOMERATE with cobbles, Clayey SAND, and gravel			
20					-Clayey sand with cobbles and gravel			
50					-Gravel with silt, sand, and cobbles			

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54

Figure A-2,
Log of PERCOLATION TEST P 2, Page 1 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PERCOLATION TEST P 2

ELEV. (MSL.)________ DATE COMPLETED **09-08-2015**

EQUIPMENT **CANTERRA 450 AIR PERCISSION-6"** BY: **G. CANNON**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
56								
58								
60								
62					-Gravel and cobbles with silt and sand			
64								
66								
68								
70								
72								
74								
76								
78					-Sand with gravel and cobbles			
80								
82								
84								
86								
88								
90								
92								
94								
96								
98								
100					BORING TERMINATED AT 100 FEET No groundwater encountered			

Figure A-2,
Log of PERCOLATION TEST P 2, Page 2 of 2

G1488-42-03.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◣ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

Categorization of Infiltration Feasibility Condition			Worksheet C.4-1
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	Yes	No
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: Calculated hydraulic conductivity values of 0.2 in/hr were calculated for soil between a depth of 0 to 40 feet and 0.38 in/hr for soil at a depth greater than 40 feet (see Appendix B of Geocon's report dated January 21, 2016). The rates are less than 0.5 inches/hour. Therefore, full infiltration is not feasible. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: The area of infiltration for the proposed dry well will be at a depth of at least 50 feet below the ground surface and below the toe of adjacent slopes. In our opinion the use of dry wells at this depth will not increase the risk of geotechnical hazards (slope stability, groundwater mounding, or impact utilities). Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 2 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>3</td><td>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

We did not encounter groundwater within 10 feet of the bottom of the boring performed for the infiltration testing. It is our opinion that infiltration from the drywell should not impact groundwater.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>4</td><td>Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

It is our opinion that infiltration from the proposed drywells should not impact water balance issues. Response provided by Pasco Laret Suiter & Associates, the project's civil engineer.</td></tr>
<tr><td>Part 1 Result*</td><td colspan="2">If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration

If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2</td><td></td></tr>
</table>

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

Provide basis:

Calculated hydraulic conductivity values of 0.2 in/hr were calculated for soil between a depth of 0 to 40 feet and 0.38 in/hr for soil at a depth greater than 40 feet (see Appendix B of Geocon's report dated January 21, 2016).

The rates indicate the geologic conditions allow for appreciable rates.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Criteria	Screening Question	Yes	No
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	

Provide basis:

The area of infiltration for the proposed dry well will be at a depth of at least 50 feet below the ground surface and below the toe of adjacent slopes. In our opinion the use of dry wells at this depth will not increase the risk of geotechnical hazards (slope stability, groundwater mounding, or impact utilities).

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: We did not encounter groundwater within 10 feet of the bottom of the boring performed for the infiltration testing. It is our opinion that infiltration from the drywell should not impact groundwater. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: It is our opinion that downstream water rights should not be impacted. Response provided by Pasco Laret Suiter & Associates, the project's civil engineer. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

Project No. G1488-42-03
January 28, 2016

Sudberry Properties, Inc.
5465 Morehouse Drive, Suite 260
San Diego, California 92121

Attention: Mr. Jeff Rogers

Subject: RESPONSE TO CITY REVIEW COMMENTS
CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

References:
1. City of San Diego Review Comments, LDR-Geology, 240716-58, dated November 16, 2015.
2. *Geotechnical Analysis for Dry-Well Design, Carroll Canyon Mixed Use, San Diego, California,* prepared by Geocon Incorporated, dated January 21, 2016 (Project No. G1488-42-03).
3. *Preliminary Geotechnical Investigation, Carroll Canyon Mixed Use, San Diego, California*, prepared by Geocon Incorporated, dated October 12, 2015 (Project No. G1488-42-03).

Dear Mr. Rogers:

In accordance with your request, we have prepared this letter to respond to City of San Diego review comments (Reference 1). The review comments are provided below followed by our responses.

Issue No. 22 *Provide a geologic/geotechnical map that shows the proposed development and the distribution of fill, surficial deposits, and geologic units. Circumscribe the area of recommended remedial grading on the geologic/geotechnical map.*

Response Figure 2 of Reference 2 provides a geologic map for the project. The fill and other surficial deposits at the site are discontinuous, limited areally, and too thin (less than 2 feet thick) to be considered mappable units at the 1:1,200 scale; therefore, only the bedrock unit has been mapped. Incidental remedial grading is expected to be limited to areas of undocumented fill, which may be may be encountered during site grading. Remedial grading will not extend beyond the property limits.

Issue No. 23 *Provide representative geologic/geotechnical cross sections that show the existing and proposed grades, limits of recommended remedial grading, and temporary slopes.*

Response Figures 2 and 3 of Reference 3 provide geologic cross sections. As indicated in response to Issue No. 22, remedial grading is expected to be limited and not extend outside of the property limits.

Issue No. 24 *Provide logs of the percolation test borings.*

Response Infiltration test boring logs are provided in Reference 2.

Issue No. 25 *Per the City's Guidelines for Geotechnical Reports, in situ percolation testing shall be conducted at a minimum of two locations within 50-feet of the proposed dry well to demonstrate suitability.*

Response Based on a meeting with City project personal, one boring per infiltration area is acceptable for this initial study/EIR submittal. Additional testing and/or full scale well testing will be performed at the design level.

Issue No. 26 *The project's geotechnical consultant should indicate the recommended percolation rate to be used for design. The recommended percolation rate should consider the long term infiltration rate to account for potential "siltation".*

Response Recommended hydraulic conductivity and well infiltration rates are provided in Reference 2. Based on information provided by the dry-well manufacture (Torrent Resources), the proposed MaxWell Plus Drainage system will have a primary settling chamber that will remove sediment such that siltation in the well should be negligible; therefore, no reduction in the effective infiltration rate as a result of siltation has been recommended.

Issue No. 27 *The project's geotechnical consultant should provide a conclusion regarding the suitability of the site for the proposed dry wells.*

Response Based on our infiltration testing and dry well analysis performed by Albus-Keefe & Associates, Inc. (see Appendix B of Reference 2), it is our opinion the site is suitable for the proposed dry wells provided they are designed appropriately for the estimated well peak flow volume.

Issue No. 28 *The project's geotechnical consultant should provide a conclusion whether or not the proposed on-site deep percolation dry wells will result in daylight water seepage.*

Response Considering infiltration from the proposed dry wells will not occur in the upper 50 feet below pad grade, it is our opinion that the dry wells will not result in daylight water seepage or impact adjacent properties, utilities, or cause slope instability.

Issue No. 29 *The project's geotechnical consultant should indicate if the proposed "modified Maxwell plus drainage system" is in accordance with their recommendations and will not impact the proposed development or adjacent properties or the right of way.*

Response The proposed dry well system is in accordance with our recommendations and provided the dray wells are design appropriate for the estimated well peak flow volume provided in our report, the dry well system should not impact the proposed development or adjacent properties or the right of way.

Should you have any questions regarding this letter, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Rodney C. Mikesell
GE 2533

Garry W. Cannon
CEG 2201
RCE 5646

RCM:dmc

(1) Addressee
(e-mail) Pasco Laret Suiter & Associates
Attention: Mr. Mike Wolfe

GEOCON
INCORPORATED

GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G1488-42-03
June 1, 2016

Sudberry Properties, Inc.
5465 Morehouse Drive, Suite 260
San Diego, California 92121

Attention: Mr. Jeff Rogers

Subject: REVIEW OF DRAFT EIR
CARROLL CANYON MIXED USE
SAN DIEGO, CALIFORNIA

References:
1. *Section 5.9 Geologic Conditions*, prepared by KLR Planning, electronic copy provided May 27, 2016.
2. *Preliminary Geotechnical Investigation, Carroll Canyon Mixed Use, San Diego, California*, prepared by Geocon Incorporated, dated October 12, 2015 (Project No. G1488-42-03).

Dear Mr. Rogers:

In accordance with the request of KLR Planning, we have reviewed Section 5.9 Geologic Conditions of the project's Draft Environmental Impact Report (DEIR). Based on our review, it is our opinion that the information provided in Section 5.9 of the DEIR is consistent with the information provided in our preliminary geotechnical investigation (Reference 2). Additionally, previous mass grading of the project site and development of the existing buildings and associated improvements has created slopes with factors of safety of at least 1.5 with respect to global and surficial stability and suitable conditions for the construction and support of the proposed development. Recommendations are provided in Reference 1 to place highly expansive soils, if encountered, at a depth of at least 3 feet or greater below finish pad grade or outside of structural improvement areas.

Should you have any questions regarding this letter, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Rodney C. Mikesell
GE 2533

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STATE OF CALIFORNIA

RCM:GWC:ejc

(e-mail) Addressee

(e-mail) KLR Planning
Attention: Ms. Karen Ruggles

6960 Flanders Drive ■ San Diego, California 92121-2974 ■ Telephone 858.558.6900 ■ Fax 858.558.6159