with construction for the new alignment for State Route 38, as well as internal streets north of the new highway, could present concerns related to slope stability. If bedding planes near the shoreline area, south of realigned State Route 38, are essentially horizontal (as depicted in test pit TP-1), no such gross slope stability problem would be anticipated. However, where significant cut slopes are planned, a site-specific subsurface investigation should be performed in order to evaluate the nature and extent of bedding planes and the presence of any weak clay layers.

MINERAL RESOURCES

There are no economic metallic or non-metallic ore deposits within or directly adjacent to the project area. The potential for oil and/or gas deposits beneath the site is considered remote.

GEOLOGIC HAZARDS

The primary geologic hazards within the project area are those associated with possible slope instability for new slopes, soil erosion, strong ground motion from earthquakes, and potential seiche along the shoreline.

The project area is situated within the County of San Bernardino Geologic Hazard (GH) Overlay District. For information purposes only, the GH Overlay District was created to provide greater safety by establishing review procedures and setbacks for areas that are subject to potential geologic problems such as ground shaking from earthquakes, liquefaction and subsidence.

FAULTING AND SEISMICITY

Hazards associated with earthquakes include primary hazards, such as ground shaking and surface rupture; and secondary hazards, such as liquefaction, seismically-induced settlement, landsliding, tsunamis, and seiches.

In accordance with the California Department of Conservation Division of Mines and Geology, a fault is a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side. Most faults are the result of repeated displacements over a long period of time. An inactive fault is a fault that has not experienced earthquake activity within the last three million years. In comparison, an active fault is one which has experienced earthquake activity in the past 11,000 years. A fault which has moved within the last two to three million years, but not proven by direct evidence to have moved within the last 11,000 years, is considered potentially active. No active or potentially active faults are located within or project towards the Project area.

The Project area, like most of Southern California is part of a seismically active region. The Alquist-Priolo Act of 1972 (now the Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code 2621-2624, Division 2 Chapter 7.5) regulates development near active faults so as to mitigate the hazard of surface fault-rupture. Under the Act, the State Geologist is required to delineate “special study zones along known active faults in California”. The Act also requires that, prior to approval of a project, a geologic study be conducted to define and delineate any hazards from

surface rupture. A registered geologist by the State of California, within or retained by the lead agency for the project must prepare this geologic report. A 50-foot setback from any known trace of an active fault is required. The project area is not currently known to be located within an Alquist-Priolo Fault Rupture Hazard Zone, according to the California Division of Mines and Geology.

The Modified Mercalli intensity scale was developed in 1931 and measures the intensity of an earthquake's effects in a given locality, and is perhaps much more meaningful to the layman, as compared to the Richter Scale, because it is based on actual observations of earthquake effects at specific places. On the Modified Mercalli intensity scale, values range from I to XII. The most commonly used adaptation covers the range of intensity from the conditions of "I –not felt except by very few, favorably situate," to "XII – damage total, lines of sight disturbed, objects thrown into the air". While an earthquake has only one magnitude, it can have many intensities, which decrease with distance from the epicenter.

Ground shaking accompanying earthquakes on nearby faults can be expected to be felt within the Project site. However, the intensity of ground shaking would depend upon the magnitude of the earthquake, the distance to the epicenter, and the geology of the area between the epicenter and the property.

A listing of active faults considered capable of producing strong ground motion at the Project site, their distances from the Project site, and the maximum expected earthquake along each fault is presented in Table 5.10-1, *Summary of Fault and Generalized Earthquake Information for the Moon Camp Project Site*. Also presented are generalized evaluations of maximum ground shaking on site for the maximum earthquakes, and generalized predictions of the likelihood of such events occurring.

Table 5.10-1
Summary of Fault and Generalized Earthquake Information for the Moon Camp Project Site

Name	Miles (direction from site)	Maximum Magnitude	Expected Level of Ground Shaking	Likelihood
North Frontal (Western Segmane)	6.5 (north)	7.0	High	Moderate
Helendale	8.0 (east)	7.3	High	Moderate
San Andreas	14 (south)	7.3	High	High
Pinto Mountain	18 (southeast)	7.0	Moderate	Moderate
San Jacinto	25 (southwest)	6.7	Moderate	High

The most severe ground shaking would be expected to accompany a large earthquake on the North Frontal Fault. An earthquake magnitude of 7.0 on this fault could produce Modified Mercallli intensities in the range of VIII to X within the property, and a maximum horizontal ground acceleration between .060 and 1.22 (Hilltop Geotechnical 2001). Damage from ground rupture on-site is extremely unlikely because no known active faults cross the property.

Secondary earthquake hazards, which include liquefaction, ground lurching, lateral spreading, seismically induced settlement, tsunamis, and earthquake induced landsliding, are discussed in the following sections.

Liquefaction

Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as a dense fluid. Liquefaction is caused by a sudden temporary increase in pore water pressure due to seismic densification or other displacement of submerged granular soils. Liquefaction more often occurs in earthquake prone areas underlain by young alluvium where the groundwater table is higher than 50 feet below the ground surface.

The borings conducted for this EIR were drilled in accordance with the "Guidelines for Evaluating and Mitigating Seismic Hazards in California, 1997" published by the Division of Mines and Geology (DMG) of the Department of Conservation. These guidelines are otherwise known as SP 117 (Special Publication 117). The procedures for analyzing liquefaction potential at the site conform to the "Recommended Procedures for Implementation of DMG Special Publication 117" produced by the Southern California Earthquake Center (SCEC) in 1999. Rotary wash drilling techniques were used to advance the borings for this site and Standard Penetration Tests (SPTs) were conducted in general accordance with ASTM D1586. A standard sampler driven by automatic hammer was used to perform the SPTs. Previous measurements by the drilling company rated the hammer energy at 75 to 80 percent. The SCEC recommends the use of the 1985 simplified procedures by Seed and others to analyze liquefaction potential. Typically, the methodology is to determine a corrected blowcount $(N_1)_{60}$ and use a recommended relationship between the corrected SPT blow count and the equivalent uniform cyclic stress ratio necessary to trigger liquefaction during a 7½-magnitude earthquake. For $(N_1)_{60}$ greater than 30, the potential for earthquake-induced liquefaction is practically non existent. Field SPT values were corrected for sampler type, drill rod lengths, hammer type and release system, and overburden stresses to generate the corrected value $(N_1)_{60}$. SPT data for this project show generally high blowcount. Consequently, corrected SPT blowcounts yielded $(N_1)_{60}$ values that were greater than 30.

Based on the results of the SPT data obtained from the exploratory borings, as well as observations within the exploratory test pits, there are no conditions within the project area that could promote liquefaction. Although shallow groundwater is present beneath the shoreline portions of the property, the lithologic character of the older alluvial materials that underlie the entire shoreline area of the project is such that the potential for liquefaction is considered nonexistent.

The only possible exception could be small areas directly at the lake-shoreline interface and the mouth of the major alluvial channels. However, only one of these areas lies within the project area. Given the nature of the lithologic conditions and high SPT blowcounts encountered in exploratory boring B-3 near the mouth of this channel, the lateral extent of any loose, saturated alluvial soils would be very limited. The likelihood of liquefaction-induced impacts in this area is considered low.

Ground Lurching

Certain soils have been observed to move in a wave-like manner in response to intense seismic ground shaking, forming ridges or cracks on the ground surface. Areas underlain by thick accumulations of colluvium and alluvium appear to be more susceptible to ground lurching than bedrock. Under strong seismic ground motion conditions, lurching can be expected within loose, cohesionless solids, or in clay-rich soils with high moisture content. Generally, only lightly loaded structures such as pavement, fences, pipelines and walkways are damaged by ground lurching; more heavily loaded structures appear to resist such deformation. Ground lurching may occur where deposits of loose alluvium exist on the project site, such as within the two major alluviated channels that transect the project area.

Lateral Spreading

Lateral spreading involves the lateral displacement of surficial blocks of sediment as a result of liquefaction in a subsurface layer. As previously stated the liquefaction potential within the project area, however, is considered to be nonexistent.

Seismically Induced Ground Settlement

Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, loosely packed alluvial deposits are especially susceptible to this phenomenon. Poorly compacted artificial fills may also experience seismically induced settlement. Unconsolidated soils such as modern alluvial soils within the two active stream channels are subject to seismically induced ground settlement.

Tsunamis

A tsunami is a seismic sea-wave caused by sea-bottom deformations that are associated with earthquakes beneath the ocean floor. The hazard from tsunamis is considered non-existent, given the large distance from the Pacific Ocean.

Seiching

Seiching involves an enclosed body of water oscillating due to groundshaking, usually following an earthquake. Lakes and water towers are typical bodies of water affected by seiching. Because of the proximity of the subject site to Big Bear Lake, the site is susceptible to damage from seiching. The largest amplitude of ground motion associated with a seismic event in this area is anticipated to be related to a major earthquake along the North Frontal Fault zone.

Other Geologic Hazards

Landslides. No landslides are known to exist within the upgradient of the site. Field reconnaissance did not disclose the presence of older, existing landslides within or near the subject property. Aerial photographic analyses performed as part of this study also did not disclose any existing landslides or slumps in the project area.

IMPACTS

SIGNIFICANCE CRITERIA

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains the Initial Study Environmental Checklist form used during preparation of the project Initial Study as contained in Appendix 15.1 of this EIR. The Initial Study includes questions relating to geology, soils and mineral resources. The issues presented in the Initial Study Checklist have been utilized as thresholds for significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Section 10.0, *Effects Found Not to be Significant*);
  - Strong seismic ground shaking (refer to Impact Statement 5.10-3);
  - Seismic-related ground failure, including liquefaction (refer to Section 10.0, *Effects Found Not to be Significant*);
  - Landslides (refer to Section 1.0, *Effects Found Not to be Significant).*

- Result in substantial soil erosion or the loss of topsoil (refer to Impact Statement 5.10-2);

- 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 (refer to Impact Statement 5.10-1);

- Be located on expansive soils, as defined in Table 18-1 B of the Uniform Building Code (1994), creating substantial risks to life or property (refer to Impact Statement 5.10-5); and/or

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater (refer to Section 10.0, *Effects Found Not to be Significant*).

Potential impacts associated with the project area's topography, soils, and the region's seismic activities are identified below. Mitigation measures are provided to reduce the significance of impacts.

The level of geotechnical and landform information contained herein is adequate to analyze the potential project effects on earth resources and landforms, and to determine appropriate mitigation measures. For certain items, the project geotechnical engineer should perform further testing and review of on-site conditions as part of the final design work. This additional work will further refine details for site

design, but is not anticipated to alter the conclusions of significance contained herein. In accordance with CEQA case law, this later additional refinement is not a deferral of mitigation. Rather, it is a design refinement, consistent with the commitment to mitigation included in this EIR.

The conceptual grading plan prepared by Hicks and Hartwick, Inc. (dated 6/6/01) indicates the creation of numerous, southerly-facing, 2:1 (horizontal to vertical) cut and fill slopes adjacent to the realigned portion of State Route 38 and the two (2) roadways internal to the development. Based on the nature of bedding planes observed within the older alluvial deposits in test pits TP-2 and TP-5, southerly-facing cut slopes north of the realigned section of State Route 38 may be grossly unstable. If so, the lots adjacent to these cut slopes could be significantly impacted.

There are also a number of other short- and long-term impacts to the current physical/geological setting that can be generally expected from grading and development activities. These are described in the following impacts sections.

Based on the results of the data obtained from the exploratory boring and test pits, liquefaction is not considered to be a significant impact due to the nonexistent potential within the project site.

The most significant potential impacts to site development would be caused by changes in existing topography, erosion of surficial soil deposits, ground shaking from nearby seismic sources, and potential seiche along the shoreline properties. Impacts to the existing groundwater conditions beneath the site may include increased amounts of recharge to the underlying aquifer(s) as a result of widespread landscape irrigation or leaky buried water transmission lines. As stated in Section 5.11, *Hydrology and Drainage*, of this, EIR, if groundwater from on-site water wells are to provide the water supply to the project area, additional studies will be necessary to assess the impacts to the underlying aquifer as a result of groundwater withdrawals.

SLOPE STABILITY

5.10-1 *Development of the proposed Project could result in slope failures. Implementation of the recommended mitigation measures and compliance with the County Development Code and Uniform Building Code would reduce impacts to less than significant levels.*

Given the apparent southerly inclination of bedding planes within the older alluvial deposits, proposed of south-facing, manufactured cut slopes could be grossly unstable. If weak clay layers within the older alluvium were found to be dipping out-of-slope, in what is referred to as “daylighted bedding”, slope failures could occur and encroach into adjacent lots.

Methods to mitigate such conditions could include to construction of 2:1 (horizontal to vertical) buttressed slopes using on-site native soil materials, or constructing geotextile-reinforced soil buttresses where cut slopes are planned. Either of these methods, as well as a number of other forms of proven slope reinforcement methods would reduce this impact to a less than significant level.

SOIL EROSION

5.10-2 *Development of the proposed Project could result in accelerated soil erosion. Project compliance with the County Development Code, the Uniform Building Code and the recommended mitigation measures would reduce impacts to a less than significant level.*

The younger alluvial deposits within the two major stream channels are highly erodible. Adverse surface drainage could promote accelerated soil erosion which could undermine proposed structures and lead to increased sedimentation within Big Bear Lake. This impact would be considered significant if not mitigated.

Mitigation measures, such providing adequate surface drainage away from these soils or covering them with a roadway, would reduce this impact to a less than significant level.

GROUND SHAKING

5.10-3 *Development of the proposed Project may increase the number of people/structures exposed to effects associated with seismically induced ground shaking. Implementation of the recommended mitigation measures and compliance with the County Development Code and the Uniform Building Code would reduce potential impacts to less than significant.*

Given the highly seismic character of the Southern California Region, moderate to severe ground shaking can be expected within the project area due to moderate to large earthquakes on the nearby North Frontal, Helendale, or San Andreas fault zones. This impact would be considered significant if not mitigated. In order to reduce this impact a less than significant level, all structures for human occupancy should be constructed in accordance with seismic design standards set forth in the latest edition of the Uniform Building Code.

SEICHE

5.10-4 *Development of the proposed Project may expose people/structures to seiching as a result of significant ground motion related to an earthquake. Project compliance with recommended mitigation measures would reduce impacts to less than significant levels.*

Seiche-induced run-up along the shoreline properties adjacent to Big Bear Lake could conceivably occur due to significant ground motion from a major earthquake. The amount of potential run-up would be dependant on the inclination of the near-shore environment and the height of the lake level at the time of the seismic event. Assuming the lake would be at its highest level during such an event, mitigation measures involving at least 5 feet of “free-board” above the high-water line for all residential structures would reduce this impact to a less than significant level.

EXPANSIVE SOILS

5.10-5 *Development of the proposed Project may create substantial risks to life or property as a result of expansive soils. Implementation of the recommended mitigation measure would reduce impacts to less than significant levels.*

Currently, there is insufficient information concerning the expansive nature of the alluvial soils beneath the project site. This impact will need to be evaluated in ~~additional~~ design level geotechnical analysis/studies~~.~~, which include ~~1)~~ a quantitative geotechnical analysis~~,~~ ~~2), a design level geotechnical engineering report,~~ and ~~3)~~ a design-level engineering geology report. Implementation of the recommended mitigation measures ~~of~~ from the design-level geotechnical engineering report ~~the recommended mitigation measure and conclusions rendered in the referenced reports~~ would reduce impacts to less than significant levels.

CUMULATIVE

5.10-6 *The proposed Project, combined with future development, may result in increased short-term impacts such as erosion and sedimentation, and long-term seismic impacts within the area. Mitigation is incorporated on a project-by-project basis to reduce impacts to a less than significant level in areas deemed suitable for development.*

Soils and geologic conditions in the Project vicinity may vary by location. Short-term cumulative impacts such as erosion and sedimentation would occur. The only cumulative long-term impact related to geology is the exposure of people and the property in the vicinity of the North Frontal Fault System to the potential for seismically induced ground shaking. Implementation of the cumulative projects would incrementally increase the number of people and structures potentially subject to a seismic event. Such exposure can be minimized by adhering to UBC standards and requirements. The cumulative effects of increased seismic risk would be addressed on a project-by-project basis in order to determine the need for project specific mitigation.

MITIGATION MEASURES

This section directly corresponds to the identified Impact Statements in the impacts subsection.

SLOPE STABILITY

5.10-1 The stability of ~~S~~south facing cut slopes shall be analyzed as part of the design-level geotechnical investigation. ~~u~~Utilize~~e~~ing 2:1 buttressed slopes using on site native soil materials, or ~~by~~ constructing geotextile-reinforced soil buttresses ~~where~~for planned unstable cut slopes ~~are planned~~ are typical engineering designs for stabilizing slopes. Either of these methods, or other methods must be approved by the San Bernardino County Department of Building and Safety~~Geologist for slope reinforcement may be utilized~~.

SOIL EROSION

5.10-2a Due to the potential for erosion associated with younger alluvial deposits within the two major on-site stream channels, increased surface drainage quantities associated with development on-site shall be directed away from the stream channels.

5.10-2b Prior to the issuance of Grading Permits, the Project Applicant shall prepare a Soil Erosion and Sedimentation Plan for submittal and approval by the County Building and Safety Department.

GROUND SHAKING

5.10-3 Engineering design for all structures and roadways shall be based on the current California Uniform Building Code at the time of project development. Construction plans shall be in accordance with seismic design standards set forth by the County's Development Code and Uniform Building Code.

SEICHE

5.10-4 Residential structures shall be located in areas which provide a minimum of five feet of freeboard above the high water line for any structures.

EXPANSIVE SOILS

5.10-5 Prior to grading permit issuance, ~~geologic analysis/studies shall be required including 1) a~~ a quantitative geotechnical analysis and~~of liquefaction, 2) a~~ design-level geotechnical engineering report shall be required and submitted to the County of San Bernardino Department of Building and Safety for their approval. ~~and 3) a design level engineering geology report.~~

CUMULATIVE

5.10-6 No mitigation measures are recommended.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant impacts related to Geology and Soils have been identified following implementation of mitigation measures and/or compliance with applicable standards, policies and/or County of San Bernardino Development Code and standards set forth in the Uniform Building Code.

5.11 HYDROLOGY AND DRAINAGE

This Section analyzes potential impacts on existing drainage patterns and flood control facilities in the Project area, as well as the potential effects on the groundwater and water quality in Big Bear Lake. Mitigation measures are recommended to reduce potential impacts to a less than significant level. Information in this Section is based on the Hydrology and Water Quality Report for the Project site prepared by RBF Consulting (June 2002), hydrological data made available by Hicks & Hartwick, Inc., the Geohydrologic Investigation of the Moon Camp Area (GSS 2000 report), prepared by Geoscience Support Services, Inc. (GSS) (July 2000), the Focused Geohydrologic Evaluation of the Maximum Perennial Yield of the North Shore and Grout Creek Hydrologic Subunit Tributary Subareas (GSS 2003 report), prepared by GSS (December 2003) and the Delineation of Jurisdictional Waters, prepared by RBF Consulting (July 2004).

EXISTING CONDITIONS

The purpose of this existing conditions evaluation is to establish a baseline for comparison of the pre-project and the post-project conditions. Baseline conditions investigated include: land use, hydrology, floodplain mapping, groundwater and surface water quality.

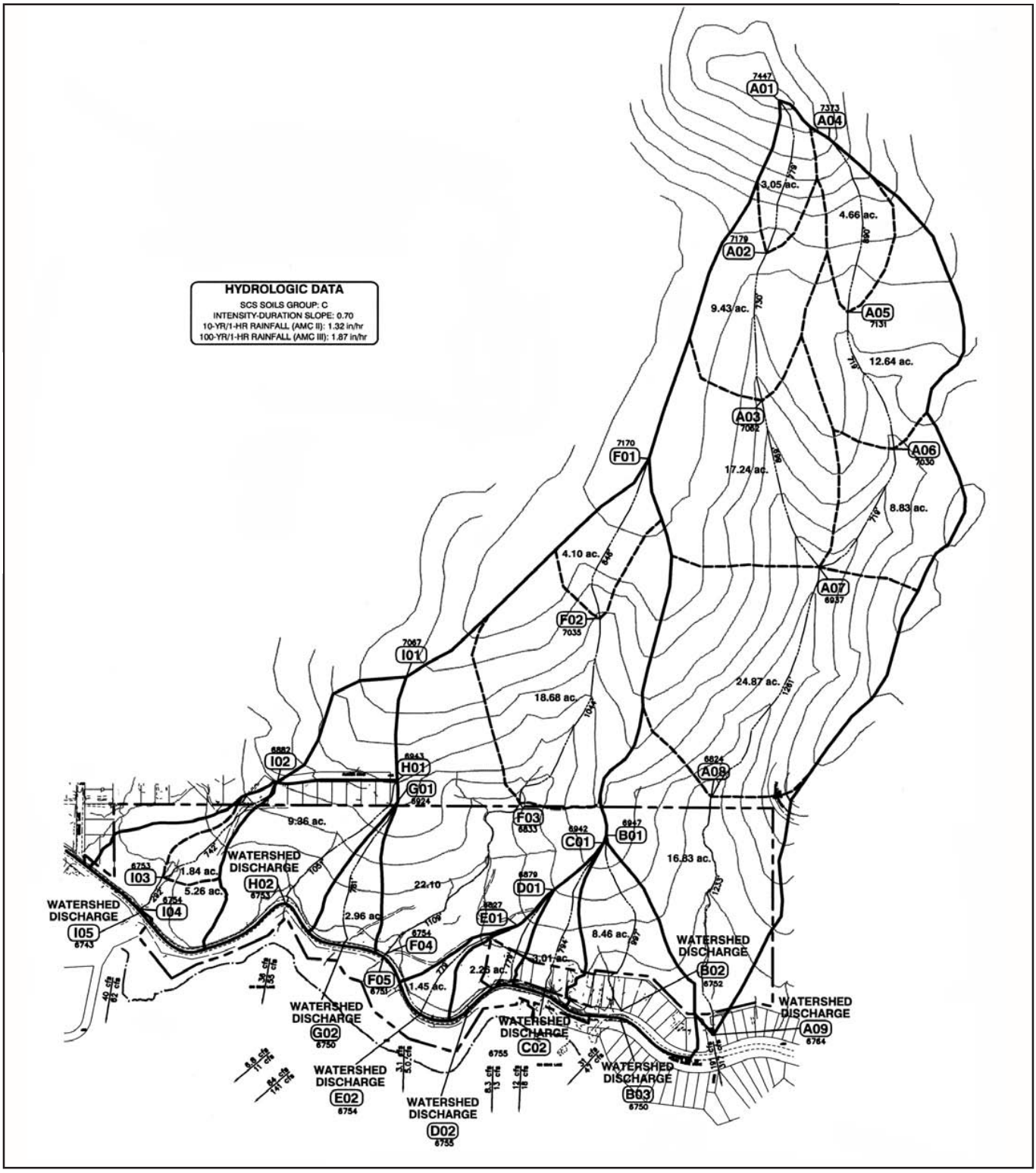
The watershed tributary to the site can be separated into nine drainage areas consisting of approximately 177 acres. Flows enter Big Bear Lake via cross culverts under State Route 38 and direct sheet flow over State Route 38. The drainage areas are labeled A through I. Area A, located on the eastern end of the site, contains a natural channel passing through the proposed development site. It is the largest drainage area consisting of 98 acres.

HYDROLOGY

Hicks & Hartwick, Inc. conducted a hydrology analysis that provides the basis for the existing condition hydrology for the Project site. Hydrologic calculations utilized to evaluate surface runoff from the 10-year and 100-year hypothetical design storm frequencies of tributary drainage areas were performed using Advances Engineering Software 1983-1994 (AES). The computer software (AES) creates an inactive watershed system to compute hydraulic and hydrological information for a given watershed. The watershed subarea boundaries were delineated in their *Preliminary Drainage Study*. Hydrologic parameters used in the analysis, such as rainfall and soil classification, are presented in the *San Bernardino County Hydrology Manual* dated May 1983. Exhibit 5.11-1, *Existing Condition Hydrology Map*, illustrates the hydrology for the existing condition.

EXISTING WATERSHED DESCRIPTION

The historic drainage pattern for the area follows the natural topography, north to south with the flow outleting to Big Bear Lake.



Source: Hicks & Hartwick, Inc., Preliminary Drainage Study.

Not to Scale

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

12/05 JN 10-101901

MOON CAMP TT #16136
ENVIRONMENTAL IMPACT REPORT

Existing Condition Hydrology Map

Exhibit 5.11-1

The maximum elevation differential of the watershed is approximately 213 feet (from elevation 2,960 at the northeast boundary to 2,747 feet at the lakefront). The site has slopes of five to 40 percent. Due to on-site drainage patterns, the project site was divided into nine areas (A through I). Area "A" is on the eastern portion of the watershed and area "I" is on the western portion. Table 5.11-1, *Drainage Area Breakdown*, provides further detail on the nine existing drainage areas and subareas.

Table 5.11-1
Drainage Area Breakdown

Drainage Area	Area (acres)	Number of Subareas
A	95.4	8
B	8.5	1
C	3.0	1
D	2.3	1
E	1.5	1
F	44.9	3
G	3.0	1
H	9.4	1
I	11.4	3

All soil types are classified into four hydrologic groups (A, B, C and D). Soil type A has low runoff potential and consists primarily of sand and gravel. Soil type B has a moderate infiltration rate and consists mostly of sandy-loam soils. Soil type C has a slow infiltration rate and consists primarily of silty-loam soils. Soil type D has a high runoff potential and consists of clay soils.

Area "A" is composed of 8 subareas. Currently all land in area "A" is natural. There is a natural channel running down the center of watershed "A". Approximately 50 percent of the land on the north end of sub-watershed "A" is composed of soil type "D", while the remainder is composed of soil type "C". Area "B" is composed of one subarea. Area "B's" land use consists of 1.0 dwelling unit per acre (DU/AC). Areas "C", "D", and "H" are all composed of one subarea. Within these subareas, the land use consists of 1.0 DU/2.5 AC. Areas "E" and "G" are also composed of one subarea each. These subareas exist as natural lands. Area "F" is composed of three subareas. The entire drainage area is comprised of natural lands. Area "I" is composed of three subareas. In the upper drainage area, the land use consists of 4.0 DU/AC. In the second drainage area, the land use consists of 1.0 DU/2.5 AC. The downstream drainage area in subarea "I" consists of natural lands.

RBF observed that the existing culverts which cross State Route 38 were either plugged with sediment, had crushed inlets, or both. These deficiencies result in little to no capacity in the existing culverts. The deficiencies cause ponding and overtopping of State Route 38.

RATIONAL METHOD

Hicks & Hartwick performed the hydrologic calculations to determine the 10-year and 100-year peak flow rates using the *San Bernardino County Hydrology Manual* dated May 1983. The Rational Method is an empirical computation procedure used for developing a peak runoff rate (discharge) for storms of a specific recurrence interval. The design discharges were computed by generating a hydrologic "link-node" model, which divides the area into drainage subareas. These subareas are tributary to a concentration point or hydrologic "node" point determined by the existing terrain and street layout. The assumptions/guidelines applied for use of the Rational Method are included in Appendix 15.9, *Hydrology Data*.

EXISTING CONDITION SURFACE WATER HYDROLOGY

To establish the baseline hydrologic conditions for the Project, both 10-year and 100-year frequency storm were analyzed by Hicks & Hartwick. The flows for the 10-year storm are used to determine local storm drain sizing, while the 100-year analysis is used for larger master plan facilities and floodplain mapping. The predominant hydrologic soil classification of the natural watershed is soil type "C" and "D", which corresponds to a high runoff potential, with the soil having slow infiltration rates consistent with clay soils. Table 5.11-2, *Existing Conditions Peak Flowrates*, summarizes the results of the existing condition analysis utilizing the 1983-1994 Advanced Engineering Software.

FLOODPLAIN MAPPING

The County of San Bernardino is a participant in the National Flood Insurance Program (NFIP). Communities participating in the NFIP must adopt and enforce minimum floodplain management standards, including identification of flood hazards and flooding risks. Participation in the NFIP allows communities to purchase low cost insurance protection against losses from flooding. The published Flood Insurance Rate Maps (FIRMs) for the Project site are included on Community Panel Number 060270 7295B. The FIRMs indicated that there are no existing flood hazards within the Project site.

JURISTICTIONAL WATERS

RBF Consulting conducted a Delineation of Jurisdictional Waters (July 2004). The findings of their Study are summarized below.

WATERS OF THE U.S. (WETLAND) DETERMINATION

In order to be considered a wetland, an area must exhibit all three of the wetland parameters (i.e., vegetation, soil and hydrology) per the evaluation criteria in the Wetland Delineation Manual. Based on the results of the field investigations, it was determined that not all three parameters were present within the drainages (neither hydric soils nor riparian vegetation were present). As a result, RBF identified no Corps wetlands on the proposed Project site.

Table 5.11-2
Existing Conditions Peak Flowrates

Subarea	Area (acres)	Total Area (AC)	Tc (min)	Total 10-Yr. Peak Q (cfs)	Total 100-Yr. Peak Q (cfs)
Watershed A					
A1 – A2	3	3	16.6	7.8	12.2
A2 – A3	9.4	12.5	17.4	30.3	48.4
A3 – A7	17.2	29.7	18.3	69.0	111.0
A4 – A5	4.7	4.7	18.4	11.0	17.4
A5 – A6	12.6	17.3	19.2	39.4	62.5
A6 – A7	8.8	26.1	20.0	57.4	91.6
A7 – A8	24.9	79.0	19.6	170.1	227.3
A8 – A9	16.8	95.9	21.2	191.5	317.3
Watershed B					
B1 – B2	8.5	8.5	10.3	31.1	47.3
Watershed C					
C1 – C2	3.0	3.0	9.4	11.7	17.9
Watershed D					
D1 – D2	2.3	2.3	10.0	8.3	12.8
Watershed E					
E1 – E2	1.5	1.5	19.9	3.1	5
Watershed F					
F1 – F2	4.1	4.1	20.0	8.6	14.1
F2 – F3	18.7	22.8	21.1	45.6	75.2
F3 – F4	22.1	44.9	22.5	84.4	141.1
Watershed G					
G1 – G2	3.0	3.0	18.1	6.7	10.9
Watershed H					
H1 – H2	9.4	9.4	9.6	35.7	54.6
Watershed I					
I1 – I2	4.3	4.3	9.4	17.3	25.7
I2 – I3	1.8	6.1	10.2	22.9	34.7
I3 – I4	5.3	11.4	10.7	40.2	61.9

WATERS OF THE U.S. (NON-WETLAND) DETERMINATION

~~The unnamed drainages within the Project site exhibited evidence of flow (i.e., sediment/silt deposition) sufficient to document the Ordinary High Water Mark (OHWM) (i.e., channel bed and bank lines), thus meeting the criteria for jurisdictional waters.~~ Evidence of an Ordinary High Water Mark (OHWM) was observed within the on-site ephemeral drainages, primarily indicated by sediment deposits. It should also be noted that Big Bear Lake adjoins the project site to the south. Based on discussions with the Big Bear Municipal Water District, the current water level of Big Bear Lake (as of June 28, 2004) is 6,727.8-feet above mean sea level (msl). The high water mark is reported to be 6,743.2 feet above msl. Refer to ~~Appendix 15.10, *Jurisdictional Delineation*, and~~ Exhibit 5.8-2, *Jurisdictional Map*, for an illustration of jurisdictional boundaries.

Based on the results of the field observations and data collection, RBF identified 0.15-acre of Corps jurisdictional "waters of the U.S." within the proposed project site. ~~The drainages are ephemeral.~~ In addition to on-site ephemeral drainages, the Corps considers Big Bear Lake jurisdictional. The Corps' jurisdictional limits are delineated at the high water line, which is reported to be at 6,743.20-foot elevation (and below).

CALIFORNIA DEPARTMENT OF FISH AND GAME (1602~~3~~) JURISDICTION

Based on the results of the field observations and data collection, RBF identified 0.15-acre of CDFG jurisdictional streambed~~waters~~ located within the boundaries of the Project site (refer to Exhibit 5.8-2, *Jurisdictional Map)*. As with the Corps, Big Bear Lake would be considered jurisdictional by the CDFG, including the approximate 4.14-acre lake shoreline. Utilizing the most current development plans, it was determined that the proposed improvements would impact 4.38-acres of CDFG jurisdiction (includes streambed, shoreline, and lake impacts). Refer to Section 5.8, *Biological Resources*, for further discussion regarding jurisdictional waters.

GROUNDWATER

The Big Bear Lake Watershed has been divided into seven hydrologic subunits based on surface water drainage divides. Two of the hydrologic subunits, the North Shore and Grout Creek Subunits, extend across most of the northern portion of Big Bear Lake. Although the subunits can be categorized as independent surface drainage catchments, their large size and/or elongated east-west extent warrant further subdivision to distinguish available groundwater resources in the eastern portion from available groundwater resources in the western portion.

As stated above, ~~T~~the groundwater conditions cited in this EIR are based on two separate reports prepared by Geoscience Support Services, Inc. (GSS). The GSS 2000 report includes data on the groundwater quality, on-site well operations (Wells-FP-2 and FP-3) and groundwater supply potential. ~~in 2000 and a~~ The GSS 2003 report ~~Focused Geohydrologic Evaluation of the Maximum Perennial Yield for the North Shore and Grout Creek Hydrologic Subareas, prepared in 2003~~ includes current data on groundwater supplies in the North Shore and Grout Creek Hydrologic Subunits. The findings in the GSS 2003 report regarding groundwater supplies are

assumed to supercede the 2000 findings. The GSS 2003 report presents a focused geohydrologic evaluation of the maximum perennial yield of the North Shore and Grout Creek Subunits that includes dividing each subunit into smaller tributary subareas. However, the data regarding groundwater quality and well operations in the GSS 2000 report are still applicable and cited in this section. It is also noted that the wells analyzed in the GSS 2000 report are not included in the GSS 2003 report, as they are non-operational. Well FP-2 is located on the Moon Camp project site.

Although the project area is located entirely within tributary subarea A of the North Shore Hydrologic Subunit, potential groundwater resources are analyzed for both the North Shore and the Grout Creek Hydrologic Subunits as they are both considered potential sources to supply water to the project.

~~According to the 2000 report, the entire project site is within subunit A of the North Shore subarea of Big Bear Lake. The western one-third lies within the Grout Creek subarea. The North Shore subarea is similar in several respects to the Grout Creek subarea. For example, a considerable amount of the water bearing (older alluvial) material present is above the known groundwater surface. Only a band of these materials adjacent to Big Bear Lake are continuously saturated.~~

~~According to a recent geohydrologic investigation of the Moon Camp Area by Geoscience Support Services (GSS, 2000), the older alluvial deposits represent the main water-bearing formation beneath the site. Groundwater level data from two U.S. Forest Service wells located within the project area suggest that Big Bear Lake provides recharge to the aquifer beneath the project area. Additional groundwater recharge emanates from gravity drainage from the higher elevations north of the Moon Camp area.~~

~~Based on studies by GSS (2000), the main water-bearing zones within the older alluvial deposits consist of intermixed and interlayered sand and gravels. However, lithologic data from the two U.S. Forest Service wells indicate that these sand and gravel aquifers are not continuous over wide areas and tend to follow subsurface channels (GSS, 2000). In mid-2000, groundwater beneath the southern margin of the site was approximately 5 to 10 feet below the level in the lake. More recent groundwater level observations from the three exploratory borings drilled for the liquefaction analysis appears to be similar with respect to the level of the lake.~~

~~The results from GSS 2000 geohydrologic investigation indicate the recoverable amount of groundwater in the Moon Camp area is estimated at 230 acre-feet per year. Based on the nature of the aquifer materials, thickness of the aquifer and the discharge rate of existing wells in the Moon Camp area is estimated at 230 acre-feet per year. Based on the nature of the aquifer materials, thickness of the aquifer and the discharge rate of existing wells in the Moon Camp area, the potential to develop a 100 gallon per minute (gpm) water well supply is considered by GSS (2000) to be good. Chemical analyses of the groundwater from the two on-site water wells indicate that the groundwater is of superior quality. However, the iron concentration (0.69 mg/l) in one well exceeds the state maximum concentration limit for iron (0.3 mg/l) (GSS, 2000).~~

Maximum perennial yield was evaluated in the context of the total average annual ground water recharge within the North Shore and Grout Creek Subunits. Ground water recharge is the total amount of water that reaches the aquifer (i.e., ground water reservoir) through natural processes, such as deep percolation of precipitation falling on the land surface and infiltration beneath flowing stream channels. In the development of ground water resources for municipal supply, however, not all of the natural recharge that any given aquifer receives on an average annual basis can be developed.

Maximum perennial yield is distinguished from average annual ground water recharge through the following definition:

> *The maximum quantity of ground water perennially available if all possible methods and sources are developed for recharging the basin. The quantity depends on the amount of water economically, legally, and politically available to the organization or agency managing the basin (Todd, 1980).*

By definition, the maximum perennial yield is some portion (i.e. subset) of the total amount of ground water recharge that the aquifers receive from precipitation on an average annual basis. Not all of the water that reaches the aquifer can be developed for beneficial use because either it is not economically feasible, or there is no legal right to the water, or political constraints prevent or inhibit development.

Average annual ground water recharge estimates were assigned to smaller tributary subareas, which were determined from surface drainage divides within the larger hydrologic subunits. The North Shore Subunit was subdivided into six tributary subareas (A through F) and the Grout Creek Subunit was subdivided into four tributary subareas (A through D). The boundaries of the tributary subareas represent surface water drainage divides, which, for most of the tributary subareas also represent ground water flow divides. Exceptions include the margins of Big Bear Lake and in the southeast portion of the North Shore Subunit where the ground water within one subarea/subunit can be in hydraulic communication with adjacent subareas/subunits.

Average annual ground water recharge was estimated for each tributary subarea using a watershed hydrologic model and by estimating ground water underflow (conducted for the alluvial portion of the Grout Creek Subunit only). When possible, measured data was used as input for the analysis of ground water discharge. Measured data included:

- Long-term precipitation records from weather stations within the Big Bear Lake watershed,
- Evapotranspiration data from evaporation pans and weather stations within the watershed,
- Ground water levels, and
- Ground water production.

However, most of the input parameters that are required for a detailed evaluation of the average annual ground water recharge had to be estimated or assumed from data collected outside the Grout Creek and North Shore Subunits or outside the Big

Bear Lake Watershed due to lack of measured data in the area. Although the assumed values are published and are from reliable sources (i.e., the U.S. Environmental Protection Agency, United States Geological Survey, etc.), they are not specific to the area of interest. Numerous additional monitoring features can be developed to collect the data necessary to refine the ground water recharge estimates. However, priority should be given to the construction of monitoring wells and the development of a reliable ground water level baseline for the tributary subareas.

NORTH SHORE HYDROLOGIC SUBUNIT

Groundwater in the North Shore Hydrologic Subunit generally occurs in the unconsolidated alluvial deposits on the lower slopes of the surrounding mountains and in the fractures and weathered portions of the bedrock. Groundwater in the alluvium occurs at depths ranging from approximately 5 feet (ft) in the western portions of the Subunit and near the RV Park wells to approximately 50 ft near Division Well Nos. 6 and 7 (refer to Figure 2 in the GSS 2003 report for well location in the North Shore and Grout Creek Subunits).

Groundwater flows by gravity drainage from areas of high elevation (the mountain slopes) into areas of low elevation, ultimately collecting in the sediments beneath Big Bear Lake. Groundwater recharge likely occurs as deep percolation of runoff through the younger alluvium and fractures in the bedrock during periods of prolonged precipitation.

The primary sources of groundwater discharge from the North Shore Subunit are underflow and groundwater pumping from wells within the Subunit. The DWP currently operates four vertical production wells within the North Shore Subunit (RV Park Well Nos. 1 and 2 and Division Well Nos. 6 and 7). Combined average annual groundwater production from DWP wells between 1993 and 2002 is 282 acre-feet per year acre-ft/yr. Pumping data for the 20 private wells in the Subunit were not available. However, assuming that they are domestic sources and that an average single family home uses approximately 200 gallons per day per year (gpd/yr), it is estimated that production from these wells is approximately 4.5 acre-ft/yr.

Groundwater levels in the central portion of the North Shore Hydrologic Subunit, as measured in RV Park Well No. 1, have declined approximately 20 feet between 1996 and 2002. The groundwater level in this well is relatively stable, however, with most of the decline occurring after year 2000, a period of relatively dry climatic conditions. Groundwater levels in Division Well No. 6, located in the eastern portion of the Subunit, have declined approximately 80 ft between 1992 and 2003. Recent groundwater level declines in the eastern portion of the Subunit can also be correlated with dry climatic conditions, although the greater degree of decline is also a reflection of higher groundwater production in the area.

Estimates of Average Annual Groundwater Recharge (North Shore Subunit)

Estimates of average annual groundwater recharge were assigned to each tributary subarea using the watershed model. Required input parameters for the watershed model for which no measured data were available were obtained from the EPA

database of hydrologic parameters. Based on the watershed modeling results, the estimates of average annual groundwater recharge for the North Shore Hydrologic Subunit range from approximately 150 to 430 acre-ft/yr with a midpoint of approximately 290 acre-ft/yr. This range of recharge is approximately 2 to 7 percent of average annual precipitation for the Subunit, which is within the range of accepted recharge estimates for other groundwater basins in southern California (3 to 7 percent) determined by the Metropolitan Water District of Southern California (MWD). The midpoint of the range is approximately 4.5 percent of precipitation for the Subunit.

Estimates of average annual groundwater recharge for the six tributary subareas range from 27 acre-ft/yr (subarea E) to 73 acre-ft/yr (subarea B) (refer to Table 5.11-3, *Summary of Groundwater Recharge Results North Shore Tributary Subareas*). These groundwater recharge estimates represent the average of the watershed model output range, which is based on the average of typical and possible input values. The data suggests that the RV Park wells are producing groundwater at a rate (approximately 14 acre-ft/yr), which is well within their subarea's (subarea B) average annual groundwater recharge. Combined average annual groundwater production from Division Well Nos. 6 and 7 is exceeding that subarea's (subarea F) average annual groundwater recharge. However, it is important to note that these wells are in the alluvial portion of the subarea, which is in hydraulic continuity with the alluvial portions of the adjacent hydrologic subunit (i.e. the Division Subunit to the south). Accordingly, production from these wells should be evaluated in the context of the groundwater basin in this area and not the watershed tributary to the wells.

Maximum Perennial Yield (North Shore Subunit)

According to the GSS 2003 report, the midpoint of the estimated range of average annual groundwater recharge (approximately 290 acre-feet per year) is considered a good estimate of maximum perennial yield for the North Shore Hydrologic Subunit, given the available data.

The results of the ground water recharge analysis for the North Shore Subunit are as follows:

Table 5.11-3
Summary of Ground Water Recharge Results - North Shore Tributary Subareas

Tributary Subarea	Area (acres)	Annual Precipitation (inches)	Average Annual Ground Water Recharge – Low Estimate (acre-ft/yr)	Average Annual Ground Water Recharge – High Estimate (acre-ft/yr)	Average of Ground Water Recharge Estimate Range (acre-ft/yr)
A	247	27.87	14	44	29
B	720	25.45	36	110	73
C	828	23.01	37	107	72
D	558	21.45	22	63	43
E	392	20.01	15	39	27
F	814	18.27	23	66	44
TOTAL	3,559	136.06	147	429	288

GROUT CREEK HYDROLOGIC SUBUNIT

Groundwater within the Grout Creek Subunit occurs in both the bedrock and alluvium. The Cedar Dell slant wells (located in subarea C) are drilled into the Mesozoic granitic rock and typically produce approximately 20 gallons per minute, collectively. Groundwater in the alluvium occurs at depths ranging from approximately 20 to 90 ft and flows to the south toward Grout Bay (Big Bear Lake) at a gradient of 0.024 to 0.043 ft/ft. Pumping test and lithologic data from the Barbara Lee Lane Well and specific capacity data from Wells 12P01, 13C01, and Northshore Well Nos. 1, 2, and 3 were used to estimate aquifer transmissivity. Estimates range from 700 to 1,900 gpd/ft.

Groundwater recharge likely occurs within the Grout Creek streambed during periods of extended runoff, near the contact between the bedrock and alluvium and, to a lesser extent, as percolation of precipitation directly on the alluvium. Groundwater recharge also occurs through fractures in the bedrock formations.

The primary sources of groundwater discharge from the Grout Creek Subunit are underflow and groundwater pumping from wells within the Subunit. DWP currently operates two vertical production wells, two slant wells in bedrock, and one spring within the Grout Creek Subunit. Average annual groundwater production from DWP wells within the Subunit from 1989 to 2002 has been approximately 134 acre-ft/yr. With the exception of pumping from Barbara Lee Lane Well No. 1, all of the municipal groundwater production in the Grout Creek Hydrologic Subunit is from tributary subarea C. Pumping data for the 29 private wells in the Subunit were not available. However, assuming that they are domestic sources and that an average single family home uses about 200 gpd/yr, it is estimated that production from these wells is approximately 6.5 acre-ft/yr.

Estimates of Average Annual Groundwater Recharge (Grout Creek Subunit)

Groundwater level elevations in North Shore Well Nos. 1 and 3, both located at the discharge end of tributary subarea C, have been relatively stable between 1995 and 2003, with seasonal fluctuations and a minor decline during the relatively dry climatic cycle from 1999 to December 2003. The average annual groundwater recharge of the Grout Creek Subunit was estimated using the underflow method and the watershed model.

The underflow method indicated an average annual groundwater recharge estimate of approximately 200 acre-ft/yr. It should be noted, however, that the underflow calculation only accounts for outflow in the alluvial aquifer and does not account for outflow through the bedrock in the Subunit. It is assumed that some outflow occurs within the bedrock aquifer, which is one reason why the underflow estimate for the Grout Creek Subunit is lower than the perennial yield estimate from the watershed model (described below).

Based on the watershed modeling results, the average annual groundwater recharge for the Grout Creek Hydrologic Subunit (subareas A through D) is estimated to range from approximately 260 to 840 acre-ft/yr with a midpoint of approximately 550 acre-ft/yr (refer to Table 5.11-4, *Summary of Groundwater Recharge Results Grout Creek*

Tributary Subareas). This range of recharge is approximately 2 to 8 percent of average annual precipitation for the Subunit. The midpoint of the range is approximately 5 percent of precipitation for the Subunit. Assumed input parameters for the watershed model are based on the average of EPA' s suggested parameter ranges.

The relative disparity between the average annual recharge estimates obtained from the underflow analysis and watershed model is partly due to the estimated nature of the input parameters used in each analysis. In the case of the underflow analysis, the transmissivity parameter is estimated based on review of lithologic logs and pumping tests in wells within the Big Bear area that are perforated in similar aquifer materials. More representative values can be obtained via formal aquifer pumping tests using the wells in the Subunit. For the watershed model, 18 of the 20 required input parameters are estimated from the EPA' s database, which is not specific to the mountains of Southern California. Additionally, the underflow analysis does not account for all of the recharge within the bedrock. As data is collected in the future, the range of recharge will become less.

Estimates of average annual groundwater recharge for the four tributary subareas range from 66 acre-ft/yr (subarea D) to 217 acre-ft/yr (subarea C). These average annual recharge values represent the average of the watershed model output range, which is based on the average of typical and possible input values. These data suggest that average annual groundwater production from the Grout Creek Hydrologic Subunit (approximately 134 acre-ft/yr), which occurs almost entirely from tributary subarea C, is within the average annual recharge for both the tributary subarea and the hydrologic subunit.

Maximum Perennial Yield (Grout Creek Subunit)

The maximum perennial yield of the Grout Creek Hydrologic Subunit is within the range of average annual groundwater recharge specified by the watershed model, but is more likely to be in the lower end of the range than the upper end. As mentioned previously, by definition, maximum perennial yield is the amount of water that can be developed economically, legally and politically. In consideration of this, subareas A and B of the Grout Creek Subunit are remote and are located on land under the jurisdiction of the United States Forest Service (USFS). There is no established distribution system in subareas A and B of the Grout Creek Subunit. Furthermore, access to the area would likely require a lengthy negotiation process with the USFS. Given these factors, developing groundwater resources in these subareas is not currently practical.

At this time, it is recommended to use the sum of the midpoint recharge estimates for tributary subareas C and D (217 acre-ft plus 66 acre-ft; see Table 5.11-4) as the maximum perennial yield for the Grout Creek Subunit (total of 283 acre-ft/yr). It should be emphasized that as groundwater production is initiated in each subarea, it will be very important to monitor groundwater levels in dedicated non-pumping monitoring wells (i.e. " key wells") located in each tributary subarea from which groundwater is extracted. As was recommended for the North Shore Hydrologic Subunit, future management of the groundwater resources in each tributary subarea

should rely more on established groundwater level thresholds than the perennial yield estimates.

The results of the groundwater recharge analysis for the Grout Creek Subunit are as follows:

Table 5.11-4
Summary of Ground Water Recharge Results
Grout Creek Tributary Subareas

Tributary Subarea	Area (acres)	Annual Precipitation (inches)	Average Annual Ground Water Recharge – Low Estimate (acre-ft/yr)	Average Annual Ground Water Recharge – High Estimate (acre-ft/yr)	Average of Ground Water Recharge Estimate Range (acre-ft/yr)
A	1,074	33.44	74	249	161
B	850	29.01	50	160	105
C	1,668	29.93	104	331	217
D	592	26.74	32	99	66
Total (A to D)	4,184	119	260	839	549
Total (C and D only)	2,260	56.67	136	430	283

Tributary subareas A and B are excluded from the totals because they are not currently practicable to developed due to their remote locations and are located on land under the jurisdiction of the U.S. Forest Service.

GROUNDWATER QUALITY

According to the GSS 2000 Report, groundwater samples collected from Well FP-2 located on the southern portion of the Moon Camp site in 1987 was submitted for a full Title 22 analysis. The chemical analysis indicated that the groundwater quality in the Moon Camp area is calcium bicarbonate and is generally of superior water quality as all concentrations were below maximum contaminant levels (MCLs), with the exception of iron with a concentration of 0.69 mg/L. The MCL for iron is 0.3 mg/L. However, the iron concentration of Well-FP-3 (located approximately 800 feet to the northeast of Well FP-2) was only 0.06 mg/L, which suggest that iron concentrations are possibly lower elsewhere.

STORM WATER QUALITY

Storm water quality is a significant concern in Southern California. This section discusses typical pollutants found in storm water runoff and discusses what sort of contaminants may be found in existing storm water runoff. Based on the Clean Water Act, a 303 (d) list has been developed, which includes Big Bear Lake. The 303(d) Clean Water Act section contains a list of impaired surface water bodies which identifies primary pollutants, sources of pollutants and a priority schedule for developing Total Maximum Daily Loads (TNDL) to reduce the amount of pollutants in the water body. For a specific discussion concerning the status of the 303(d) listing for Big Bear Lake refer to the Existing Storm Water Quality discussion below.

NONPOINT SOURCE POLLUTANTS

A net effect of urbanization can be to increase pollutant export over naturally occurring conditions. The impact of the higher export can be on the adjacent streams and also on the downstream receiving waters. However, an important consideration in evaluating storm water quality from the project is to assess if it impairs the beneficial use to the receiving waters. Nonpoint source pollutants have been characterized by the following major categories in order to assist in determining the pertinent data and its use. Receiving waters can assimilate a limited quantity of various constituent elements, but there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. Background of these standard water quality categories provides understanding of typical urbanization impacts.

Sediment. Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons. Construction-sites are the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of runoff due to urbanization.

Nutrients. Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are 1) surface algal scums, 2) water discolorations, 3) odors, 4) toxic releases, and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

Trace Metals. Trace metals are primarily a concern because of their toxic effects on aquatic life, and their potential to contaminate drinking water supplies. The most common trace metals found in urban runoff are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban runoff are attached to sediment and this effectively reduces the level, which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically occur over a shorter

duration, which reduces the amount of exposure and could be toxic to the aquatic environment. The toxicity of trace metals in runoff varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

Oxygen-Demanding Substances. Aquatic life is dependent on the dissolved oxygen in the water. When organic matter is consumed by microorganisms dissolved oxygen (DO) is consumed in the process. A rainfall event can deposit large quantities of oxygen demanding substance in lakes and streams. The biochemical oxygen demand of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low DO results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and total organic carbon (TOC).

Bacteria. Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded EPA water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk in themselves, but are often associated with human pathogens.

Oil and Grease. Oil and grease contain a wide variety of hydrocarbons some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly absorb within it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbons export, although illegal disposal of waste oil into storm waters can be a local problem.

Other Toxic Chemicals. Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in storm water. Priority pollutant scans have been conducted in previous studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in storm water include - 1) phthalate (plasticizer compound), 2) phenols and creosols (wood preservatives), 3) pesticides and herbicides, 4) oils and greases, 5) metals.

PHYSICAL CHARACTERISTICS OF SURFACE WATER QUALITY

Standard parameters which can assess the quality of storm water provide a method of measuring impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability as a pollutant in surface runoff. In an urban environment, the quantity of certain pollutants in the

environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or ground water.

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a water quality standard refers to its physical, chemical, or biological characteristics. Water quality parameters for storm water comprise a long list and are classified in many ways. In many cases, the concentration of an urban pollutant, rather that the annual load of that pollutant, is needed to assess a water quality problem. Some of the physical, chemical or biological characteristics that evaluate the quality of the surface runoff are:

Dissolved Oxygen. Dissolved oxygen in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The dissolved oxygen concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. Dissolved oxygen is a transient property that can fluctuate rapidly in time and space. Dissolved oxygen represents the status of the water system at a particular point and time of sampling. The decomposition of organic debris in water is a slow process and the resulting changes in oxygen status respond slowly also. The oxygen demand is an indication of the pollutant load and includes measurements of biochemical oxygen demand or chemical oxygen demand.

Biochemical Oxygen Demand (BOD). The biochemical oxygen demand (BOD) is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.

Chemical Oxygen Demand. The chemical oxygen demand (COD) is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.

Total Dissolved Solids (TDS). TDS concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS are an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affect saturation concentration of dissolved oxygen and influence the ability of a water body to assimilate wastes. Eutrophication rates depend on total dissolved solids.

pH. The pH of water is the negative log, base 10, of the hydrogen ion (H^+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life. Generally, toxic limits for pH values are less than 4.8 and greater than 9.2.

Alkalinity. Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 mg/l. Typically, alkalinity of 100-200mg/l seem to support well-diversified aquatic life.

Specific Conductance. The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long-term monitoring of a project's waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2000 µohms/cm indicate a TDS level too high for most freshwater fish.

Turbidity. The clarity of water is an important indicator of water quality that relates to the ability of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Turbidity is caused by suspended clays and other organic particles. It can be used as an indicator of certain water quality constituents such as predicting the sediment concentrations.

Nitrogen (N). Sources of nitrogen in storm water are from the additions of organic matter or chemical additions to water bodies. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Excessive nitrogen can lead to eutrophication since nitrification consumes dissolved oxygen in the water. Nitrogen occurs in many forms. Organic Nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia); ammonia; nitrite plus nitrate; nitrite; and nitrogen in plants. The principal water quality criteria for nitrogen focus on nitrate and ammonia.

Phosphorus (P). Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban storm water discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic

material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. Important methods of measurement include detecting orthophosphate and total phosphorus.

EXISTING STORM WATER QUALITY

Water quality monitoring has historically been conducted on Big Bear Lake. The monitoring has resulted in Big Bear Lake being listed on the Santa Ana Regional Water Quality Board Section 303(d) list for impaired water bodies. Table 5.11-5, *Big Bear Lake Pollutant List*, contains the 303(d) list of the pollutants found in Big Bear Lake and the source of the pollutant.

Table 5.11-5
Big Bear Lake Pollutant List

Pollutant Stressors	Source	Priority
Copper	Resource Extraction	High
Mercury	Resource Extraction	High
Metals	Resource Extraction	High
Noxious Aquatic Plants	Unknown Non-Point Source	High
Nutrients	Construction and Snow Skiing Activities	High
Sedimentation and Siltation	Construction, Snow Skiing Activities and Unknown Non-Point Source	High
Source: Draft 2002 Clean Water Act Section 303(D) List and TMDL Priority Schedule.		

The Project site lacks data on storm water runoff quality. In the absence of site-specific data, expected storm water quality can be qualitatively discussed by relating typical pollutants to specific land uses.

Currently, the site is vacant, consisting of primarily open space with trees and shrubs. The watershed is primarily open land with 83.7 percent of the watershed 100 percent pervious (natural area), 4.7 percent is 80 percent pervious (1 dwelling unit per acre), 9.2 percent is 70 percent pervious (2.5 dwelling units per acre) and 2.4 percent is 60 percent pervious (4 dwelling units per acre). The expected existing pollutants in the existing condition storm water runoff from the residential area are trash, nutrients, bacteria, oil and grease, and household hazardous wastes from the residential development. There is also oil and grease associated with automobile use on-site and on State Route 38. The natural areas that make up the majority of the site contribute suspended solids.

Currently, the site does not contain any structural Best Management Practices (BMP) which would potentially decrease the amount of pollutants in storm water runoff. It is likely that portions of potential pollutants are removed through the use of natural conveyance. Conveying flows overland through vegetation affords some infiltration and biofiltration of runoff and thus, potential pollutant removal. However, the residential areas are on the lakeshore end of the Project site, providing little natural

conveyance. A draw back to conveying flows overland is that it tends to create erosion problems and thus increase suspended solids in the runoff. Problems associated with suspended solids and erosion are evident on the Project Site as illustrated in Figure 5 of Appendix 15.9, *Hydrology Data*.

IMPACTS

SIGNIFICANCE CRITERIA

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains the Initial Study Environmental Checklist form used during preparation of the Project Initial Study, which is contained in Appendix 15.1, *Initial Study/Notice of Preparation*, of this EIR. The Initial Study includes questions relating to hydrology, drainage and water quality. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this Section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

- Violation of any water quality standards or waste discharge requirements (refer to Impact Statements 5.11-3 and 5.11-4);

- Substantial depletion of groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted) (refer to Impact Statement, 5.11-2);

- Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site (refer to Impact Statement 5.11-1);

- Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site (refer to Impact Statement 5.11-1);

- Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provision of substantial additional sources of polluted runoff (refer to Impact Statement 5.11-1);

- Otherwise substantial degradation of water quality (refer to Impact Statements 5.11-3 and 5.11-4);

- Housing placement within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (refer to Section 10.0, *Effects Found Not To Be Significant*);

- Placement within a 100-year flood hazard area structures which would impede or redirect flood flows (refer to Section 10.0, *Effects Found Not To Be Significant*); and/or

- Exposure of people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (refer to Section 10.0, *Effects Found Not To Be Significant*).

Potential impacts associated with drainage and water quality are categorized below according to topic. Mitigation measures at the end of this Section directly correspond to the impact statements below.

The following discussion is an evaluation of the proposed Project which is then compared to the existing conditions analysis to determine impacts associated with development of the property. Proposed conditions investigated include: land use, proposed storm drain configuration, hydrology, floodplain mapping, groundwater and surface water quality.

Federal, State and local drainage laws and regulations govern the evaluation of impacts to surface water drainage. For this evaluation, impacts to surface water drainage would be considered significant if the Project alters the drainage patterns of the site, causing erosion, siltation, or increased runoff, thus, resulting in increased flooding. Increase in the amount of runoff could be considered significant if it impacts State Route 38 or downstream storm drain facilities.

The evaluation of impacts to storm water quality is of growing concern throughout Southern California. In response to the growing concerns and implementation of the Clean Water Act, the Santa Ana Regional Water Quality Control Board has a tentative draft of the Municipal National Pollution Discharge Elimination System (NPDES) Permit for San Bernardino County. The Order Number is R8-2002-0012. The current NPDES number for San Bernardino County is CAS618036.

Development Planning for Storm Water Management

The requirement to implement a program for development planning was based on Federal and State statutes including: Section 402 (p) of the Clean Water Act. The Clean Water Act amendments of 1987 established a framework for regulating storm water discharges from municipal, industrial, and construction activities under the NPDES program. The primary objectives of the municipal storm water program requirements are to:

- Effectively prohibit non-storm water discharges, and

- Reduce the discharge of pollutants from the storm water conveyance system to the Maximum Extent Practicable.

For this evaluation, impacts to storm water quality would be considered significant if the project did not attempt to address storm water pollution to the maximum extent practicable. Currently, there are no definitive water quality standards that require storm water quality leaving a project site to meet standards for individual pollutants.

Therefore, impacts to storm water quality will be considered less than significant if they meet the requirements of the Water Quality Management Plan (WQMP). Starting January 2004 permittees (San Bernardino County) are required to review their existing BMPs for new developments and submit to Executive Officers for Review. Based on Order No. R8-200-0012 for San Bernardino County all new developments must follow the following guidelines:

> *A new development is defined as projects for which tentative tract or parcel map approval was not received by June 1, 2004. However, projects that have not commenced grading by the initial expiration date of the tentative tract or parcel map approval shall be deemed a new development project as defined in this section. New development does not include projects receiving map approval after June 1, 2004 that are proceeding under a common scheme of development that was the subject of a tentative tract or parcel map approval that occurred prior to June 1, 2004.*

The WQMP requirements for on-site and or watershed based BMPs include the following:

- The pollutants in post-development runoff shall be reduced using controls that utilize best available technology (BAT) and best conventional technology (BCT).
- The discharge of any listed pollutant to an impaired waterbody on the 303(d) list shall not cause or contribute to an exceedance of receiving water quality objective.

DRAINAGE AND RUNOFF

5.11-1 *The proposed Project could significantly alter drainage patterns which could result in increased erosion potential and runoff. Impacts are concluded as less than significant with implementation of the Project design features (i.e., the provision of adequate outlet structures, storm drains to contain flows and proper bluff drainage).*

HYDROLOGY

The hydrology calculations by Hicks & Hartwick were used to evaluate surface runoff associated with 10-year and 100-year hypothetical design storm frequencies from the tributary drainage areas. The watershed subarea boundaries were delineated according to physical constraints from the topography, existing drainage facilities and proposed developments. Exhibit 5.11-2, *Proposed Conditions Hydrology Map*, illustrates the hydrology for the proposed condition. Hydrologic parameters used in the analysis, such as rainfall and soil classification, are as presented in the *San Bernardino County Hydrology Manual*.

WATERSHED DESCRIPTION

The drainage patterns for the area follow the natural topography, north to south with the flow draining into Big Bear Lake. The proposed Project has some redirection of flow and the elimination of sheet flow across State Route 38. All cross-culverts would be designed to handle the 100-year storm event.

Due to on-site drainage patterns, the proposed Project site was divided into ten areas (A through J). Area "A" is on the eastern portion of the watershed and area "J" is on the western portion. In the proposed condition, the watershed delineation would slightly change from the existing condition due to grading and the proposed addition of impervious areas.

Table 5.11-6, *Proposed Condition Drainage Area Breakdown*, provides further detail on the ten drainage areas and subareas.

Table 5.11-6
Proposed Condition Drainage Area Breakdown

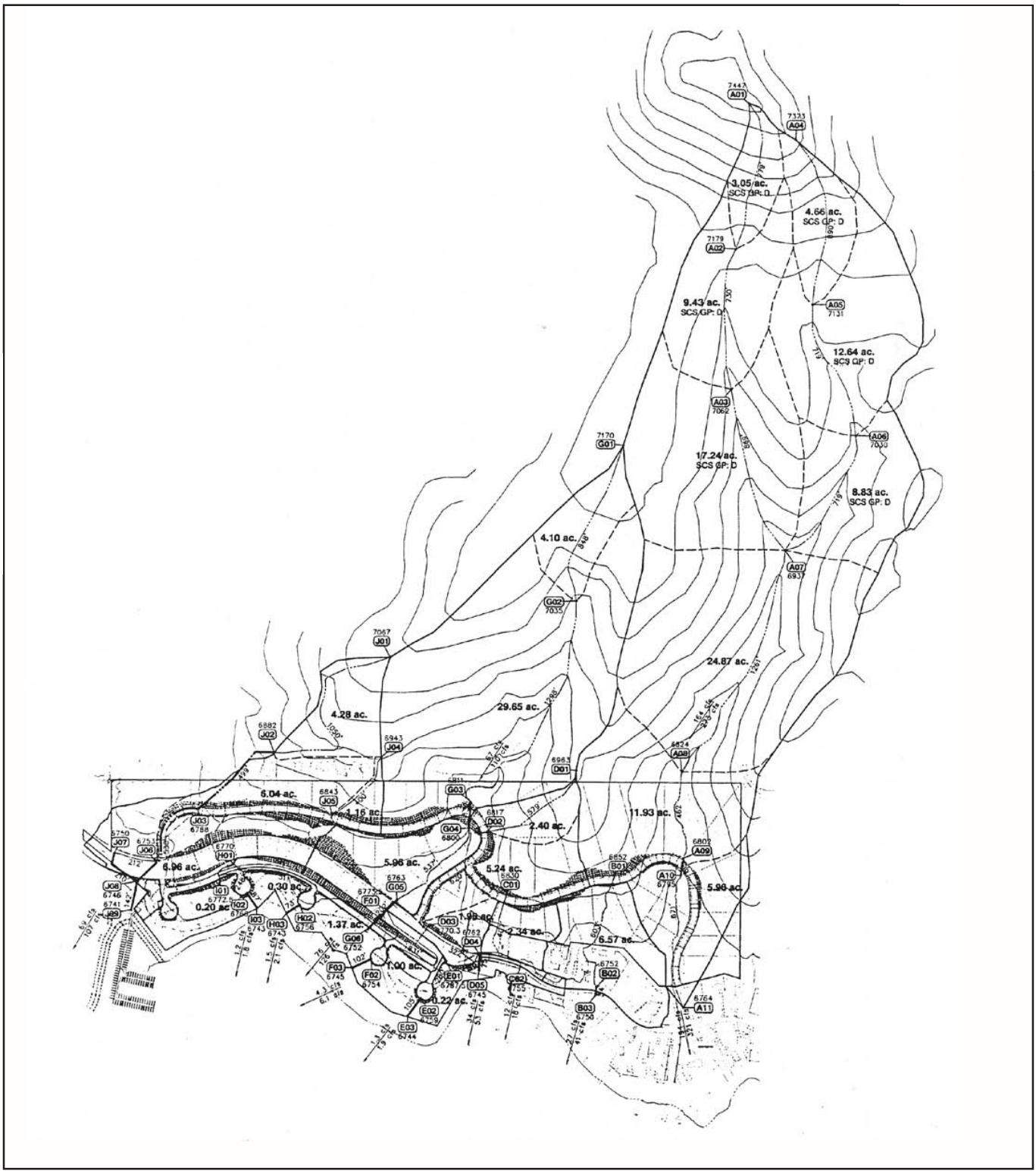
Drainage Area	Area (acres)	Number of Subareas
A	96.9	9
B	6.6	1
C	2.3	1
D	9.6	3
E	0.2	1
F	1.0	1
G	39.7	3
H	0.3	1
I	0.2	1
J	14.2	4

Approximately 35 percent of the overall watershed that contains the proposed Project would be developed. The 92 residential lots would contain custom homes along the north shore of Big Bear Lake. Table 5.11-7, *Percent Impervious Based on Land Use*, shows the percent impervious values for the types of land uses proposed on the Project site. The values presented are from the *San Bernardino County Hydrology Manual*.

Table 5.11-7
Percent Impervious Based on Land Use

Land Use	Percent Pervious
1.0 Dwelling per Acre	80%
2.0 Dwellings per Acre	60%
4.0 Dwellings per Acre	50%
1.0 Dwelling per 2.5 Acre	90%
Commercial [1]	10%
Natural Area – Soil Type C	100%
Natural Area – Soil Type D	100%

[1] This land use value was used for the proposed roadways.



Source: Hicks & Hartwick, Inc., Preliminary Drainage Study.

Not to Scale

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

12/05 JN 10-101901

MOON CAMP TT #16136
ENVIRONMENTAL IMPACT REPORT

Proposed Conditions Hydrology Map

Exhibit 5.11-2

Surface Water Hydrology

Table 5.11-8, *Proposed Condition Peak Flow Rates*, summarizes the results of the proposed condition hydrologic analysis.

The proposed condition would have a greater amount of impervious area than the existing condition. The change in impervious area would have the potential to cause significant downstream impacts. Hicks & Hartwick have proposed to upsize the cross culverts to contain the 100-year storm water flow along State Route 38 and eliminate sheet flow across the highway. They have also proposed to add catch basins and cross culverts along the residential roads. All flow would be directed into the Big Bear Lake, similar to the current condition. From the existing condition of 412.2 cfs for the 10-year and 669.1 cfs for the 100-year storm event, the overall watershed flow rate in the proposed condition would contain an increase of 8.7 cfs in the 10-year storm event and an increase of 9.5 cfs in the 100-year storm event. This was determined by calculating the change in total runoff between the existing condition and the proposed condition.

Provided that the proposed cross culverts are sized for 100-year burn and bulking flow rates, the burn and bulking method would increase the runoff from the natural areas. San Bernardino County Hydrology Manual does not contain a burning and bulking method. Therefore, the method found in the Los Angeles County Hydrology Manual is recommended to determine required culvert sizes. In addition, the cross culverts should all be designed with headwalls to prevent CMP crushing, and maintained adequately. No additional hydrologic mitigation is required.

In summary, the proposed Project would alter drainage areas and percent pervious areas on the Moon Camp site, which could be considered potentially significant to siltation and erosion potential unless mitigated. However, all cross culverts and storm drain systems would be sized appropriately so all flows leaving the site were contained, therefore no flooding would occur on- or off-site. Thus, potential flooding and erosion impacts would be reduced to less than significant levels with implementation of the recommended mitigation measures. Additionally, by placing inline filtration devices and water quality basins, the suspended solids being deposited into Big Bear Lake would be reduced to a less than significant level.

GROUNDWATER

5.11-2 *The proposed project may result in groundwater overdraft conditions. Although mitigation measures requiring further testing are referenced, based upon the evidence presented to date, it is concluded that groundwater overdraft is a significant adverse impact and until additional technical review is conducted, the project would result in an unavoidable adverse impact.*

GROUNDWATER RESOURCES

Based on the analyses presented in the GSS December 2003 Report, the following have been concluded regarding the maximum perennial yield of the North Shore Hydrologic Subunit:

- The North Shore Hydrologic Subunit can be conveniently subdivided into six tributary subareas (A through F) based on surface water drainage divides.

- The range of average annual ground water recharge for the North Shore Hydrologic Subunit as a whole is approximately 150 to 430 acre-ft/yr with a midpoint of approximately 290 acre-ft/yr. The midpoint of the range is approximately 4.5 percent of precipitation for the Subunit, which is within the range of accepted recharge estimates for other ground water basins in southern California (3 to 7 percent).

- Based upon the watershed modeling results, the midpoint of the average annual ground water recharge estimate (290 acre-ft/yr) is considered a good estimate of maximum perennial yield for the North Shore Hydrologic Subunit, given the available data. However, additional ground water monitoring and geohydrologic data collection are required in each individual subarea to manage the ground water resources in the area as it is developed in the future.

- Combined average annual ground water production from Division Well Nos. 6 and 7 is exceeding that subarea's average annual ground water recharge. However, these wells are in the alluvial portion of the subarea, which is in hydraulic continuity with the alluvial portions of the adjacent hydrologic subunit (i.e., the Division subunit to the south). Accordingly, production from these wells should be evaluated in the context of the ground water basin in this area and not the watershed tributary to the wells.

For the Grout Creek Hydrologic Subunit, the following is concluded:

- The Grout Creek Hydrologic Subunit can be conveniently subdivided into four tributary subareas (A through D) based on surface water drainage divides.

- The range of average annual recharge for the Grout Creek Hydrologic Subunit as a whole is approximately 260 to 840 acre-ft/yr with the midpoint of approximately 550 acre-ft/yr (subareas A through D). The midpoint of the range is approximately 5 percent of precipitation for the Subunit, which is within the range of accepted recharge estimates for other ground water basins in southern California (3 to 7 percent).

- Ground water resources in subareas A and B of the Grout Creek Subunit would be difficult to develop because they are remote and are located on land under the jurisdiction of the USFS.

- Due to the cost and political limitations associated with ground water development in subareas A and B, it is currently recommended to use the sum of the midpoint recharge estimates for tributary Subareas C and D (283 acre-ft/yr) as the maximum perennial yield for the Grout Creek Subunit.

GSS's 2003 Report concludes that, given the possible range of recharge for the North Shore and Grout Creek Hydrologic Subunits, and correspondingly the range of recharge for the individual tributary subareas within each subunit, it is recommended

that development planning for tributary subareas be initially based on the maximum perennial yield estimates as described above. However, as ground water production is initiated in each tributary subarea, it will be very important to monitor ground water levels in dedicated non-pumping monitoring wells located in each tributary subarea from which ground water is extracted. The GSS estimate of maximum perennial yield is based on long-term precipitation records. However, short-term periods (5 to 10 years) of relatively low precipitation have been observed throughout the period of record. These short-term periods of low precipitation are anticipated to have a significant impact on the ground water levels in the North Shore and Grout Creek Hydrologic Subunits because the storage capacity of the ground water reservoir is relatively small (shallow alluvium underlain by granitic bedrock). For this reason, GSS concludes that future ground water production, and development in each tributary subunit should rely more on established ground water level thresholds than the perennial yield estimates.

Upon completion of the 2003 GSS Report, RBF Consulting was directed by the County of San Bernardino to conduct a peer review of the report for incorporation into the EIR. Engineering Geologist, D. Scott Magorien, reviewed the subject GSS Report from the standpoint of assessing available ground water resources within the vicinity of the Moon Camp Project area. The primary concern is that there is not enough detail provided to do the kind of detailed review that is believed warranted in order to thoroughly evaluate the nature of the ground water resources, nor the actual long-term impacts on this resource in the vicinity of the Moon Camp Project site. The following points have been identified:

- The perennial yield is based on a watershed model that is run with assumptions for most of the parameters and is primarily based on long-term precipitation records. These results have a fair amount of uncertainty in them (they mention that they used many parameters that were not specific to the area of interest).

- The input parameters in the watershed models are estimated from the EPA's database, which are not specific to the mountains of Southern California.

- It is not possible to verify the calculations of underflow as the parameters used in the calculation (like the Transmissivity or aquifer thickness) and sample calculations are not provided.

- There should be a difference in recharge if the area is alluvium or bedrock. Based on the report, it is difficult to determine if the distinction is made in the modeling when assigning values. The output from the watershed modeling doesn't indicate it is an important distinction. For example, North Shore tributary subareas B and C have about the same recharge and the areas are similar, but C appears to be underlain by substantially more alluvium than subarea B. It appears that the watershed parameters are applied uniformly across the watershed.

- It is stated that the reason for the recent groundwater level declines in the eastern portion of North Shore can be correlated with dry climatic conditions although the greater degree of decline is also a reflection of higher

groundwater production in the area. Based on Mr. Magorien's review of the data, the production rate from Division Well No. 6 (see report Table 4) is the much more correlatable with the drop in water levels. Based upon information/studies available as of the publication of the Draft EIR, there is the potential that~~It appears~~ the North Shore Subunit is in an overdraft situation given ~~their~~the analyzed pumping rates.

- On page 23 of the 2003 report, it is stated that the range in recharge calculated is within the range of accepted recharge estimates for other ground water basins in southern California (3% - 7%). This is used as a quasi-validation of results. The high altitude alpine basins with substantial bedrock exposures seem to be a bit more unique.

Based on the information presented in the 2003 GSS report, as well as the 2000 report, it is concluded by Mr. Magorien in the peer review that the groundwater basin associated with the North Shore Hydrologic Subunit in which the Moon Camp Project area is situated~~, is in~~ has the potential to be in a state of overdraft. Any additional groundwater withdrawals from this Subunit will only exacerbate this potential overdraft condition. Considerably more investigative studies involving exploratory drilling and aquifer testing to assess the actual nature of the groundwater regime in the vicinity of the Moon Camp Project are is warranted. Furthermore, although there appears to be groundwater resources available within the neighboring Grout Creek hydrologic unit, a more thorough hydrogeologic investigation is also warranted for this hydrologic unit before additional groundwater resources can be exploited for a project the size of Moon Camp.

As stated in Section 5.3, *Public Services and Utilities*, the project would require approximately 46 acre-feet per year of water to meet the average daily water demand for the proposed residential uses. If water was obtained from existing well(s) (FP-2 and/or FP-3), which are located in subarea A of the North Creek Hydrologic Subunit, subarea A alone would not have the requisite water resources to meet the ADD over the course of a one-year period, as it only averages approximately 29 ac-ft/yr of groundwater recharge. Thus, it can be concluded that additional water resources beyond what is available from on-site wells or wells located within subarea A of the North Shore Hydrologic Subunit would need to be obtained to meet the water demands of the project.

~~Regarding the two existing wells located within the Moon Camp Project site, no mention was given in the latest GSS report as to the potential hydrologic interconnection of the groundwater aquifer with Big Bear Lake. Given the proximity of these wells to the lake, it appears highly probably that the water extracted from one or both of these wells could include some component of lake water.~~

Based upon the conclusions rendered by GSS and subsequent peer review, additional review is necessary to conclude hydrologic subunit effects. Although mitigation measures requiring further testing are referenced, based upon the evidence presented to date, it is concluded that impacts to groundwater resources are~~overdraft is~~ a significant adverse effect and until additional technical review is conducted to verify conditions, the Project would result in an unavoidable impact.

Interference with Big Bear Lake Water Levels

Regarding the two existing wells located within the Moon Camp Project site, no mention was given in the latest 2003 GSS report as to the potential hydrologic interconnection of the groundwater aquifer with Big Bear Lake. The GGSS 2000 report states that the water level in the lake is approximately 5 to 10 feet higher than the water level elevation of Well FP-2, indicating that there is the potential for recharge from the lake. Thus, given the proximity of the existing on-site wells to the lake, it appears highly probable that the water extracted from one or both of these wells could include some component of lake water. It may be possible to mitigate this impact by relocating wells up slope and away from the lake. However, further study is necessary to determine the interconnection of lake water to the subareas of the North Shore and Grout Creek Subunits.

GROUNDWATER QUALITY

As stated in the Existing Conditions section above, groundwater samples collected from Well FP-2 located on the southern portion of the Moon Camp site in 1987 were submitted for a full Title 22 analysis. The chemical analysis indicated that the groundwater quality in the Moon Camp area is generally of superior water quality, with the exception of iron concentration. Thus, if existing on-site wells are utilized for obtaining water resources for the proposed project, mitigation measures have been recommended to ensure that the wells are in acceptable operating condition and that groundwater does not exceed the maximum contaminant level (MCL) for iron concentrations (refer to Mitigation Measures 5.3-6a and 5.3-6b). However, it also acknowledged that all potential water resources, including the above referenced wells, for the proposed project would be subject to all applicable local, State and/or Federal groundwater quality standards.

WATER QUALITY - CONSTRUCTION

5.11-3 *Grading, excavation and construction activities associated with the proposed Project could impact water quality due to sheet erosion of exposed soils and subsequent deposition of particles and pollutants in drainage areas. Impacts would be reduced to a less than significant level through regulatory compliance and with incorporation of the recommended mitigation.*

Construction controls are separated from the rest of the water quality management because the measures are temporary and specific to the type of construction. Construction of a project such as the Moon Camp Project would typically produce potential pollutants such as nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, waste materials including wash water, paints, wood, paper, concrete, food containers, and sanitary wastes, fuel, and lubricants.

Table 5.11-8
Proposed Condition Peak Flow Rates

Subarea	Area (acres)	Total Area (acres)	Tc (min)	Total 10-Year Peak Q (cfs)	Total 100-Year Peak Q (cfs)
Watershed A					
A1 – A2	3.0	3	16.6	7.8	12.2
A2 – A3	9.4	12.5	17.8	30.3	48.4
A3 – A7	17.2	29.7	18.8	69.0	111.0
A4 – A5	4.7	4.7	18.4	11.0	17.4
A5 – A6	12.6	17.3	19.2	39.4	62.5
A6 – A7	8.8	26.1	20.1	57.4	91.6
A7 – A8	24.9	79.0	1.4	170.1	277.3
A8 – A9	11.9	91.0	0.7	189.9	311.6
A9 – A10	6.0	96.9	1.0	194.3	321.0
Watershed B					
B1 – B2	6.6	6.6	8.7	27.5	41.5
Watershed C					
C1 – C2	2.3	2.3	6.8	11.9	17.7
Watershed D					
D1 – D2	2.4	2.4	8.2	10.4	15.8
D2 – D3	5.2	7.6	9.8	29.1	45.1
D3 – D4	2.0	9.6	10.7	34.1	53.5
Watershed E					
E1 – E2	0.2	0.2	5.8	1.3	1.9
Watershed F					
F1 – F2	1.0	1.0	9.5	4.3	6.1
Watershed G					
G1 – G2	4.1	4.1	20.0	8.6	14.1
G2 – G3	29.6	33.8	21.4	66.7	110.2
G3 – G4	6.0	39.7	22.3	76.1	126.0
Watershed H					
H1 – H2	0.3	0.3	7.6	1.5	2.1
Watershed I					
I1 – I2	0.2	0.2	5.7	1.2	1.8
Watershed J					
J1 – J2	4.3	4.3	9.4	17.3	25.7
J2 – J3	1.2	1.2	6.8	5.9	8.7
J3 – J4	6.0	7.2	9.6	28.0	43.6
J4 – J5	7.0	14.2	10.3	51.9	81.3

As part of compliance with the NPDES requirements, a Notice of Intent (NOI) would need to be prepared and submitted to the Santa Ana Regional Water Quality Control Board providing notification and intent to comply with the State of California general permit. Prior to construction, a Storm Water Pollution Prevention Plan (SWPPP) is required for the construction activities on-site. The SWPPP outlines the source control and/or treatment control BMPs that would avoid or mitigate runoff pollutants at the construction site to the "maximum extent practicable." Compliance with the NPDES requirements would reduce construction-related impacts to water quality to a less than significant level.

WATER QUALITY – LONG-TERM

5.11-4 *Project development may result in long-term impacts to the quality of storm water and urban runoff, subsequently impacting water quality. Impacts would be reduced to less than significant levels with incorporation of the recommended mitigation measures along with State and County Development Code requirements.*

A Water Quality Management Plan is required for the proposed Project as stated in the guidelines in the *Draft Water Quality Management Plan (WQMP) For Urban Runoff* prepared by San Bernardino County. The WQMP conforms to the new National Pollutant Discharge Elimination System (NPDES) permit requirement for San Bernardino County (effective as of July 2004). At the time of RBF's analysis, a Water Quality Management Plan had not been available for the Project.

Project development would increase the impervious area impacting storm water quality. The Project would increase pollutant loading in Big Bear Lake located immediately off-site. The lake is presently impaired due to the following existing pollutants: copper, mercury, metals, noxious aquatic plants, nutrients, and sediment and siltation. The 303(d) list currently indicates that all of the listed pollutants are a "high" priority. A "high" priority indicates that the receiving water body would be subject to Total Maximum Daily Loads (TMDL) by the year 2005. Based on the current Draft 303(d) list, it appears that the Santa Ana Regional Water Quality Control Board is currently developing TMDLs for Big Bear Lake. Therefore, the recommended mitigation focuses on meeting potential TMDLs for Big Bear Lake.

Preparation of a Water Quality Management Plan (WQMP) containing both structural and non-structural Best Management Practices (BMPs) is required. The WQMP would be based on the San Bernardino County Draft WQMP Guidelines and NPDES permits that will be in effect as of January 2004. Compliance with the NPDES permit, WQMP standards and specified mitigation would reduce long-term water quality impacts to less than significant levels.

Overall, the Project has the potential to violate water quality standards due to an increase in the level of activity on the Project site. Without mitigation, the Project would be expected to increase pollutant loadings, including hydrocarbons, fertilizers, and pesticides. The recommended mitigation includes a comprehensive Water Quality Management Plan (WQMP) for Urban Runoff, including both Structural and Non-Structural BMPs, which would comply with the requirements made by the Santa

Ana Regional Water Quality Control Board. This mitigation would reduce potential impacts to a less than significant level.

JURISDICTIONAL WATER IMPACTS

Refer to Section 5.8, *Biological Resources*, for a discussion of potential impacts to jurisdictional waters.

CUMULATIVE

5.11-5 *The proposed Project along with other future development may result in increased hydrology and drainage impacts in the area. Due to inconclusive of potential overdraft conditions, cumulative groundwater impacts are concluded to be significant and unavoidable. Other hydrology and drainage impacts are evaluated on a project-by-project basis in order to mitigate to a less than significant level.*

Due to inconclusive project testing of potential overdraft conditions for the groundwater basin associated with the North Shore Hydrologic Subunit, cumulative impacts to the Subunit are also concluded to be significant and unavoidable.

For purposes of the drainage and water quality analysis, cumulative impacts are considered for projects in the same watershed as the proposed Moon Camp Project. Per the projects identified in Section 4.0, *Basis for Cumulative Analysis*, Tract 12217 (Marina Point), Tract 15465 (Kelsch) and Relocation of the Moonridge Zoo adjacent to the Discovery Center are all in the same watershed or adjacent watersheds as Moon Camp. All three of these cumulative projects drain into Big Bear Lake and would have to comply with the same TMDL standards and the Water Quality Management Plan for Urban Runoff as outlined in the Santa Ana Region's NPDES Permit and Water Discharge Requirements. Therefore, the cumulative impacts and mitigation for the Projects would be limited to those associated with the Moon Camp Project.

MITIGATION MEASURES

This section directly corresponds to the identified Impact Statements in the impacts subsection.

DRAINAGE AND RUNOFF

5.11-1 The proposed cross culverts shall be sized for 100-year burn and bulking flow rates. The burn and bulking method would increase the runoff from the natural areas. The method provided in the Los Angeles County Hydrology Manual is recommended. In addition, the cross culverts shall all be designed with headwalls to prevent CMP crushing, and shall be maintained adequately.

GROUNDWATER

Refer to Mitigation Measures 5.3-6a and 5.3-6b for mitigation regarding operations and groundwater quality from existing on-site wells.

~~5.11-2 Based upon the technical analysis presented, a potential groundwater overdraft condition would occur and no additional mitigation measures have been identified.~~

5.11-2a Within three months of project approval, the Project Applicant shall submit a plan for a detailed geohydrologic investigation. The plan must present the possible sources of groundwater selected for the project and the methodology proposed to investigate those sources. If the on-site wells are to be utilized to serve this project, it must be determined if either could draw water from Big Bear Lake. The plan must be prepared by a California Registered Geologist.

5.11-2b Within six months of plan approval, the Project Applicant shall submit the results of the geohydrologic investigation. The report must be prepared by a California Registered Geologist.

5.11-2c Concurrently or within three months of approval by the geohydrologic report, the Project Applicant shall submit a groundwater monitoring plan in accordance with San Bernardino County's "Guidelines for Preparation of a Groundwater Monitoring Plan." The plan must be prepared by a California Registered Geologist.

WATER QUALITY - CONSTRUCTION

5.11-3 Prior to Grading Permit issuance and as part of the Project's compliance with the NPDES requirements, a Notice of Intent (NOI) shall be prepared and submitted to the Santa Ana Regional Water Quality Control Board providing notification and intent to comply with the State of California general permit. Also, a Storm Water Pollution Prevention Plan (SWPPP) shall be completed for the construction activities on-site. A copy of the SWPPP shall be available and implemented at the construction-site at all times. The SWPPP shall outline the source control and/or treatment control BMPs to avoid or mitigate runoff pollutants at the construction-site to the "maximum extent practicable." At a minimum, the following shall be implemented from the *California Storm Water Best Management Practice Handbook - Construction Activity:*

- *CA 1 Dewatering Operations* – This operation requires the use of sediment controls to prevent or reduce the discharge of pollutants to storm water from dewatering operations.

- *CA 2 Paving Operations* – Prevent or reduce the runoff of pollutants from paving operations by proper storage of materials, protecting storm drain facilities during construction, and training employees.

- *CA 3 Structural Construction and Painting* – Keep site and area clean and orderly, use erosion control, use proper storage facilities, use safe products and train employees to prevent and reduce pollutant discharge to storm water facilities from construction and painting.

- *CA 10 Material Delivery and Storage* – Minimize the storage of hazardous materials on-site. If stored on-site, keep in designated areas, install secondary containment, conduct regular inspections and train employees.

- *CA 11 Material Use* – Prevent and reduce the discharge of pesticides, herbicides, fertilizers, detergents, plaster, petroleum products and other hazardous materials from entering the storm water.

- *CA 20 Solid Waste Management* - This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas.

- *CA 21 Hazardous Waste Management* - This BMP describes the requirements to properly design and maintain waste areas.

- *CA 23 Concrete Waste Management* – Prevent and reduce pollutant discharge to storm water from concrete waste by performing on and off-site washouts in designated areas and training employees and consultants.

- *CA 24 Sanitary Septic Water Management* – Provide convenient, well-maintained facilities, and arrange regular service and disposal of sanitary waste.

- *CA 30 Vehicle and Equipment Cleaning* – Use off-site facilities or wash in designated areas to reduce pollutant discharge into the storm drain facilities.

- *CA 31 Vehicle and Equipment Fueling* – Use off-site facilities or designated areas with enclosures or coverings to reduce pollutant discharge into the storm drain facilities.

- *CA 32 Vehicle and Equipment Maintenance* – Use off-site facilities or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities. In addition, run a “dry site” to prevent pollution discharge into storm drains.

- *CA 40 Employee and Subcontractor Training* – Have a training session for employees and subcontractors to understand the need for implementation and usage of BMPs.

- *ESC 2 Preservation of Existing Vegetation* – Minimize the removal of existing trees and shrubs since they serve as erosion control.

- *ESC 10 Seeding and Planting* – Provide soil stability by planting and seeding grasses, trees, shrubs, vines, and ground cover.

- *ESC 11 Mulching* – Stabilize cleared or freshly seeded areas with mulch.

- *ESC 20 Geotextiles and Mats* – Natural or synthetics material can be used for soil stability.

- *ESC Dust Control* – Reduce wind erosion and dust generated by construction activities by using dust control measures.

- *ESC 23 Construction Road Stabilization* – All on-site vehicle transport routes shall be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.

- *ESC 24* – Stabilized Construction Entrance – Stabilize the entrance pad to the construction area to reduce amount of sediment tracked off-site.

- *ESC 30 Earth Dikes* – Construct earth dikes of compacted soil to divert runoff or channel water to a desired location.

- *ESC 31 Temporary Drains and Swales* – Use temporary drains and swales to divert off-site runoff around the construction-site and stabilized areas and to direct it into sediment basins or traps.

- *ESC 40 Outlet Protection* – Use rock or grouted rock at outlet pipes to prevent scouring of soil caused by high velocities.

- *ESC 41 Check Dams* – Use check dams to reduce velocities of concentrated flows, thereby reducing erosion and promoting sedimentation behind the dams. Check dams are small and placed across swales and drainage ditches.

- *ESC 50 Silt Fence* – Composed of filter fabric, these are entrenched, attached to support poles, and sometimes backed by wire fence support. Silt fences promote sedimentation behind the fence of sediment-laden water.

- *ESC 51 Straw Bale Barrier* – Place straw bales end to end in a level contour in a shallow trench and stake them in place. The bales detain runoff and promote sedimentation.

- *ESC 52 Sand Bag Barriers* – By stacking sand bags on a level contour, a barrier is created to detain sediment-laden water. The barrier promotes sedimentation.

- *ESC 53 Brush or Rock Filter* – Made of 0.75 to 3-inch diameter rocks placed on a level contour or composed of brush wrapped in filter cloth and staked to the toe of the slope provides a sediment trap.

- *ESC 54 Storm Drain Inlet Protection* – Devices that remove sediment from sediment laden storm water before entering the storm drain inlet or catch basin.

- *ESC 55 Sediment Trap* – A sediment trap is a small, excavated, or bermed area where runoff for small drainage areas can pass through allowing sediment to settle out.

WATER QUALITY – LONG-TERM

5.11-4a Prior to Grading Permit issuance, a Water Quality Management Plan shall be developed and shall include both Non-Structural and Source Control BMPs. The WQMP shall conform to the San Bernardino County Draft NPDES permit and WQMP standards. The following are the minimum required controls to be implemented as a part of the *Water Quality Management Plan (WQMP) for Urban Runoff.*

- *Education for Property Owners, Tenants and Occupations* – The Property Owners Association is required to provide awareness educational material, including information provided by San Bernardino County. The materials shall include a description of chemicals that should be limited to the property and proper disposal, including prohibition of hosing waste directly to gutters, catch basins, storm drains or the lake.

- *Activity Restrictions* – The developer shall prepare conditions, covenants and restriction of the protection of surface water quality.

- *Common Area Landscape Management* – For the common landscape areas on-going maintenance shall occur consistent with County Administrative Design Guidelines or city equivalent, plus fertilizer and pesticide usage consistent with the instructions contained on product labels and with regulation administered by the State Department of Pesticide Regulation or county equivalent.

- *Common Area Catch Basin Inspection* – Property Owners Associations shall have privately owned catch basins cleaned and maintained, as needed. These are intended to prevent sediment, garden waste, trash and other pollutants from entering the public streets and storm drain systems.

- *Common Area Litter Control* – POAs shall be required to implement trash management and litter control procedures to minimize pollution to drainage waters.

- *Street Sweeping Private Streets and Parking Lots* – Streets and Parking lots shall be swept as needed, to prevent sediment, garden waste, trash and other pollutants from entering public streets and storm drain systems.

The following controls from the *California Storm Water Best Management Practice Handbook - Municipal* shall be employed:

- *SC10 Housekeeping Practices* - This entails practices such as cleaning up spills, proper disposal of certain substances and wise application of chemicals.

- *SC32 Used Oil Recycling* - May apply to maintenance and security vehicles.

- *SC72 Vegetation Controls* – Vegetation control typically includes chemical (herbicide) application and mechanical methods. Chemical methods are discussed in SC10. Mechanical methods include leaving existing vegetation, cutting less frequently, hand cutting, planting low maintenance vegetation, collecting and properly disposing of clippings and cuttings, and educating employees and the public.

- *SC73 Storm Drain Flushing* - Although general storm drain gradients are sufficiently steep for self-cleansing, visual inspection may reveal a buildup of sediment and other pollutants at the inlets or outlets, in which case flushing may be advisable.

5.11-4b The Water Quality Management Plan (WQMP) shall include Structural or Treatment BMPs. The structural BMPs utilized shall focus on meeting potential TMDL requirements for noxious aquatic plants, nutrients, sedimentation and siltation. The structural BMPs shall conform to the San Bernardino County NPDES permit and the San Bernardino WQMP standards.

Consistent with the WQMP guidelines contained in the *Draft National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements* for San Bernardino County, Structural BMPs shall be required for the proposed Project. They shall be sized to comply with one of the following numeric sizing criteria or be considered by the permittees to provide equivalent or better treatment.

Volume Based BMPs shall be designed to infiltrate or treat either:

- The volume of runoff produced from the 85th percentile 24-hour storm event, as determined from the local historical rainfall record; or

- The volume of the annual runoff produced by the 85th percentile 24-hours rainfall event, determined as the maximized capture storm water volume for the area, from the formula recommended in Urban

Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998); or

- The volume of annual runoff based on unit basin storage volume, to achieve 80% or more volume treatment by the method recommended in California Stormwater Best Management Practice Handbook – Industrial/Commercial (1993); or

- The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event.

OR

Flow – based BMPs shall be designed to infiltrate or treat either:

- The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour; or

- The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or

- The maximum flow rate of runoff, as determined from the local historical rainfall record that achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two.

The following are the minimum required controls to be implemented as a part of the *Water Quality Management Plan (WQMP) for Urban Runoff.*

- *Control of Impervious Runoff* – Surface runoff shall be directed to landscaped areas or pervious areas.

- *Common Area Efficient Irrigation* – Physical implementation of the landscape plan consistent with County Administrative Design Guidelines or city equivalent, which may include provision of water sensors, programmable irrigation timers, etc.

- *Common Area Runoff-Minimizing Landscape Design* – Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration.

- *Catch Basin Stenciling* – "No Dumping – Flows to Lake" or equivalent effective phrase shall be stenciled on catch basins to alert the public as to the destination of pollutant discharging into storm drain.

- *Debris Posts* – These shall be installed to prevent large floatable debris from entering the storm drains. They shall be placed upstream of the cross culverts.

- *Inlet Trash Racks* – These shall be installed where appropriate to reduce intake and transport through the storm drain system of large floatable debris. Trash racks shall be provided where drainage from open areas enters storm drain or cross culverts.

5.11-4c Storm water treatment under the NPDES Permit and the future TMDL requirements shall include the construction of treatment BMPs. Treatment BMPs appropriate for on-site use shall include infiltration trenches and basins, swales, inlet filtration, and/or water quality basins. All storm water runoff shall be treated before leaving the site to reduce pollutants in Big Bear Lake.

Infiltration Trenches and Basins

Infiltration Trenches and/or Basins shall be used on site to meet potential future TMDLs for noxious aquatic plants and nutrients. Infiltration trenches and basins treat storm water runoff through filtration. A typical infiltration trench is essentially an excavated trench, that is lined with filter fabric and backfilled with stones. Depth of the infiltration trench shall range from three to eight feet and shall be located in areas with permeable soils, and water table and bedrock depth situated well below the bottom of the trench. Trenches shall not be used to trap coarse sediments since large sediment would likely clog the trench. Grass buffers may be installed to capture sediment before it enters the trench to minimize clogging. Infiltration basins shall be used for drainage areas between five and 50 acres. Infiltration basins shall be either in-line or off-line, and may treat different volumes such as the water quality volume or the 2-year or 10-year storm.

Swales

The project shall implement either vegetative swales, enhanced vegetated swales utilizing check dams and wide depressions, a series of small detention facilities designed similarly to a dry detention basin, or a combination of these treatment methods into a treatment train (series of Structural BMPs). The Water Quality Management Plan shall address treatment for the Project to assure that runoff from the site is treated to the “maximum extent practicable”.

The swales shall be treated as water quality features and shall be maintained differently than grass areas. Specifically, pesticides, herbicide, and fertilizers, which may be used on the grass areas, shall not be used in the vegetation swales.

Filtration

Filtration shall be implemented as a treatment method and shall use drop-in infiltration devices or inline devices.

Drop-infiltration devices at all curb inlets within the internal parking lots shall be implemented to provide potential pollutant removal. Existing examples of these filtration devices include the Drain Pac Storm Drain Inserts and Fossil Filters. These types of devices are efficient at removing oil and grease, debris, and suspended solids from treated waters. Some of these devices have also exhibited high efficiencies at removing heavy metals and other pollutants.

Inline devices suggested for use onsite include the Continuous Deflection Separator (CDS® unit). Once the runoff has entered the storm drain, an in-line diversion would direct the treatment flow to a CDS® unit. The CDS® unit is a non-blocking, non-mechanical screening system, which would provide a second line of defense for solids removal. Adsorption materials can be added within the CDS® unit to aid in the removal of oil and grease. The treated flow will exit the CDS® unit and continue downstream.

To assure the efficiency of these filtration devices, monitoring shall be conducted. The use of street sweeps on the parking lots and streets shall aid in reducing the amounts of sediment and debris that flow through the devices. This will extend the effectiveness of the devices during a storm and will lower the frequency of required maintenance. The devices shall be checked and cleaned, if necessary, once a month during the rainy season, following any precipitation and at the end of the dry season prior to the first precipitation event of the rainy season.

Consideration shall be given to using these filtration units in other areas besides the parking lot inlets. Another potential location is at the downstream end of the tributary pipes that feed the discharge point. Siting these units at a downstream point would allow for the treatment of a greater amount of runoff.

CUMULATIVE

5.11-5 No mitigation measures are recommended.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Due to inconclusive testing of potential overdraft conditions for the groundwater basin associated with the North Shore Hydrologic Subunit, project and cumulative impacts are concluded to be significant and unavoidable.

If the County of San Bernardino approves the project, the County shall be required to adopt findings in accordance with Section 15091 of the CEQA Guidelines and prepare a Statement of Overriding Considerations in accordance with Section 15093 of the CEQA Guidelines.

No additional significant impacts related to hydrology and water quality have been identified following implementation of the recommended mitigation measures and/or through regulatory compliance.

6.0 Long-Term Implications of the Proposed Project

6.0 LONG-TERM IMPLICATIONS OF THE PROPOSED PROJECT

6.1 THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

If the proposed Project is approved and constructed, a variety of short-term and long-term impacts would occur on a local level. During Project grading and construction, portions of surrounding uses may be temporarily impacted by dust and noise. Short-term erosion may occur during grading. There may also be a minor increase in dust and vehicle emissions caused by grading and construction activities. However, these disruptions would be temporary, and may be mitigated to a large degree through mitigation cited in this report and the standards for construction as cited in the County of San Bernardino Development Code (refer to Section 5.0, *Description of Environmental Setting, Impacts and Mitigation Measures*).

Ultimate development of the Project site would create long-term environmental consequences that are associated with a transition in land use. The long-term effects of the proposed Project and subsequent development may impact the physical, aesthetic, and human environments. Long-term physical consequences of development include: increased traffic volumes, additional noise created by traffic generated from the Project, incremental increased demands for public utilities, and increased energy and natural resource consumption. Long-term biological resource consequences associated with grading, construction and landscaping would also include the replacement of on-site vegetation with other plant varieties. Long-term visual/aesthetic impacts include alterations in views across the site. Incremental degradation of local and regional air quality would also be a long-term impact.

6.2 IRREVERSIBLE ENVIRONMENTAL CHANGES THAT WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Approval of the proposed Project would cause irreversible environmental changes. Implementation of the proposed Project would result in the following changes:

- Commitment of land, which would be physically altered.
- Vegetation removal for grading and construction activities.
- Alteration of the human environment as a consequence of the development process. The project represents an enhanced commitment to residential and recreational uses which intensifies land uses on the project site.

- Utilization of various new raw materials, such as lumber, sand and gravel for construction. Some of these resources are already being depleted worldwide. The energy consumed in development and maintaining the site may be considered a permanent investment.

- Incremental increases in vehicular activity in the surrounding circulation system, resulting in associated increases in air emissions and noise levels.

6.3 GROWTH-INDUCING IMPACTS

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15126(g), the following discussion identifies ways in which the proposed Moon Camp Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. According to CEQA, growth-inducing impacts should be assessed in terms of whether a proposed project influences the rate, location, and the amount of growth. Projects that remove obstacles to population growth, or allow or encourage growth that would not otherwise have occurred if the project were not built, would be growth inducing. Potential growth-inducing impacts are also assessed based on a project's consistency with adopted plans that have addressed growth management from a local and regional standpoint.

Potential growth-inducing impacts from the proposed Moon Camp Project are analyzed below as they relate to population, housing and employment factors. Also refer to Section 5.1, *Land Use and Relevant Planning*, for additional analyses.

REGIONAL AND LOCAL SETTING

San Bernardino County encompasses approximately 20,160 square miles. Approximately ninety percent of the County is desert and the remainder consists of the San Bernardino Valley and San Bernardino Mountains. The City of Big Bear Lake is situated along the south shore of Big Bear Lake. Data available for the City of Big Bear Lake is utilized as background information for this Section. The Community of Fawnskin, located along the north shore of Big Bear Lake, differs from the City of Big Bear Lake and south shore area in that Fawnskin does not encounter the vast numbers of tourists and visitors during holiday weekends and/or peak winter or summer travel times.

Population and housing data from the 2000 Census were obtained for the County of San Bernardino and the City of Big Bear Lake. The 2000 Census does not recognize Fawnskin in the category of "Place," thus, data for Fawnskin is based upon the Census database for the 92333 Zip Code. The 92333 Zip Code database generally encompasses the area between Holcomb Valley Rd. on the east, Polique Canyon Rd. on the north, North Shore Drive on the South and Rim of the World Drive on the west. Thus, it is assumed that the 92333 Zip Code database represents the Community of Fawnskin. Since the 1990 Census also does not recognize Fawnskin in the category of "Place," and does not have a database for the 92333 Zip Code, information is based on 2000 Census data only.

POPULATION

San Bernardino County. San Bernardino County is one of the fastest growing counties in California. According to the U.S. Census, the County's 2000 Census population was 1,709,434 persons, representing an approximately 17 percent population increase over the County's 1990 Census population of 1,418,380 persons. San Bernardino County's 2002 population was an estimated 1,783,656 persons.[1]

City of Big Bear Lake. The City of Big Bear Lake's 1990 population was 5,351 persons. Between 1990 and 2000 the City grew by less than one percent with a 2000 population of 5,438 persons. The City's 2002 population was an estimated 5,696 persons.[2]

Community of Fawnskin. According to the U.S. Census, the Community of Fawnskin's permanent population in 2000 was 409 persons. In addition to the permanent population, the community experiences seasonal fluctuations in its population. The seasonal population is comprised of both winter and non-winter visitation and activities, although these temporary changes in population peak during winter. Thus, due to the resort nature of the Community, many of the residences listed as "vacant" in the 2000 Census are occupied during seasonal periods, weekends, and/or Holidays. Assuming that all of the 664 existing housing units are occupied simultaneously, it can be concluded that as many as 1428 persons (664 housing units x 2.15 persons per household) could potentially populate the Fawnskin Community during peak weekend/holiday periods.

HOUSING

San Bernardino County. According to the 2000 Census, San Bernardino County's housing stock was an estimated 601,369 units. The County's housing stock increased by approximately 10 percent between 1990 (542,332 units) and 2000. In 2000, approximately 12 percent (72,775 units) of the housing units were vacant. The average household size (persons per household) in 2000 was 3.15 persons. In 2002, the County's total housing stock was an estimated 612,890 units and vacancy rate was approximately 12 percent.[3]

City of Big Bear Lake. The City of Big Bear Lake's housing stock as of 2000 was an estimated 8,705 housing units, representing an increase of approximately two percent over the City's 1990 housing stock of 8,564 housing units. In 2000, approximately 73 percent (6,362 units) of the housing units were vacant. The average household size in 2000 was 2.31 persons. In 2002, the City's total housing stock was an estimated 8,941 units and vacancy rate was approximately 73

[1] State of California, Department of Finance, *City/County Population and Housing Estimates, 2002, Revised 2001, with 2000 Census Counts*. Sacramento, California, May 2002.

[2] Ibid.

[3] Ibid.

percent.[4] This vacancy rate is attributed to the fact that many of the homes are not the permanent/primary residence for the property owners.

Community of Fawnskin. In 2000, Fawnskin's total housing stock was an estimated 664 housing units. Approximately 71 percent (474 units) of the housing units were vacant. As with the City of Big Bear Lake, the Community's high vacancy rate is attributed to the fact that the majority of the homes are not the permanent/primary residence for the property owners. The average household size in 2000 was 2.15 persons.

EMPLOYMENT

The County's civilian labor force in 2001 was an estimated 814,600 persons, while the unemployment rate was approximately 4.8 percent. The total number of jobs existing in the County in 2001 for all industries was 560,400. The vast majority of these jobs were in the service-producing sector (approximately 80 percent) including approximately 25 percent in the services sector and approximately 25 percent in the trade sector.

Employment data is not available for the City of Big Bear Lake or the Community of Fawnskin.

PROJECT IMPACTS

Implementation of the proposed Project would result in the development of as many as 92 housing units. Based on the City of Big Bear Lake average household size multiplier of 2.31 persons per household, the proposed Project has the potential to increase Fawnskin's population by approximately 212 persons at buildout. The Project's potential population growth would represent an approximately 52 percent increase over the Community's permanent population estimate of 409 persons (2000) and an approximately 15 percent increase over the Community's peak weekend/holiday period population of 1,428 persons. Project implementation would be considered growth inducing inasmuch as the proposed development would result in the construction of additional housing, consequentially fostering population growth.

Potential growth-inducing impacts are also assessed based on a project's consistency with adopted plans that have addressed growth management from a local and regional standpoint. The following discussion addresses the Project's consistency with the General Plan.

As noted in Section 5.1, *Land Use and Relevant Planning*, the Project site is currently designated Rural Living (RL)-40. Based on the 40-acre minimum lot size for the RL District, the dwelling unit potential of the Project site is approximately two dwelling units (62.43/40=1.56). Based upon the City of Big Bear Lake's estimate of 2.31 persons per household and a dwelling unit potential of two units, Fawnskin's population could increase by approximately three persons under the existing RL-40 District. Thus, the proposed Project would result in a greater population increase (212 additional persons) than what would be anticipated under the existing RL-40

[4] Ibid.

District. Project implementation would be considered growth inducing inasmuch as the proposed development would result in a greater population increase than what was anticipated with the existing RL-40 District.

As discussed in Section 5.3, *Public Utilities*, Project implementation would require the expansion of existing water and wastewater facilities to meet increased demands associated with Project-related population growth. This extension is not considered growth inducing inasmuch as the extension was anticipated in the General Plan. As discussed in Section 5.1, *Land Use and Relevant Planning*, the Project site is designated Improvement Level 1 (IL-1). IL-1 is applied to those areas planned for the densest and highest intensity level of development. The Project would be required to provide each of the improvements specified in Figure II-15 of the San Bernardino County General Plan, *Improvement Standards – Mountain*. The Project would be subject to implementation of the IL-1 standards according to more detailed County guidelines. With implementation of the required improvements, the Project would provide the appropriate and applicable infrastructure facilities and services essential to the proposed residential uses. Additionally, the Project would represent a reasonable extension of the existing pattern of infrastructure facilities and services in the surrounding area. As outlined in Table 5.1-1, *Summary of Land Uses*, existing IL-1 areas are located north, south, east and west of the Project site. The extension of facilities and services consistent with IL-1 standards was anticipated for the Project site and the Project would not be growth inducing in this regard.

The *Growth Management* section of the General Plan focuses on ways to monitor and manage future growth of the County in order to preserve valuable resources and maintain a high quality of life for all residents. In order to anticipate the cost of providing services to future development, the General Plan divides the County into three broad development areas (urban, rurban, and rural) based on the factors outlined below. These development area designations then define the types of uses that are allowed, enabling the County to anticipate the types of services they will need to provide.

- Existing and anticipated level of development and level of build-out at planned densities.
- Current lot pattern/sizes.
- Proximity to water and sewer District service boundaries and capability for providing future service to designated areas.
- Availability of public services and the carrying capacity of existing infrastructure facilities.
- Proposed expansion/extension of existing, and development of new facilities.
- Hazards.
- Carrying capacity of existing natural resources.
- The extent and potential for damage to significant environmental resources.

- Spheres of influence/city boundaries.

Urban Areas (UA) are areas that are committed or planned for higher density/ intensity uses. A full range of public facilities and services (including water, sewer, roads, flood control/drainage, police and fire services, etc.) shall be focused on these areas. Urban areas include:

- Areas surrounded by incorporated cities.
- Areas adjacent to incorporated cities, generally divided into parcels 5,000 square feet up to one (1) acre, and served by a water purveyor.
- Areas within the sphere of influence of incorporated cities.

Urban areas should be suitable for urban land uses. The following Land Use Districts can be located within urban areas[5]:

- Single Residential RS
- Multiple Residential RM
- Office Commercial CO
- Neighborhood Commercial CN
- General Commercial CG
- Service Commercial CS
- Community Industrial IC
- Regional Industrial IR

Rurban Areas (RB) are designed to accommodate residential development opportunities for those who desire ex-urban, low density, or country living environment and are willing to assume the costs of providing many of their own services and amenities. The low intensities accommodated in this district generally permit onsite septic systems and wells, thereby reducing public expenditures. These areas are not expected to be converted to higher intensities in the future; they are expected to be built as currently designated. Rurban areas are areas that meet one or more of the following criteria:

- Areas adjacent to incorporated cities, generally divided into parcels of 1.0 acre up to 5.0 acres.
- Areas in remote locations with limited access already subdivided into parcels that are less than 5.0 acres.
- Areas where onsite disposal systems may be permitted.

The following Land Use Districts can be located in Rurban Areas:

- Rural Living RL
- Single Residential RS (1 acre min. parcel size)
- Neighborhood Commercial CN

[5] The Planned Development (PD), Institutional (IN) and Floodway (FW) Districts can be located in any of the three areas.

- Service Commercial CS
- Community Industrial IC
- Highway Commercial CH

Rural Areas (RA) are comprised of agricultural and unimproved lands and low-intensity residential development. These areas are not required for urban development at the present time and, according to current population projections, will not be required (for urban development) in the next twenty years. There is generally a long-term commitment to maintain a rural lifestyle in these areas. Although certain basic public services and facilities are available to these areas, few, if any, urban services are either available, planned or encouraged. Rural areas are defined as lands which are generally suitable for lower density/ intensity land uses because they meet one or more of the following criteria:

- Used for agriculture, general open space or as a watershed for a public water supply.

- Isolated subdivided areas and commercial centers which are not adjacent to incorporated cities.

- Divided into parcels of 5.0 acres or larger, next to an urban incorporated area.

- Subdivided areas that use onsite wastewater management systems that are adjacent to, but not surrounded by incorporated areas.

The following Land Use Districts can be located in Rural Areas:

- Resource Conservation RC
- Agriculture AG
- Rural Living RL
- Neighborhood Commercial CN
- Service Commercial CS
- Rural Commercial CR
- Highway Commercial CH

The Project site is located within a designated Urban Area. As previously noted, the Project proposes a Land Use District Change to RS which is a permitted land use District in an UA. Thus, growth commensurate with the proposed Project was anticipated for the Project site and the Project would not be considered growth inducing in this regard.

Overall, the proposed development would not require the substantial development of unplanned/unforeseen support uses and services as is evidenced by the site's and the surrounding area's existing IL-1 and UA designations. As a result, the proposed project would not result in significant growth-inducing impacts.

7.0 Alternatives to the Proposed Project

7.0 ALTERNATIVES TO THE PROPOSED PROJECT

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.6, the following Section describes a range of reasonable alternatives to the proposed Project which could feasibly attain the basic project objectives and would avoid or substantially lessen any of the significant effects. The evaluation also reviews the comparative merits of each alternative. The analysis focuses on alternatives capable of eliminating significant adverse environmental effects or reducing significance, even if these alternatives would impede, to some degree, the attainment of the project objectives. Potential environmental impacts associated with four separate alternatives are compared to impacts from the proposed Project below. These alternatives include the "No Project/No Development" Alternative, "No Project/Existing Designation" Alternative, "Reduced Density, Without Road Realignment and Without Marina" Alternative and "Reduced Density, With Project Redesign" Alternative. The "No Project" Alternative scenario is a requirement in an EIR pursuant to Section 15126.6(e) of CEQA. Refer to Table 7-1, *Comparison of Alternatives*, which is an impact matrix comparing the Alternatives to the proposed Project. The Environmentally Superior Alternative is identified and discussed in Section 7.5.

7.1 "NO PROJECT/NO DEVELOPMENT" ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

Implementation of the "No Project/No Development" Alternative would retain the site in its current condition. None of the improvements proposed as part of the project and/or the existing designation would occur. The following discussion evaluates the potential environmental impacts associated with the No Project/No Development Alternative as compared to impacts from the proposed Project.

IMPACT COMPARISON TO THE PROPOSED PROJECT

Land Use and Relevant Planning

According to the County of San Bernardino General Plan Map, the project site is designated as Rural Living (RL-40), with the exception of the State Route 38 right-of-way. Under the No Project/No Development Alternative no development would occur onsite. The existing General Plan designation (RL-40) would remain and an amendment to the Official Land Use District would not occur. With no development occurring within the project site, it would remain in its existing undeveloped condition. It is further noted that it is not the intent of the County to preclude development from occurring within the project site.

Recreation

Since no new residents would be generated by this Alternative, no new demands would be placed on Big Bear Lake or local and regional park facilities in the area.

This Alternative would retain existing on-site paths/trails. However, public access on the site and to the lakefront would not be assured since the Project site is private property. Additionally, this Alternative would not involve the construction of any recreational facilities (i.e., marina facilities). The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Table 7-1
Comparison of Alternative Environmental Impacts with Proposed Project

Issue	No Project/No Development	No Project/ Existing Designation	Reduced Density, Without Road Realignment and Without Marina	Reduced Density, With Project Redesign
Land Use and Relevant Planning	□	□	□	=
Recreation	□	□	=	=
Fire and Police Protection	□	=	=	=
Schools	□	□	□	□
Libraries	□	□	=	=
Water and Sewer	□	=	=	=
Solid Waste	□	□	=	=
Utilities	□	□	□	□
Aesthetics/Light and Glare	□	□	□	□
Traffic and Circulation	□	□	□	□
Air Quality	□	□	□	□
Noise	□	□	□	□
Biological Resources	□	□	□	□
Cultural Resources	□	□	□	□
Geology and Soils	□	□	□	=
Hydrology and Drainage	□	□	=	=

= Impact is equivalent to impact of proposed Project (neither environmentally superior nor inferior).
□ Impact is less than impact of proposed Project (environmentally superior).
■ Impact is greater than impact of proposed Project (environmentally inferior).

Public Services and Utilities

Fire and Police Protection. The No Project/No Development Alternative would not involve new residences; thus, no new demand for fire and police protection services over existing conditions would be required. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Schools. The No Project/No Development Alternative would not generate additional school children and would not place demands on the school district serving the sites. Thus, this Alternative would not strain current educational resources. Compared to the proposed Project, the No Project/No Development Alternative would be considered environmentally superior.

Libraries. The No Project/No Development Alternative would not generate additional residents and would not place demands on libraries serving the project site. Thus, this Alternative would not impact current resources. Since the proposed Project would create minimal demands on library resources, the No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Water and Sewer. The No Project/No Development Alternative would not involve development within the project area. Consequently, the need to extend water and sewer lines to the project site would not occur under this Alternative. Compared to the proposed Project, the No Project/No Development Alternative would be considered environmentally superior.

Solid Waste. The No Project/No Development Alternative would not produce new generators of solid waste, and would not impact existing County landfills. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Utilities. The No Project/No Development Alternative would not increase the demand for utility services beyond existing levels. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Aesthetics/Light and Glare

The visual character of the site, which consists of undeveloped forested land would remain unchanged, and no site grading would occur. Existing views of Big Bear Lake and the distant mountain ranges to the south would not be obstructed from the project site, which includes views from State Route 38. In addition, lighting impacts would be eliminated, as no new light sources would be introduced onto the project site. Compared to the proposed Project, the No Project/No Development Alternative would be considered environmentally superior.

Traffic and Circulation

The No Project/No Development Alternative would not result in the realignment of State Route 38 and would not create new interior roads within the project area. This Alternative would not increase project-related traffic above current levels. However, the realignment of State Route 38 would be considered as a circulation improvement since the roadway would be straightened to reduce safety hazards. Due to the reduction in traffic generation, the No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Air Quality

No new long-term sources of air pollution would result from increased traffic, watercraft uses, wood burning fireplaces and the increased use of energy sources. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Noise

The noise increases created by project-related traffic and watercraft on Big Bear Lake would not occur under this Alternative. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Biological Resources

The impacts to plants and wildlife would not occur under this Alternative. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Cultural Resources

The impacts to cultural resources would not occur under this Alternative. The No Project/No Development Alternative would be considered environmentally superior to the proposed Project.

Geology and Soils

The No Project/No Development Alternative would not involve development within the project area. Consequently, no new structures would be subject to seismic hazards, such as ground shaking or seismically induced settling. Compared to the proposed Project, the No Project/No Development Alternative would be considered environmentally superior.

Hydrology and Drainage

The No Project/No Development Alternative would not involve development within the project area. Thus, no groundwater source would be extracted and no new sources of stormwater runoff would be created. Compared to the proposed Project, the No Project/No Development Alternative would be considered environmentally superior.

ABILITY TO MEET PROJECT OBJECTIVES

The No Project/No Development Alternative would not result in any of the environmental impacts associated with the proposed construction and development of the proposed Project. This Alternative would avoid potential impacts resulting from alterations of the project sites' physical characteristics and construction of new structures and uses. Maintaining the Project site in its existing condition would not alter the visual characteristic of the Project site. The No Project/No Development Alternative would eliminate recreation, aesthetic, public services and utilities, traffic

and circulation, air quality, noise, biological resources, cultural resources, geology, soils, hydrology and groundwater impacts associated with the proposed Project. However, this Alternative is not consistent with the Project objectives, which are to provide up to 92 single-family residential lots, to be developed as custom lots in the future. The Project also seeks realignment of North Shore Drive to improve the design of the roadway, which would also allow for lakefront lots to be developed.

7.2 "NO PROJECT/EXISTING DESIGNATION" ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

Implementation of the "No Project/Existing Designation" Alternative would be in accordance with the existing Official Land Use District Rural Living-40 (40-acre minimum lot size). This Alternative would result in 1.5 residential lots on the project site. This Alternative would be less intensive than the proposed Project. Approximately three persons (1.5 housing units x 2.15 persons/household) would be added to the permanent population of the Community of Fawnskin. It is further noted that in addition to a single-residential structure, other uses can be allowed including those in the "Additional Uses" section of the County Development Code, subject to a Conditional Use Permit. The following discussion evaluates the potential environmental impacts associated with the No Project/Existing Designation Alternative as compared to impacts from the proposed Project.

IMPACT COMPARISON TO THE PROPOSED PROJECT

Land Use and Relevant Planning

According to the County of San Bernardino General Plan Map, the project site is designated as Rural Living (RL-40), with the exception of the State Route 38 right-of-way. Under the No Project/Existing Designation Alternative, dwelling units consistent with the Rural Living (RL-40) land use designation would be developed. The existing General Plan designation (RL-40) would remain and an amendment to the Official Land Use District would not be processed. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Recreation

Approximately three new residents would be generated by this Alternative. This nominal increase in population would not create new demands on Big Bear Lake or local and regional park facilities in the area. Unlike the proposed Project, this Alternative would not involve the construction of any recreational facilities (i.e., marina facilities). This Alternative would retain existing on-site paths/trails. However, public access on the Project site and to the lakefront would not be assured since the Project site is private property. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Public Services and Utilities

Fire and Police Protection. The No Project/Existing Designation Alternative would result in development of 1.5 residential lots on the project site; thus, a nominal increase in the demand for fire and police protection services would occur over existing conditions. Similar to the proposed Project, this Alternative would not result in the need for expansion or construction of police or fire protection facilities. The No Project/Existing Designation Alternative would be considered neither environmentally superior or inferior to the proposed Project.

Schools. The No Project/Existing Designation Alternative would generate approximately one school child (.20 students x 1.5 dwelling units), which is approximately 17 fewer school children than the proposed Project. Since existing school enrollments exceed the capacity at all three schools that would serve the project site, increases in students would further strain resources. Since the No Project/Existing Designation Alternative would generate less impact on existing educational resources, it would be considered environmentally superior to the proposed Project.

Libraries. The No Project/Existing Designation Alternative would generate approximately three additional residents; however, as with the proposed Project, the addition of three new residents would not significantly impact libraries serving the project site. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Water and Sewer. Given that the No Project/Existing Designation Alternative would result in development of 1.5 residential lots on the project site, the need to extend water and sewer lines to the project site would be less of an impact than with the proposed Project. Since water supplies and existing reservoir facilities in the Big Bear Valley are limited, this Alternative would produce less impact to the resource. This Alternative would result in similar water service impacts due to the inability of providers to confirm service. Thus, compared to the proposed Project, the No Project/Existing Designation Alternative would not be considered to be environmentally superior or inferior to the proposed project.

Solid Waste. The No Project/Existing Designation Alternative would produce less solid waste when compared to the proposed Project. However, this Alternative, as with the proposed Project, would not result in significant impacts to existing landfills. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Utilities. The No Project/Existing Designation Alternative would result in a nominal increase in demand for utility services (i.e., gas, electric) beyond existing levels and at levels less than those of the proposed Project. The need for modification and addition of utilities into the project site would be less than for the proposed Project. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Aesthetics/Light and Glare

The visual character of the site, which consists of undeveloped forest land, would be slightly modified under the No Project/Existing Designation Alternative. Given that this Alternative proposes only 1.5 residential lots and no realignment of State Route 38, fewer impacts are anticipated with respect to landform alteration, aesthetics and light and glare. The development of 1.5 lots designated for residential uses would not involve the extensive removal of Jeffrey pine trees. Although trees may be removed onsite, the property would retain its forested nature. The No Project/Existing Alternative would maintain the views of Big Bear Lake and distant mountain ranges to the south from State Route 38 and surrounding land uses. Big Bear Lake would remain in its current aesthetic condition, as no recreational facilities on the Lake would occur with this Alternative. Thus, compared to the proposed Project, the No Project/No Development Alternative would be considered environmentally superior.

Traffic and Circulation

The No Project/Existing Designation Alternative would not result in the realignment of State Route 38, would not create new interior roads within the project area and would nominally increase project-related traffic above current levels. Similar to the proposed Project, this Alternative would contribute to the existing intersection deficiency at Stanfield Cutoff and Big Bear Boulevard. However, this Alternative would result in fewer new trips on the local road system when compared to the proposed Project. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Air Quality

Fewer vehicular trips would be generated under this Alternative than for the proposed Project, which would also produce less mobile and energy source emissions. With fewer homes, less particulate emissions would be generated. This Alternative would result in fewer local and regional air pollutant emissions. Additionally, construction-related emissions from the realignment of State Route 38 would not occur with this Alternative. Thus, the No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Noise

Given that approximately 90 less residential lots would occur under this Alternative, long-term noise levels associated with vehicular traffic would be less than the noise levels under the proposed Project. Additionally, this Alternative does not include new marina facilities, which in turn, would not produce new noise sources from watercraft utilizing Big Bear Lake. Additionally, construction-related noise from the realignment of State Route 38 would not occur with this Alternative. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Biological Resources

The No Project/Existing Designation Alternative would impact existing on-site biological resources with the development of 1.5 residential lots, as compared to 92 residential lots of the proposed Project. While this Alternative could result in removal of trees for the development of 1.5 residential lots, the proposed Project would remove approximately 655 trees, or 24 percent of the existing 2,772 trees for roadway construction. The proposed Project could also involve additional tree removal during individual lot development and construction of custom homes. This Alternative would not involve a marina facility which would result in no impacts to Big Bear Lake in this regard. The No Project/Existing Designation Alternative would be considered environmentally superior to the proposed Project.

Cultural Resources

Development under either the proposed Project or the No Project/Existing Designation Alternative has the potential to impact on-site cultural resources. Although the proposed Project would alter a greater quantity of land than the No Project/Existing Designation Alternative, both would require monitoring by qualified archeological and/or paleontological experts. Thus, the No Project/No Development Alternative would be considered neither environmentally superior or inferior to the proposed Project.

Geology and Soils

Under this Alternative, less residents and structures would be exposed to seismic hazards than the proposed Project. The proposed Project would involve grading for the realignment of State Route 38 and for structures to the north and south (lakefront) of State Route 38. Grading required for this Alternative would occur for development of 1.5 residential lots. The amount of grading associated with this Alternative would result in less potential impacts resulting from slope stability than the proposed Project. Compared to the proposed Project, the No Project/Existing Designation Alternative would be considered environmentally superior.

Hydrology and Drainage

The No Project/Existing Designation Alternative would involve less development in the project area than the proposed Project. The amount of impermeable surface area (i.e., roads, driveways, etc) would be less with this Alternative than the proposed Project. Additionally, this Alternative would involve fewer residences and vehicles on-site, thus reducing sources of stormwater pollution runoff. The groundwater overdraft condition noted for the proposed project may still occur with this Alternative, but at a significantly reduced rate. Compared to the proposed Project, the No Project/Existing Designation Alternative would be considered environmentally superior.

ABILITY TO MEET PROJECT OBJECTIVES

The No Project/No Development Alternative would decrease the intensity of the environmental impacts associated with the proposed construction and development

of the proposed Project. This Alternative would decrease potential impacts resulting from alterations of the Project sites' physical characteristics and construction of new structures and uses. By not realigning State Route 38 and not removing the amount of trees associated with the proposed Project, the project site would maintain the majority of its existing condition and the visual character of the Project site would not be significantly altered. The No Project/Existing Designation Alternative would reduce impacts to recreation, public services and utilities, aesthetics, traffic and circulation, air quality, noise, biological resources, geology/soils, hydrology/drainage and groundwater associated with the proposed Project. However, while meeting the objectives established in the County General Plan, this Alternative does not meet the objectives established for the proposed Project, which are to provide up to 92 single-family residential lots, to be developed as custom lots in the future. The Project also seeks realignment of North Shore Drive in order to improve the design of the roadway, which would also allow for lakefront lots to be developed.

7.3 "REDUCED DENSITY, WITHOUT ROAD REALIGNMENT AND WITHOUT MARINA" ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

For the Reduced Density, Without Road Realignment and Without Marina Alternative, development of 62 residential lots and associated infrastructure (as depicted in the project description) would occur on the north side of the existing State Route 38 alignment. State Route 38 would not be realigned and no residential development would occur to the south of State Route 38. The land area south of State Route 38, along the lakefront, would be retained in its current state. Approximately 133 persons (62 housing units x 2.15 persons/household) would be added to the permanent population of the Community of Fawnskin.

IMPACT COMPARISON TO THE PROPOSED PROJECT

Land Use and Relevant Planning

As with the proposed Project, this Alternative would require an amendment to the Official Land Use District designation of the project site, per the County of San Bernardino General Plan. Currently, the project site is designated as Rural Living (RL-40). Under the Reduced Density, Without Road Realignment and Without Marina Alternative, as well as the proposed Project, development onsite would not be consistent with the Rural Living (RL-40) land use designation. Development would include 62 residential lots and associated infrastructure under the Single Residential (RS-7200) land use designation. This Alternative would not include realignment of State Route 38, thus no amendment to the Circulation Element of the General Plan would occur. Similar to the proposed Project, development standards under this Alternative would be required to be consistent with the provisions of the Geologic Hazard, Fire Safety, Biotic Resources and Scenic Resources Overlay District provisions/requirements in the San Bernardino Development Code. Per the provisions of the Geologic Hazard, Fire Safety, and Biotic Resources Overlay

Districts, either the proposed Project or this Alternative would result in less than significant impacts, with compliance of the development standards outlined in the Development Code and mitigation measures referenced in the applicable technical reports (i.e., geology/soils and biological reports). This Alternative would not result in obstructed views of Big Bear Lake and distant mountain ranges from the lakefront and/or State Route 38. Hence, this Alternative would be consistent with development standards set forth in the Scenic Resources Overlay District. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior to the proposed Project.

Recreation

This Alternative would not include residential development along the lakefront. The lakefront would remain in its existing condition. Public access on the site and to the lakefront would not be assured since the Project site is private property. This Alternative and the proposed Project would result in the loss of trails within the forested areas to the north from the project site. Neither this Alternative, nor the proposed Project would increase the use of existing parks or recreational facilities such that substantial physical deterioration would occur. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Public Services and Utilities

Fire and Police Protection. The Reduced Density, Without Road Realignment and Without Marina Alternative would result in development of 62 residential lots, as compared to 92 residential lots with the proposed Project. Development under this Alternative or the proposed Project would increase the demand for fire and police protection services over existing conditions. Similar to the proposed Project, this Alternative would not result in the need for expansion or construction of police or fire protection facilities. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Schools. The Reduced Density, Without Road Realignment and Without Marina Alternative would generate approximately 12 school children (.20 x 62 dwelling units), which is six fewer school children than the proposed Project. Since existing school enrollments currently exceed the capacity at all three schools that would serve the project site, increases in students would further impact resources. Since the Reduced Density, Without Road Realignment and Without Marina Alternative would generate less impact on existing educational resources, it would be considered environmentally superior to the proposed Project.

Libraries. The Reduced Density, Without Road Realignment and Without Marina Alternative would generate approximately 133 residents; however, as with the proposed Project, the addition of these new residents would not significantly impact libraries serving the project site. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered neither environmentally superior or inferior to the proposed Project.

Water and Sewer. Given that the Reduced Density, Without Road Realignment and Without Marina Alternative would result in development of 62 residential lots on the project site, the need to increase water supply and treatment and/or storage facilities would be less of an impact than with the proposed Project. Since water supplies and existing reservoir facilities in the Big Bear Valley are limited, this Alternative, when compared to the proposed Project, would result in a reduced impact on currently strained resources. This Alternative would result in similar water service impacts due to the inability of providers to confirm service. On this basis, when compared to the proposed Project, the Reduced Density, Without Road Realignment and Without Marina Alternative would not be considered to be environmentally superior or inferior to the proposed Project.

Solid Waste. The Reduced Density, Without Road Realignment and Without Marina Alternative would produce less solid waste when compared to the proposed Project. However, this Alternative, as with the proposed Project, would not create impacts to existing landfills. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered neither environmentally superior or inferior to the proposed Project.

Utilities. The Reduced Density, Without Road Realignment and Without Marina Alternative would increase the demand for utility services (i.e., gas, electric) beyond existing levels but, at levels less than those of the proposed Project. The need for modification and addition of utilities would be less than for the proposed Project. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior to the proposed Project.

Aesthetics/Light and Glare

As with the proposed Project, the visual character of the site, which consists of undeveloped forest land, would be modified under the Reduced Density, Without Road Realignment and Without Marina Alternative. Given that this Alternative involves development to the north of State Route 38 and no realignment of State Route 38, fewer Aesthetic impacts are anticipated with respect to landform alteration, aesthetics and light and glare. Since this Alternative does not involve residential lot development south of State Route 38, views of Big Bear Lake and the distant mountain ranges from State Route 38 would be retained. Although existing views of the Lake and mountains to the south, from Flicker Road, may still be obstructed with this Alternative, surrounding uses to the east and west would retain views of the Lake and mountains. Furthermore, residential lot development associated with the proposed Project would limit public access to the lakefront and change the visual character of the site from a forested, undeveloped nature to a developed residential area. Compared to the proposed Project, the Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior.

Traffic and Circulation

When compared to the proposed Project, the Reduced Density, Without Road Realignment and Without Marina Alternative would not result in the realignment of State Route 38 and would generate less traffic on surrounding roadways. This Alternative would result in fewer new trips on the local road system when compared

to the proposed Project. However, both the proposed Project and this Alternative would contribute to the existing intersection deficiency at Stanfield Cutoff and Big Bear Boulevard. The proposed Project and this Alternative would be required to pay "fair-share" fees to mitigate respective contributions to the existing intersection deficiency. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior to the proposed Project.

Air Quality

Fewer vehicular trips would be generated under this Alternative than for the proposed Project, which would also produce less mobile and energy source emissions. With fewer homes, less particulate emissions would be generated. This Alternative would result in fewer local and regional air pollutant emissions. Additionally, construction-related emissions from the realignment of State Route 38 would not occur with this Alternative. Thus, the Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior to the proposed Project.

Noise

Given that approximately 30 less residential lots would occur under this Alternative, long-term noise levels associated with vehicular traffic would be less than the noise levels under the proposed Project. Additionally, construction-related noise from the realignment of State Route 38 would not occur with this Alternative. The Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior to the proposed Project.

Biological Resources

The conversion of undeveloped forest land and impacts to biological resources north of State Route 38 would be similar to the proposed project. This Alternative would not modify existing habitat to the south of Highway 38. Thus, no physical impacts to biological resources to the south of Highway 38 would occur. Compared to the proposed Project, the Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior.

Cultural Resources

Development under either the proposed Project or the Reduced Density, Without Road Realignment and Without Marina Alternative has the potential to impact on-site cultural resources. Although the proposed Project would alter a greater quantity of land than the Reduced Density, Without Road Realignment and Without Marina Alternative, both would require monitoring by qualified archeological and/or paleontological experts. Thus, the No Project/No Development Alternative would be considered neither environmentally superior or inferior to the proposed Project.

Geology and Soils

Under this Alternative, less residents and structures would be exposed to seismic hazards than the proposed Project. Unlike this Alternative, the proposed Project

would involve grading for the realignment of State Route 38 and for structures to the north and south (lakefront) of State Route 38. Grading required for this Alternative would occur for development of approximately 62 residential lots north of State Route 38. The amount of grading associated with this Alternative would create similar potential impacts from slope stability as the proposed Project, since both descriptions would develop homes on the steepest portions (northern half) of the site. Compared to the proposed Project, the Reduced Density, Without Road Realignment and Without Marina Alternative would be considered environmentally superior.

Hydrology and Drainage

The Reduced Density, Without Road Realignment and Without Marina Alternative would involve less development within the project area than the proposed Project. The amount of impermeable surface area (i.e., roads, driveways, etc) would be less with this Alternative than the proposed Project. Additionally, this Alternative would involve fewer residences and vehicles on-site, thus reducing pollution sources of stormwater runoff. The overdraft condition noted for the proposed Project may still occur and based on 62 units of development would result in consistent groundwater affects. Compared to the proposed Project, the Reduced Density, Without Road Realignment and Without Marina Alternative would be neither environmentally superior nor inferior.

ABILITY TO MEET PROJECT OBJECTIVES

The Reduced Density, Without Road Realignment and Without Marina Alternative would decrease the intensity of the environmental impacts associated with the proposed construction and development of the proposed Project. This Alternative would decrease potential impacts resulting from alterations of the Project sites' physical characteristics and construction of new structures and uses. By not realigning State Route 38 and not removing the number of trees associated with the proposed Project, the site would maintain the existing forested nature and visual character south of State Route 38. Views of the Lake and mountain ranges would be retained from State Route 38 and from uses to the east and west of the project site. The Reduced Density, Without Road Realignment and Without Marina Alternative would reduce impacts to public services and utilities, aesthetics, traffic and circulation, air quality, noise, biological resources, geology and soils and hydrology and drainage when compared to the proposed Project. Groundwater affects would be consistent with conclusions rendered for the proposed Project. This Alternative does not meet the entire objectives established for the proposed Project which is to provide up to 92 single-family residential lots to be developed as custom lots in the future. The proposed Project also seeks to provide a marina facility and realign of North Shore Drive in order to improve the design of the roadway, which would also allow for lakefront lots to be developed.

7.4 "REDUCED DENSITY, WITH PROJECT REDESIGN" ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

For the Reduced Density, With Project Redesign Alternative, development of 66 residential lots and associated infrastructure would occur on project site. Implementation of this Alternative would include the realignment of State Route 38. Twenty-one (21) and 45 lots would be developed on the south and north sides of the realigned State Route 38, respectively. This Alternative would include a marina facility, with 72 boat slips. Approximately 142 persons (66 housing units x 2.15 persons/household) would be added to the permanent population of the Community of Fawnskin.

IMPACT COMPARISON TO THE PROPOSED PROJECT

Land Use and Relevant Planning

As with the proposed Project, this Alternative would require an amendment to the Official Land Use District designation of the project site, per the County of San Bernardino General Plan. Currently, the project site is designated as Rural Living (RL-40). Under the Reduced Density, With Project Redesign Alternative, as well as the proposed Project, development onsite would not be consistent with the Rural Living (RL-40) land use designation. Development would include 66 residential lots and associated infrastructure under the Single Residential (RS-7200) land use designation. This Alternative would include realignment of State Route 38, thus an amendment to the Circulation Element of the General Plan would be required. Similar to the proposed Project, development standards under this Alternative would be required to be consistent with the provisions of the Geologic Hazard, Fire Safety, Biotic Resources and Scenic Resources Overlay Districts in the San Bernardino Development Code. Per the provisions of the Geologic Hazard, Fire Safety, and Biotic Resources Overlay Districts, either Alternative would result in similar less than significant impacts with compliance of the development standards outlined in the Development Code and identified mitigation measures in the appropriate technical reports (i.e., geology/soils and biological reports). Similar to the proposed Project, this Alternative would result in obstructed views of Big Bear Lake and the distant mountain ranges from the portion of the lakefront and/or State Route 38 that traverses the project site. Thus, this Alternative would not be consistent with the developments standards set forth in the Scenic Resources Overlay District. The Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Recreation

Similar to the proposed Project, this Alternative would include residential development along the lakefront. The shoreline/lakefront would be developed with residential uses (21 dwelling units) and would include marina facilities (Lot "C") which would be located south of North Shore Drive. Public access to the lakeshore would be maintained at the eastern and western boundaries of the site. However, public

access on the site and to the lakefront would not be assured since the Project site is a private property. This Alternative and the proposed Project would include the loss of trails and access to the forested areas to the north from the project site. This Alternative would include a 72-boat slip marina facility. The increase in boats on the Lake would not impact the boating capacity of the Lake. Neither this Alternative, nor the proposed Project would increase the use of existing parks or recreational facilities such that substantial physical deterioration would occur. The Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Public Services and Utilities

Fire and Police Protection. The Reduced Density, With Project Redesign Alternative would result in development of 66 residential lots, as compared to 92 residential lots within the proposed Project. Development under this Alternative or the proposed Project would result in a nominal increase in the demand for fire and police protection services over existing conditions. Similar to the proposed Project, this Alternative, would not result in the need for expansion or construction of police or fire protection facilities. The Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Schools. The Reduced Density, with Project Redesign Alternative would generate approximately 13 school children (.20 x 66 dwelling units), which is five fewer school children than the proposed Project. Since existing school enrollments currently exceed the capacity at all three schools that would serve the project site, increases in students would further impact resources. Since the Reduced Density, With Project Redesign Alternative would generate less strain on existing educational resources, it would be considered environmentally superior to the proposed Project.

Libraries. The Reduced Density, With Project Redesign Alternative would generate approximately 142 residents; however, as with the proposed Project, the addition of these new residents would not significantly impact libraries serving the project site. The Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Water and Sewer. Given that the Reduced Density, With Project Redesign Alternative would allow development of 66 residential lots on the project site, the need to increase water supply and treatment and/or storage facilities would be less of an impact than with the proposed Project. Since water supplies and existing reservoir facilities in the Big Bear Valley are limited, this Alternative, when compared to the proposed Project, would produce less impact on currently strained resources. This Alternative would result in similar water service impacts due to the inability of providers to confirm service. On this basis, when compared to the proposed Project, the Reduced Density, With Project Redesign Alternative would not be considered to be environmentally superior or inferior to the proposed Project.

Solid Waste. The Reduced Density, With Project Redesign Alternative would produce less solid waste when compared to the proposed Project. However, this Alternative, as with the proposed Project, would not create impacts to existing

landfills. The Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Utilities. The Reduced Density, With Project Redesign Alternative would increase the demand for utility services (i.e., gas, electric) beyond existing levels but, at levels less than those of the proposed Project. Given the density of this Alternative, the need for modification and addition of utilities would be less than for the proposed Project. The Reduced Density, With Project Redesign Alternative would be considered environmentally superior to the proposed Project.

Aesthetics/Light and Glare

As with the proposed Project, the visual character of the site, which consists of undeveloped forest land, would be modified under the Reduced Density, With Project Redesign Alternative. Given that this Alternative proposes development to the north and south of State Route 38 and the realignment of State Route 38, similar impacts are anticipated with respect to landform alteration, aesthetics and light and glare. Since this Alternative would involve decreased residential densities to the south of State Route 38, views of Big Bear Lake and the distant mountain ranges from State Route 38 would not be as obstructed when compared to the proposed Project. Residential lot development associated with this Alternative, as well as the proposed Project, would limit public access to the lakefront and change the visual character of the site from a forested, undeveloped nature to a developed residential area. As with the proposed project, this Alternative would alter the visual character of the Lake with implementation of the marina facilities. Thus, similar to the proposed Project, the Reduced Density, With Project Redesign Alternative would change the visual character of the project area and adversely impact views of the lake and the distant mountain ranges. However, since residential lot densities along the lakefront would be reduced in comparison to the proposed Project, providing increased viewing opportunities of the lake and distant mountain ranges, this Alterative is considered environmentally superior to the proposed Project.

Traffic and Circulation

As compared to the proposed Project, the Reduced Density, With Project Redesign Alternative would also result in the realignment of State Route 38, but would generate less project-related traffic above current levels. This Alternative would result in fewer new trips on the local road system when compared to the proposed Project. However, both the proposed Project and this Alternative would contribute to the existing intersection deficiency at Stanfield Cutoff and Big Bear Boulevard. The proposed Project and this Alternative would likely pay “fair-share” fees to mitigate their respective contribution to the existing intersection deficiency. The Reduced Density, With Project Redesign Alternative would be considered environmentally superior to the proposed Project.

Air Quality

Fewer vehicular trips would be generated under this Alternative than for the proposed Project, which would produce less mobile and energy source emissions. Additionally, with fewer homes, less particulate emissions would be generated.

This Alternative would result in fewer local and regional air pollutant emissions. Thus, the Reduced Density, With Project Redesign Alternative would be considered environmentally superior to the proposed Project.

Noise

Given that 26 less residential lots would occur under this Alternative, long-term noise levels associated with vehicular traffic would be less than the noise levels under the proposed Project. Additionally, this Alternative would include a 72 boat slip marina facility, compared to a 100-boat slip marina with the proposed Project, which in turn, would produce less new noise sources from watercraft utilizing Big Bear Lake. Thus, compared to the proposed Project, the Reduced Density, With Project Redesign Alternative would be considered environmentally superior.

Biological Resources

The Reduced Density, With Project Redesign Alternative would impact existing on-site biological resources similar to the proposed Project. Both the proposed Project and this Alternative could involve additional tree removal during individual lot development and construction of custom homes. Additionally, both the proposed Project and this Alternative would remove approximately 655 trees, or 24 percent of the existing 2,772 trees for realignment of Route 38. Since residential lot densities would be reduced in comparison to the proposed Project, it is anticipated that residential homesite design can account for tree locations and substantially reduce the number to be removed for lot development and thus, reduce impacts to biological resources such as the bald eagle. Thus, the Reduced Density, With Project Redesign Alterative is considered environmentally superior to the proposed Project.

Cultural Resources

Development under either the proposed Project or the Reduced Density, With Project Redesign Alternative has the potential to impact on-site cultural resources. Although the proposed Project would alter a greater quantity of land than the Reduced Density, with modified Project Design Alternative, both would require monitoring by qualified archeological and/or paleontological experts. Thus, the Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior to the proposed Project.

Geology and Soils

Under this Alternative, less residents and structures would be exposed to seismic hazards than the proposed Project. Both this Alternative and the proposed Project would involve grading for the realignment of State Route 38 and for structures to the north and south (lakefront) of State Route 38. Grading required for this Alternative would occur for development of approximately 66 residential lots to the north and south of State Route 38. The amount of grading associated with this Alternative would create similar potential impacts from slope stability as the proposed Project, since both would develop homes on the steepest portions (northern half) of the site. Compared to the proposed Project, the Reduced Density, With Project Redesign Alternative would be considered neither environmentally superior nor inferior.

Hydrology and Drainage

The Reduced Density, With Project Redesign Alternative would involve less development in the project area than the proposed Project. The amount of impermeable surface area (i.e., residences, driveways, etc) would be less with this Alternative than the proposed Project. Additionally, this Alternative would involve fewer residences and vehicles on-site, thus reducing pollution sources of stormwater runoff. The overdraft condition noted for the proposed Project may still occur and based on 66 units of development would result in consistent groundwater affects. Compared to the proposed Project, the Reduced Density, With Project Redesign Alternative would be neither environmentally superior nor inferior.

ABILITY TO MEET PROJECT OBJECTIVES

The Reduced Density, With Project Redesign Alternative would decrease the intensity of the environmental impacts associated with the proposed construction and development of the proposed Project. This Alternative would decrease potential impacts resulting from alterations of the Project sites' physical characteristics and construction of new structures and uses. Since this Alternative would involve decreased residential densities to the south of State Route 38, views of Big Bear Lake and the distant mountain ranges from State Route 38 would be less obstructed when compared to the proposed Project. The Reduced Density, With Project Redesign Alternative would result in reduced impacts to public services and utilities, aesthetics, traffic and circulation, air quality, noise, biological resources and hydrology and drainage associated with the proposed Project. Groundwater affects would be consistent with conclusions rendered for the proposed Project. This Alternative does not meet the entire objectives established for the proposed Project which is to provide up to 92 single-family residential lots to be developed, as custom lots, in the future.

7.5 "ENVIRONMENTALLY SUPERIOR" ALTERNATIVE

The proposed Project would generate impacts related to public services and utilities, aesthetics, traffic and circulation, air quality, noise, biological resources, cultural resources, geology and soils and hydrology and drainage. All impacts, with the exception of those identified for public services/utilities (ability to be served water), aesthetics, air quality, biological resources and hydrology (groundwater) can be mitigated to less than significant levels. The identified aesthetic, air quality, biological resources and hydrology (groundwater) impacts remain significant and unavoidable, even with the imposition of mitigation measures.

The "No Project/No Development" and the "No Project/Existing Designation" Alternatives would both eliminate and/or reduce all environmental impacts from those anticipated for the proposed Project. However, these alternatives are not being considered for the reason that they do not meet the objectives established for the proposed Project.

The "Reduced Density, With Project Redesign" and the "Reduced Density, Without Road Alignment and Without Marina" Alternatives both would result in fewer impacts to public services and utilities, aesthetics/light and glare, traffic and circulation, air

quality, noise, biological resources, and hydrology and drainage. While the "Reduced Density, With Project Redesign" Alternative most closely meets the objectives of the proposed Project, it would also result in significant and unavoidable aesthetic impacts. However, the "Reduced Density, Without Road Alignment and Without Marina" Alternative would reduce the majority of all impacts to less than significant levels, including aesthetic impacts.

In addition, as cited in Section 15126.6(e)(2) of the CEQA Guidelines: *"If the environmentally superior alternative is the "No Project" Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."* Thus, the "Reduced Density, Without Road Alignment and Without Marina" Alternative is concluded as the environmentally superior alternative.

8.0 Inventory of Mitigation Measures

8.0 INVENTORY OF MITIGATION MEASURES

LAND USE AND RELEVANT PLANNING

SAN BERNARDINO COUNTY GENERAL PLAN

5.1-1 No mitigation measures are recommended.

SAN BERNARDINO COUNTY DEVELOPMENT CODE

5.1-2 No mitigation measures are recommended.

CUMULATIVE

5.1-3 No mitigation measures are recommended.

RECREATION

EXPANSION AND/OR CONSTRUCTION OF RECREATIONAL FACILITIES

5.2-1 No mitigation measures are recommended.

PUBLIC ACCESS

5.2-2 ~~No mitigation measures are recommended.~~ The proposed project shall be conditioned to incorporate a pedal path easement along the south side of North Shore Drive, prior to map recordation.

CUMULATIVE

5.2-3 No mitigation measures are recommended.

PUBLIC SERVICES AND UTILITIES

FIRE PROTECTION

5.3-1a The fire flow requirement shall be 1750 gpm @ 2 hours based on homes in the range of 3,600 to 4,800 square feet, and 2,000 gpm @ 2 hours for homes greater than 4,800 square feet.

5.3-1b ~~Fire sprinklers for each residence shall be provided in lieu of additional manpower.~~ All residences less than 5,000 square feet shall be subject to the standard fire sprinkler requirement (NFPA 13D). Homes above 5,000 square feet shall be subject to the NFPA13R~~have a larger~~ sprinkler requirement ~~(FPA13R)~~.

5.3-1c A ~~f~~Fuels ~~modification program~~Management Plan, with specifications, shall be prepared and subject to approval by the County of San Bernardino

Fire Department and San Bernardino National Forest Service. The Fuels Management Plan shall implement the fire safety requirements of the FS1 Fire Safety Overlay District, including a 30-foot minimum setback requirement from the National Forest. The fuel modification zone shall be located entirely within the project's boundaries. ~~The 100 foot fuel modification requirement shall not terminate at a property line. The 100 foot fuel modification requirement shall extend beyond property lines. Where such fuel modification zone extends onto U.S. Forest Service land, an easement or permit shall be required to be obtained.~~ The minimum~~100 foot~~ fuel modification zone requirements may be greater in steeper areas (up to 300 ft.), as determined by the Fire ~~Agency~~ Department.

5.3-1d Cul-de-sac lengths shall be no longer than 350 feet.

5.3-1e A Homeowner's Association or a Special District shall be established to ~~assure~~ implement the Fuels Management Plan. The Fuels Management Plan shall specify any professional assistance, if necessary, to implement the action portion of the plan. The Plan shall determine if a Registered Professional Forrester is necessary for professional guidance to implement the Plan. ~~Long-term vegetation maintenance. An annual vegetation maintenance program shall be included.~~ The HOA or Special District is to be responsible for fuel modification in common areas.

~~5.3-1f Fire resistance/drought tolerant landscaping shall be required and referenced in the Homeowner's Association or Special District Standards.~~

POLICE PROTECTION

5.3-2 No mitigation measures are recommended.

SCHOOLS

5.3-3 No mitigation measures are recommended.

LIBRARIES

5.3-4 No mitigation measures are recommended.

WASTEWATER

5.3-5a Prior to issuance of building permits, the Project Applicant shall fund all on-site and off-site sewer improvements required to support development of the Project site. Such improvements shall be to the satisfaction of the BBARWA, and may include replacement of existing sewer lines rather than construction of parallel lines.

5.3-5b Prior to issuance of building permits, the Project Applicant shall provide evidence to the County of San Bernardino that the BBARWA has

sufficient transmission and treatment plant capacity to accept sewage flows from the Project site.

5.3-5c The Project Applicant shall relocate the BBARWA 10" force main by installing new pipe (and/or bonding for the relocation) so that it is aligned within the south shoulder of the relocated State Route 38. The 10" force main shall be accessible for BBARWA to maintain and repair the sewer force main. The force main shall not pass through residential lots within the proposed tract.

5.3-5d The Project Applicant shall install air release valves and vaults at high elevation points on the new force main to minimize odors. Air release valves shall be large enough to enclose 55-gallon drum carbon filters to control odors.

WATER

5.3-6a ~~Prior to approval of building permits, a video inspection of water supply casings and screen shall be conducted in order to update~~ Values of production rates and pumping levels for on-site water supply wells shall be obtained through step-drawdown and constant rate pumping tests. Water samples shall be taken during the inspection for testing and analysis in accordance with standard requirements.

5.3-6b If either or both of the two existing on-site wells are utilized as a water source for the project, ~~T~~the Project Applicant shall equip the~~two existing on-site~~ wells to meet DWP and/or County Special Districts Department standards and dedicate these facilities and water rights to the appropriate water purveyor~~County of San Bernardino~~. Within the proposed tract, no individual private irrigation wells shall be permitted.

5.3-6c ~~If served by CSA 53-C through a contract with the City of Big Bear Lake Department of Water and Power, t~~ After a determination has been made regarding the water purveyor, the Project Applicant shall advance fair-share funds ~~or enter into a reimbursement agreement with the~~ to the appropriate water agency (CSA and/or DWP) ~~(if required)~~ towards constructing a new reservoir and pipeline improvement at Cline-Miller Reservoir (with an estimated project cost at $481,100). These facilities would be dedicated to the appropriate water agency.

5.3-6d The following water conservation measures are the minimum measures that shall be complied with in conjunction with domestic water supply to the project. A Homeowners Association shall be responsible for enforcing the water conservation measures. Additional measures may be imposed as a result of a contract for water supply between CSA 53-C and the City of Big Bear Lake DWP:

- Landscape shall not be irrigated between the hours of nine (9) a.m. and six (6) p.m.

- Residences, buildings and premises shall be limited to watering every other day.

- Landscape irrigation shall be limited to what is needed and shall not be excessive. Water from landscape irrigation shall not be allowed to run off into streets.

- Water shall not be allowed to leak from any waterline, faucet, or any other facility, either within or outside a private residence, business establishment or on private property. All such leaking waterlines, faucets, and other facilities shall be repaired immediately to prevent leakage.

- Sidewalks, paved driveways, and parkways shall not be washed off with hoses, except as required for sanitary purposes.

- Non-commercial washing of cars, and boats or any other vehicle shall only be done with an automatic shut-off nozzle on a hose, or with a bucket.

- New landscaping shall not exceed more than one-thousand square feet of turf on a parcel or lot or twenty-five percent of the available landscape area.

- A model landscaping and irrigation guide shall be prepared for the tract and required by homeowner association rules. The guide shall specify a plant palate that emphasizes native plants and cultivars that are suitable for the mountain climate. Plant materials shall be low water consuming and fire resistant. Irrigation shall emphasize drip and bubbler type emitters with limit aerial spray irrigation methods. The guide shall be reviewed and approved by the Land Use Services Department.

SOLID WASTE

5.3-7 No mitigation measures are recommended.

NATURAL GAS

5.3-8 No mitigation measures are recommended.

ELECTRICITY

5.3-9 No mitigation measures are recommended.

CUMULATIVE

5.3-10 No mitigation measures are recommended.

AESTHETICS/LIGHT AND GLARE

SHORT-TERM AESTHETIC/LIGHT AND GLARE IMPACTS

5.4-1a Construction equipment staging areas shall be located away from existing residential uses. Appropriate screening (i.e., temporary fencing with opaque material) shall be used to buffer views of construction equipment and material, when feasible. Staging locations shall be indicated on project Grading Plans.

5.4-1b All construction-related lighting associated with the construction of new roadways, the realignment of State Route 38, and the installation of utilities shall be located and aimed away from adjacent residential areas. Lighting shall use the minimum wattage necessary to provide safety at the construction site. A construction safety lighting plan shall be submitted to the county for review concomitant with Grading Permit applications for the subdivision of the lots.

LONG-TERM AESTHETIC IMPACTS

5.4-2a Roof pitches shall not exceed 9/12 and no higher than two-story for any portion of the structure footprint for lots 62-92.

5.4-2b All homes shall provide a two-car garage with automatic garage doors.

5.4-2c A view envelope for each property shall be established by creating a line starting at 6 feet at each side lot line and moving up at a 30 degree angle until both lines meet at the middle of the property. The area located under these lines is the view envelope. Structures shall not protrude outside the view envelope. The view envelope orients the building ridgeline parallel to the view corridors on narrower lots providing views for residents located behind the property.

5.4-2d New development shall be subordinate to the natural setting and minimize reflective surfaces. Building materials including siding and roof materials shall be selected to blend in hue and brightness with the surroundings. Colors shall be earth tones, shades of grays, tans, browns, greens, pale yellows, and shall be consistent with the mountain character of the area.

5.4-2e Outside parking/storage areas associated with the boat dock activities shall be completely screened from view by the placement of landscaping and plantings which are compatible with the local environment and, where practicable, are capable of surviving with a minimum of maintenance and supplemental water.

5.4-2f Construction plans for each individual lot shall include the identification and placement of vegetation with the mature height of trees listed. Landscaping and plantings should not obstruct significant views, within or outside of the project, either when installed or when they reach mature

growth. The removal of existing vegetation shall not be required to create views.

5.4-2g A Note shall be placed on the Composite Development Plan stating that during construction plans review and prior to issuance of building permits for each lot, the building inspector shall refer to the Mitigation Monitoring and Compliance Program regarding these aesthetic impact mitigation measures. The building inspector shall coordinate with the Advance Planning Division the review and approval of building plans in relation to these aesthetic impact mitigation measures, prior to approval and issuance of building permits.

LONG-TERM SCENIC HIGHWAY IMPACTS

5.4-3a Any entry sign for the development shall be a monument style sign compatible with the mountain character, preferably, rock or rock-appearance.

5.4-3b Prior to recordation of the tract map (and/or any ground disturbance, whichever occurs first), landscaping plans for lettered lots B and C shall be submitted to and approved by the San Bernardino County Planning Department.

LONG-TERM LIGHT AND GLARE IMPACTS

5.4-4a All exterior lighting shall be designed and located as to avoid intrusive effects on adjacent residential properties and undeveloped areas adjacent to the project site. Low-intensity street lighting and low-intensity exterior lighting shall be used throughout the development to the extent feasible. Lighting fixtures shall use shielding, if necessary to prevent spill lighting on adjacent off-site uses.

5.4-4b Lighting used for various components of the development plan shall be reviewed for light intensity levels, fixture height, fixture location and design by an independent engineer, and reviewed and approved by the County Building and Safety Division.

5.4-4c The project shall use minimally reflective glass. All other materials used on exterior buildings and structures shall be selected with attention to minimizing reflective glare.

5.4-4d Vegetated buffers shall be used along State Route 38 to reduce light intrusion on residential development and on forested areas located adjacent to the project site.

5.4-4e Mitigation Measures 5.4-4a through 5.4-4d shall be included within the Conditions, Covenants and Restrictions (CC&Rs) of the Home Owner's Association (HOA).

5.4-4f All outdoor light fixtures shall be cutoff luminaries and shall only use high- or low-pressure sodium lamps.

5.4-4g The Project Applicant/Developer shall install light colored, reflective roof products. Such roofs shall utilize light colored, reflective materials that meet the performance standards developed by the Energy Star Labeled Roof Program, as well as the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standards 90.1 and 90.2 on energy efficient buildings. This condition shall be verified by the County of San Bernardino Building and Safety Division prior to issuance of building permits.

CUMULATIVE

5.4-5 No mitigation measures are recommended.

TRAFFIC AND CIRCULATION

EXISTING CONDITIONS WITH PROJECT TRAFFIC ANALYSIS

5.5-1 For existing traffic conditions, the intersection of Stanfield Cutoff and Big Bear Boulevard currently requires the eastbound right turn lane to be converted to an eastbound through lane, through the intersection. The eastbound right turn lane is restricted to an eastbound through lane, and involves roadway widening. The project's pro rata share of these off-site road improvements is estimated to be $17,748.

YEAR 2006 TRAFFIC ANALYSIS

5.5-2 Refer to Mitigation Measure 5.5-1. No additional mitigation measures are recommended.

YEAR 2025 TRAFFIC ANALYSIS

5.5-3 For future traffic conditions, the intersection of Stanfield Cutoff and North Shore Drive shall require a traffic signal. The project's pro rata share of the signal is $56,523.

SAFETY HAZARDS AND EMERGENCY ACCESS

5.5-4a Parking shall be restricted on State Route 38.

5.5-4b A 150-foot eastbound left turn pocket shall be striped for traffic on North Shore Drive turning left into the project entry locations.

5.5-4c For future traffic conditions, intersection geometrics as recommended in Table 1b of the Kunzman Associates June 2003 *Traffic Analysis* report, shall be implemented.

5.5-4d All streets internal to the project shall be constructed to full ultimate cross-sections. ~~as adjacent development occurs.~~

5.5-4e A STOP sign shall be installed to control outbound traffic on all site access roadways onto North Shore Drive.

5.5-4f The County of San Bernardino shall periodically review traffic operations in the vicinity of the site once the project is constructed in order to assure that the traffic operations are satisfactory.

5.5-4g Landscape plantings and signs shall be limited to 36 inches in height within 25 feet of project driveways to assure good visibility.

AIR QUALITY

SHORT-TERM AIR QUALITY IMPACTS

5.6-1 In accordance with the County Development Code and SCAQMD Rules, the Project Applicant shall incorporate the following measures during the construction phase of the Project to the satisfaction of the SCAQMD and County of San Bernardino. Compliance with this measure is subject to periodic field inspections by the SCAQMD and County of San Bernardino.

Grading:

Apply non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas (previously graded for ten days or more);

- Replace ground cover in disturbed areas as quickly as possible;
- Enclose, cover, water two times daily or apply non-toxic soil binders in accordance to manufacturer's specifications to exposed piles (i.e., gravel, sand, dirt) with 5% or greater silt content;
- Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph; and
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered and shall maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer).

Paved Roads:

- Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads.

LONG-TERM OPERATIONAL IMPACTS

5.6-2 To the extent feasible, the project shall incorporate the installation of EPA-certified wood burning stoves or fireplaces. If this is not feasible, then the installation of a ceramic coating on the honeycomb inside a catalytic combustor shall be investigated as a feasible alternative. Alternatively, the use of natural gas fireplaces may be used as a feasible alternative.

CONSISTENCY WITH AIR QUALITY MANAGEMENT PLAN

5.6-3 No mitigation measures are recommended.

CUMULATIVE

5.6-4 No mitigation measures are recommended.

NOISE

SHORT-TERM CONSTRUCTION NOISE AND VIBRATION IMPACTS

5.7-1a Construction activities shall be limited to the hours of 7:00 a.m. ~~and~~ to 7:00 p.m. Monday to Saturday and prohibited on Sundays and Federal Holidays.

5.7-1b All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, to the satisfaction of the County Engineer.

5.7-1c Stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receptors, to the satisfaction of the County Engineer.

5.7-1d Stockpiling and staging areas shall be located as far as practical from noise sensitive receptors during construction activities, to the satisfaction of the County Engineer.

LONG-TERM NOISE IMPACTS

5.7-2 No mitigation measures are recommended.

STATIONARY NOISE

5.7-3 No mitigation measures are recommended.

WATERCRAFT

5.7-4 No mitigation measures are recommended.

CUMULATIVE

5.7-5 No mitigation measures are recommended.

BIOLOGICAL RESOURCES

SPECIAL STATUS BIOLOGICAL RESOURCES

SPECIAL STATUS PLANTS

5.8-1a ~~Prior to vegetation clearing, grading, or other disturbance, the project site shall be surveyed during a year with precipitation at least 40 percent of average for the area to determine presence or absence of special status plant species and vegetation types. Surveys shall focus on listed special status vegetation types, and Threatened or Endangered, and CNPS List 1B and 2 species whose presence could not be determined during surveys due to lack of rainfall. The location and extent of special status species populations shall be mapped and the size of the populations accurately documented.~~

~~The project applicant shall pay compensation for the loss of special status botanical resources identified on the project site by the survey by funding the purchase and management of off-site habitat through contributions to a fund established by the California Wildlife Foundation on behalf of the CDFG. The California Wildlife Foundation is an independent 501(c)3 nonprofit corporation founded to assist the CDFG and other governmental agencies in the management of funds and mitigation banks designed to offset the impact of development on California's native flora and fauna. Off-site habitat containing the same species as those identified within resources impacted by the proposed project shall be purchased at a ratio agreed upon by the County of San Bernardino, San Bernardino National Forest, USFWS, and CDFG. The typical mitigation ratio is 3:1 (i.e., three acres of habitat purchased for preservation for each acre impacted by development).~~

~~If additional surveys during a year with precipitation at least 40 percent of average do not encounter additional special status plant resources, the project applicant is responsible for the mitigation of a minimum of 11.8 acres of pebble plain and open Jeffrey pine forest in the western half of the project site that is known to be occupied by the federally-listed Threatened ash-gray Indian paintbrush (i.e., would be required to fund the purchase of 35.4 acres of offsite habitat from the California Wildlife Foundation if the agreed mitigation ratio is 3:1).~~

Prior to vegetation clearing, grading, or other disturbance, the project site shall be surveyed during a year with precipitation at least 40 percent of average for the area to determine presence or absence of special status plant species and vegetation types. Surveys shall focus on special status vegetation types, and Threatened or Endangered, and CNPS List 1B and 2 species whose presence could not be determined during surveys due to lack of rainfall. The location and extent of special status species populations shall be mapped and the size of the populations accurately documented. Pebble plain habitat acreages will be recalculated following

the survey using criteria established by the Habitat Management Guide for Pebble Plain Habitat on the National Forest System (2002).

Should avoidance/retention on-site of the 4.91 acres of Pebble Plain habitat in permanent open space under a Conservation Easement Agreement not occur, the Project Applicant shall pay compensation for the loss of special status botanical resources identified on the project site during the survey by funding the purchase, establishment of a conservation easement, and management of off-site habitat within the conservation easement by an entity approved by the CDFG. Off-site habitat containing the same species as those identified within resources impacted by the proposed project shall be purchased at a ratio of 3:1 (i.e., three acres of habitat purchased for preservation for each acre impacted by development). Prior to the initiation of clearing or grading activities on the project site, the conservation easement will be established, the management entity will be approved by the CDFG, and a non-wasting endowment will be established for the monitoring and management of the preservation site by the management entity in perpetuity.

If additional surveys during a year with precipitation at least 40 percent of average do not encounter additional special status plant resources, the Project Applicant is responsible for mitigating impacts to a minimum of 11.8-acres of pebble plain and open Jeffrey pine forest in the western half of the project site that is known to be occupied by the Federally-listed Threatened ash-gray Indian paintbrush. As such, the applicant would be required to fund the purchase and maintenance of 35.4-acres of offsite pebble plain and open Jeffrey pine forest habitat that contains special status plant species, including Ash-gray Indian paintbrush and others known to occur on the site.

SPECIAL STATUS WILDLIFE

5.8-1b Trees identified on Exhibits 3 and 4 of the Bald Eagle Survey Report (Appendix E, see attached) as eagle perch locations shall be preserved in place upon project completion and shall not be removed under any circumstances. Any development that may occur within the project site and in the individual lots must avoid impacts to these trees and their root structures. All construction or landscaping improvements, including irrigation, will be prohibited on or around the exposed root structures or within the dripline of these trees. These restrictions on development of the individual tentative tracts must be clearly presented and explained to any potential prospective developers and/or homeowners prior to assumption of title and close of escrow. This measure shall be identified as a Note on the Composite Development Plan.

5.8-1c Prior to vegetation clearing, grading, or other disturbance, the project site shall be surveyed to identify all large trees (i.e., greater than 20-inches in diameter at 4.5 feet from the ground) within 600 feet from the high water line. Trees identified on the project site as having a diameter in excess of 20-inches at four feet from the ground within 600 feet of the shoreline

shall be documented and tagged. Any development that may occur within the project site and in the individual lots must avoid impacts to tagged trees and their root structures. All construction or landscaping improvements, including irrigation, will be prohibited on or around the exposed root structures or within the dripline of these trees. These restrictions on development of the individual tentative tracts must be clearly presented and explained to any potential prospective developers and/or homeowners prior to assumption of title and close of escrow. This measure shall be identified as a Note on the Composite Development Plan.

5.8-1d Seven days prior to the onset of construction activities, a qualified biologist shall survey within the limits of project disturbance for the presence of any active raptor nests. Any nest found during survey efforts shall be mapped on the construction plans. If no active nests are found, no further mitigation would be required. Results of the surveys shall be provided to the CDFG.

If nesting activity is present at any raptor nest site, the active site shall be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code. Nesting activity for raptors in the region of the project site normally occurs from February 1 to June 30. To protect any nest site, the following restrictions on construction are required between February 1 and June 30 (or until nests are no longer active as determined by a qualified biologist): (1) clearing limits shall be established a minimum of 300 feet in any direction from any occupied nest and (2) access and surveying shall not be allowed within 200 feet of any occupied nest. Any encroachment into the 300/200 foot buffer area around the known nest shall only be allowed if it is determined by a qualified biologist that the proposed activity shall not disturb the nest occupants. Construction during the nesting season can occur only at the sites if a qualified biologist has determined that fledglings have left the nest.

5.8-1e Vegetation removal, clearing, and grading on the project site shall be performed outside of the breeding and nesting season (between March and September) to minimize the effects of these activities on breeding activities of migratory birds and other species.

5.8-1f The use of the boat dock for motorized boating shall be prohibited between the dates of December 1 and April 1. No motorized boats shall be allowed to launch or moor in the vicinity of the boat dock at any time during this period. This restriction shall be clearly displayed on signage at the entrance to the parking lot and on the boat dock visible from both land and water. This requirement shall also be published in the Homeowner's Association CC&Rs.

~~**SPECIAL STATUS VEGETATION TYPES**~~

~~5.8-1g Exterior construction shall be prohibited between the dates of December 1 and April 1 (of each year). Significant impacts to pebble plain habitat can be mitigated to a less than significant level through off-site preservation. The project applicant shall pay compensation for the loss of special status botanical resources identified on the site, by the survey, by contributing to the funding of purchase and management of off-site habitat. The Applicant shall acquire habitat in the Big Bear Valley and dedicate to the CDFG or suitable conservation organization. The California Wildlife Foundation is an independent 501(c)3 nonprofit corporation founded to assist the CDFG and other governmental agencies in the management of funds and mitigation banks designed to offset the impact of development on California's native flora and fauna. Off-site habitat shall be purchased at a ratio agreed upon by the County of San Bernardino, San Bernardino National Forest, USFWS, and CDFG. The typical mitigation ratio is 3:1 (i.e., three acres of habitat purchased for preservation for each acre impacted by development. An area containing no less than 2.1 acres of pebble plain habitat in an area located adjacent to other open space areas within the project vicinity shall be preserved in perpetuity. The preserved areas shall be protected from future development through a conservation easement or other appropriate mechanism.~~

SENSITIVE NATURAL COMMUNITIES/HABITATS

WILDLIFE IMPACTS/INDIRECT IMPACTS

5.8-2a Street lamps on the project site shall not exceed 20 feet in height, shall be fully shielded to focus light onto the street surface and shall avoid any lighting spillover onto adjacent open space or properties. Furthermore, street lights shall utilize low color temperature lighting (e.g., red or orange).

5.8-2b Outdoor lighting for proposed homes on the individual tentative tracts shall not exceed 1,000 lumens. Furthermore, residential outdoor lighting shall not exceed 20 feet in height and must be shielded and focused downward to avoid lighting spillover onto adjacent open space or properties. These restrictions on outdoor lighting of the individual tentative tracts must be clearly presented and explained to any potential prospective developers and/or homeowners prior to assumption of title and close of escrow. This requirement shall also be published in the Homeowner's Association CC&Rs.

5.8-2c To limit the amount of human disturbance ~~to~~ on adjacent natural open space areas, signs shall be posted along the northeastern and eastern perimeter of the project site where the property boundary abuts open space~~ directing people to keep out of the adjacent natural open space areas and to keep dogs leashed in areas adjacent to natural open space areas. This requirement shall be published in the Homeowner~~

~~Association CC&Rs~~ with the following statement: "Sensitive plant and wildlife habitat. Please use designated trails and keep pets on a leash at all times."

In addition, a requirement stating that residents shall keep out of adjacent open space areas to the north with the exception of designated trails will be published in the Homeowner Association CC&Rs and a map of designated hiking trails will be provided to all residents.

5.8-2d Prior to ~~the issuance of individual building permits, landscaping designs~~ recordation of the final map, a landscaping plan for the entire tract shall be prepared (inclusive of a plant palette) with native trees and plant species, and, shall be submitted to the County of San Bernardino for review and approval by a qualified biologist. The review shall determine that no non-native or invasive plant species are to be used in the proposed landscaping. The biologist should suggest appropriate native plant substitutes. A note shall be placed on the Composite Development Plan indicating that all proposed landscaping (including landscaping on individual lots) shall conform with the overall approved tract map landscaping plan. A requirement shall be included stating that residents shall include a restriction of the use of tree and plant species to only native trees/plants approved per the overall tract map landscaping plan, the Homeowner Association CC&Rs shall also restrict (individual lot owners) to use only native tree and plant species approved per the overall tract map landscaping plan.

5.8-2e ~~Garages with automatic door openers shall be required. No exterior construction shall occur between December 1 and April 1, when bald eagles are present~~. Garages with automatic door openers shall be required. No exterior construction, grading or vegetation clearing shall be permitted between December 1 and April 1, which is the wintering period for bald eagles (i.e., the season when bald eagles are present in the Big Bear area).

Also refer to mitigation measures 5.8-1a to 5.8-1f.

JURISDICTIONAL WATERS

5.8-3 ~~No mitigation measures are recommended.~~ Per the direction of the California Department of Fish and Game, all unavoidable impacts to State and Federal jurisdictional lakes, streams, and associated habitat shall be compensated for with the creation and/or restoration of in-kind habitat on-site and/or off-site at a minimum 3:1 replacement-to-impact ratio. Additional requirements may be required through the permitting process depending on the quality of habitat impacted, project design and other factors.

WILDLIFE MOVEMENT

5.8-4 No mitigation measures are recommended.

REGIONAL AND LOCAL POLICIES/PLANS

5.8-5 No mitigation measures are recommended.

CUMULATIVE

5.8-6 No mitigation measures are recommended.

CULTURAL RESOURCES

ARCHAEOLOGICAL/HISTORICAL RESOURCES

5.9-1 Project-related grading, grubbing, trenching, excavations, and/or other earth-moving activities in the project area shall be monitored by a qualified archaeologist. In the event that a material of potential cultural significance is uncovered during such activities on the project site, all earth-moving activities in the project area shall cease and the archeologist shall evaluate the quality and significance of the material. Earth-moving activities shall not continue in the area where a material of potential cultural significance is uncovered until resources have been completely removed by the archaeologist and recorded as appropriate.

PALEONTOLOGICAL RESOURCES

5.9-2a Grading shall be monitored during excavation in areas identified as likely to contain paleontologic resources by a qualified paleontological monitor. Monitoring shall be accomplished for any undisturbed subsurface older alluvium, which might be present in the subsurface. The monitor shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens.

5.9-2b Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.

5.9-2c Identification and curation of specimens into a museum repository with permanent retrievable storage shall occur for paleontological resources.

5.9-2d A report of findings shall be prepared with an appended itemized inventory of specimens. The report shall include pertinent discussion of the significance of all recovered resources where appropriate. The report and inventory when submitted to the appropriate Lead Agency, shall signify completion of the program to mitigate impacts to paleontologic resources.

BURIAL SITES

5.9-3 In the event human remains are discovered during grading/ construction activities, work shall cease in the immediate area of the discovery and the Project Applicant shall comply with the requirements and procedures set forth in Section 5097.98 of the Public Resources Code, including notification of the County Coroner, notification of the Native American Heritage Commission, and consultation with the individual identified by the Native American Heritage Commission to be the "most likely descendent."

CUMULATIVE

5.9-4 No mitigation measures are recommended.

GEOLOGY AND SOILS

SLOPE STABILITY

5.10-1 The stability of ~~S~~south facing cut slopes shall be analyzed as part of the design-level geotechnical investigation. ~~u~~Utilize~~e~~ing 2:1 buttressed slopes using on site native soil materials, or ~~by~~ constructing geotextile-reinforced soil buttresses ~~where~~for planned unstable cut slopes ~~are planned~~ are typical engineering designs for stabilizing slopes. Either of these methods, or other methods must be approved by the San Bernardino County Department of Building and Safety~~Geologist for slope reinforcement may be utilized~~.

SOIL EROSION

5.10-2a Due to the potential for erosion associated with younger alluvial deposits within the two major on-site stream channels, increased surface drainage quantities associated with development on-site shall be directed away from the stream channels.

5.10-2b Prior to the issuance of Grading Permits, the Project Applicant shall prepare a Soil Erosion and Sedimentation Plan for submittal and approval by the County Building and Safety Department.

GROUND SHAKING

5.10-3 Engineering design for all structures and roadways shall be based on the 2001 California Uniform Building Code. Construction plans shall be in accordance with seismic design standards set forth by the County's Development Code and Uniform Building Code.

SEICHE

5.10-4 Residential structures shall be located in areas which provide a minimum of five feet of freeboard above the high water line for any structures.

EXPANSIVE SOILS

5.10-5 Prior to grading permit issuance, ~~geologic analysis/studies shall be required including 1) a~~ a quantitative geotechnical analysis and~~of liquefaction, 2) a~~ design-level geotechnical engineering report shall be required and submitted to the County of San Bernardino Department of Building and Safety for their approval. ~~and 3) a design level engineering geology report.~~

CUMULATIVE

5.10-6 No mitigation measures are recommended.

HYDROLOGY AND DRAINAGE

DRAINAGE AND RUNOFF

5.11-1 The proposed cross culverts shall be sized for 100-year burn and bulking flow rates. The burn and bulking method would increase the runoff from the natural areas. The method provided in the Los Angeles County Hydrology Manual is recommended. In addition, the cross culverts shall all be designed with headwalls to prevent CMP crushing, and shall be maintained adequately.

GROUNDWATER

~~5.11-2 Based upon the technical analysis presented, a potential groundwater overdraft condition would occur and no additional mitigation measures have been identified.~~

5.11-2a Within three months of project approval, the Project Applicant shall submit a plan for a detailed geohydrologic investigation. The plan must present the possible sources of groundwater selected for the project and the methodology proposed to investigate those sources. If the on-site wells are to be utilized to serve this project, it must be determined if either could draw water from Big Bear Lake. The plan must be prepared by a California Registered Geologist.

5.11-2b Within six months of plan approval, the Project Applicant shall submit the results of the geohydrologic investigation. The report must be prepared by a California Registered Geologist.

5.11-2c Concurrently or within three months of approval by the geohydrologic report, the Project Applicant shall submit a groundwater monitoring plan

in accordance with San Bernardino County's "Guidelines for Preparation of a Groundwater Monitoring Plan." The plan must be prepared by a California Registered Geologist.

WATER QUALITY - CONSTRUCTION

5.11-3 Prior to Grading Permit issuance and as part of the Project's compliance with the NPDES requirements, a Notice of Intent (NOI) shall be prepared and submitted to the Santa Ana Regional Water Quality Control Board providing notification and intent to comply with the State of California general permit. Also, a Storm Water Pollution Prevention Plan (SWPPP) shall be completed for the construction activities on-site. A copy of the SWPPP shall be available and implemented at the construction-site at all times. The SWPPP shall outline the source control and/or treatment control BMPs to avoid or mitigate runoff pollutants at the construction-site to the "maximum extent practicable." At a minimum, the following shall be implemented from the *California Storm Water Best Management Practice Handbook - Construction Activity:*

- *CA 1 Dewatering Operations* – This operation requires the use of sediment controls to prevent or reduce the discharge of pollutants to storm water from dewatering operations.
- *CA 2 Paving Operations* – Prevent or reduce the runoff of pollutants from paving operations by proper storage of materials, protecting storm drain facilities during construction, and training employees.
- *CA 3 Structural Construction and Painting* – Keep site and area clean and orderly, use erosion control, use proper storage facilities, use safe products and train employees to prevent and reduce pollutant discharge to storm water facilities from construction and painting.
- *CA 10 Material Delivery and Storage* – Minimize the storage of hazardous materials on-site. If stored on-site, keep in designated areas, install secondary containment, conduct regular inspections and train employees.
- *CA 11 Material Use* – Prevent and reduce the discharge of pesticides, herbicides, fertilizers, detergents, plaster, petroleum products and other hazardous materials from entering the storm water.
- *CA 20 Solid Waste Management* – This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas.
- *CA 21 Hazardous Waste Management* – This BMP describes the requirements to properly design and maintain waste areas.

- *CA 23 Concrete Waste Management* – Prevent and reduce pollutant discharge to storm water from concrete waste by performing on and off-site washouts in designated areas and training employees and consultants.

- *CA 24 Sanitary Septic Water Management* – Provide convenient, well-maintained facilities, and arrange regular service and disposal of sanitary waste.

- *CA 30 Vehicle and Equipment Cleaning* – Use off-site facilities or wash in designated areas to reduce pollutant discharge into the storm drain facilities.

- *CA 31 Vehicle and Equipment Fueling* – Use off-site facilities or designated areas with enclosures or coverings to reduce pollutant discharge into the storm drain facilities.

- *CA 32 Vehicle and Equipment Maintenance* – Use off-site facilities or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities. In addition, run a "dry site" to prevent pollution discharge into storm drains.

- *CA 40 Employee and Subcontractor Training* – Have a training session for employees and subcontractors to understand the need for implementation and usage of BMPs.

- *ESC 2 Preservation of Existing Vegetation* – Minimize the removal of existing trees and shrubs since they serve as erosion control.

- *ESC 10 Seeding and Planting* – Provide soil stability by planting and seeding grasses, trees, shrubs, vines, and ground cover.

- *ESC 11 Mulching* – Stabilize cleared or freshly seeded areas with mulch.

- *ESC 20 Geotextiles and Mats* – Natural or synthetics material can be used for soil stability.

- *ESC Dust Control* – Reduce wind erosion and dust generated by construction activities by using dust control measures.

- *ESC 23 Construction Road Stabilization* – All on-site vehicle transport routes shall be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.

- *ESC 24* – Stabilized Construction Entrance – Stabilize the entrance pad to the construction area to reduce amount of sediment tracked off-site.

- *ESC 30 Earth Dikes* – Construct earth dikes of compacted soil to divert runoff or channel water to a desired location.

- *ESC 31 Temporary Drains and Swales* – Use temporary drains and swales to divert off-site runoff around the construction-site and stabilized areas and to direct it into sediment basins or traps.

- *ESC 40 Outlet Protection* – Use rock or grouted rock at outlet pipes to prevent scouring of soil caused by high velocities.

- *ESC 41 Check Dams* – Use check dams to reduce velocities of concentrated flows, thereby reducing erosion and promoting sedimentation behind the dams. Check dams are small and placed across swales and drainage ditches.

- *ESC 50 Silt Fence* – Composed of filter fabric, these are entrenched, attached to support poles, and sometimes backed by wire fence support. Silt fences promote sedimentation behind the fence of sediment-laden water.

- *ESC 51 Straw Bale Barrier* – Place straw bales end to end in a level contour in a shallow trench and stake them in place. The bales detain runoff and promote sedimentation.

- *ESC 52 Sand Bag Barriers* – By stacking sand bags on a level contour, a barrier is created to detain sediment-laden water. The barrier promotes sedimentation.

- *ESC 53 Brush or Rock Filter* – Made of 0.75 to 3-inch diameter rocks placed on a level contour or composed of brush wrapped in filter cloth and staked to the toe of the slope provides a sediment trap.

- *ESC 54 Storm Drain Inlet Protection* – Devices that remove sediment from sediment laden storm water before entering the storm drain inlet or catch basin.

- *ESC 55 Sediment Trap* – A sediment trap is a small, excavated, or bermed area where runoff for small drainage areas can pass through allowing sediment to settle out.

WATER QUALITY – LONG-TERM

5.11-4a Prior to Grading Permit issuance, a Water Quality Management Plan shall be developed and shall include both Non-Structural and Source Control BMPs. The WQMP shall conform to the San Bernardino County Draft NPDES permit and WQMP standards. The following are the minimum required controls to be implemented as a part of the *Water Quality Management Plan (WQMP) for Urban Runoff.*

- *Education for Property Owners, Tenants and Occupations* – The Property Owners Association is required to provide awareness educational material, including information provided by San Bernardino County. The materials shall include a description of chemicals that should be limited to the property and proper disposal, including prohibition of hosing waste directly to gutters, catch basins, storm drains or the lake.

- *Activity Restrictions* – The developer shall prepare conditions, covenants and restriction of the protection of surface water quality.

- *Common Area Landscape Management* – For the common landscape areas on-going maintenance shall occur consistent with County Administrative Design Guidelines or city equivalent, plus fertilizer and pesticide usage consistent with the instructions contained on product labels and with regulation administered by the State Department of Pesticide Regulation or county equivalent.

- *Common Area Catch Basin Inspection* – Property Owners Associations shall have privately owned catch basins cleaned and maintained, as needed. These are intended to prevent sediment, garden waste, trash and other pollutants from entering the public streets and storm drain systems.

- *Common Area Litter Control* – POAs shall be required to implement trash management and litter control procedures to minimize pollution to drainage waters.

- *Street Sweeping Private Streets and Parking Lots* – Streets and Parking lots shall be swept as needed, to prevent sediment, garden waste, trash and other pollutants from entering public streets and storm drain systems.

The following controls from the *California Storm Water Best Management Practice Handbook - Municipal* shall be employed:

- *SC10 Housekeeping Practices* – This entails practices such as cleaning up spills, proper disposal of certain substances and wise application of chemicals.

- *SC32 Used Oil Recycling* – May apply to maintenance and security vehicles.

- *SC72 Vegetation Controls* – Vegetation control typically includes chemical (herbicide) application and mechanical methods. Chemical methods are discussed in SC10. Mechanical methods include leaving existing vegetation, cutting less frequently, hand cutting, planting low maintenance vegetation, collecting and properly disposing of clippings and cuttings, and educating employees and the public.

- *SC73 Storm Drain Flushing* – Although general storm drain gradients are sufficiently steep for self-cleansing, visual inspection may reveal a buildup of sediment and other pollutants at the inlets or outlets, in which case flushing may be advisable.

5.11-4b The Water Quality Management Plan (WQMP) shall include Structural or Treatment BMPs. The structural BMPs utilized shall focus on meeting potential TMDL requirements for noxious aquatic plants, nutrients, sedimentation and siltation. The structural BMPs shall conform to the San Bernardino County NPDES permit and the San Bernardino WQMP standards.

Consistent with the WQMP guidelines contained in the *Draft National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements* for San Bernardino County, Structural BMPs shall be required for the proposed Project. They shall be sized to comply with one of the following numeric sizing criteria or be considered by the permittees to provide equivalent or better treatment.

Volume Based BMPs shall be designed to infiltrate or treat either:

- The volume of runoff produced from the 85th percentile 24-hour storm event, as determined from the local historical rainfall record; or

- The volume of the annual runoff produced by the 85th percentile 24-hours rainfall event, determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998); or

- The volume of annual runoff based on unit basin storage volume, to achieve 80% or more volume treatment by the method recommended in California Stormwater Best Management Practice Handbook – Industrial/Commercial (1993); or

- The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event.

OR

Flow –based BMPs shall be designed to infiltrate or treat either:

- The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour; or

- The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or

- The maximum flow rate of runoff, as determined from the local historical rainfall record that achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two.

The following are the minimum required controls to be implemented as a part of the *Water Quality Management Plan (WQMP) for Urban Runoff.*

- *Control of Impervious Runoff* – Surface runoff shall be directed to landscaped areas or pervious areas.

- *Common Area Efficient Irrigation* – Physical implementation of the landscape plan consistent with County Administrative Design Guidelines or city equivalent, which may include provision of water sensors, programmable irrigation timers, etc.

- *Common Area Runoff-Minimizing Landscape Design* – Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration.

- *Catch Basin Stenciling* – "No Dumping – Flows to Lake" or equivalent effective phrase shall be stenciled on catch basins to alert the public as to the destination of pollutant discharging into storm drain.

- *Debris Posts* – These shall be installed to prevent large floatable debris from entering the storm drains. They shall be placed upstream of the cross culverts.

- *Inlet Trash Racks* – These shall be installed where appropriate to reduce intake and transport through the storm drain system of large floatable debris. Trash racks shall be provided where drainage from open areas enters storm drain or cross culverts.

5.11-4c Storm water treatment under the NPDES Permit and the future TMDL requirements shall include the construction of treatment BMPs. Treatment BMPs appropriate for on-site use shall include infiltration trenches and basins, swales, inlet filtration, and/or water quality basins. All storm water runoff shall be treated before leaving the site to reduce pollutants in Big Bear Lake.

Infiltration Trenches and Basins

Infiltration Trenches and/or Basins shall be used on site to meet potential future TMDLs for noxious aquatic plants and nutrients. Infiltration trenches and basins treat storm water runoff through filtration. A typical infiltration trench is essentially an excavated trench, that is lined with filter fabric and backfilled with stones. Depth of the infiltration trench shall range from three to eight feet and shall be located in areas with permeable soils, and water table and bedrock depth situated well below the bottom of the trench. Trenches shall not be used to trap coarse sediments since large sediment would likely clog the trench. Grass

buffers may be installed to capture sediment before it enters the trench to minimize clogging. Infiltration basins shall be used for drainage areas between five and 50 acres. Infiltration basins shall be either in-line or off-line, and may treat different volumes such as the water quality volume or the 2-year or 10-year storm.

Swales

The project shall implement either vegetative swales, enhanced vegetated swales utilizing check dams and wide depressions, a series of small detention facilities designed similarly to a dry detention basin, or a combination of these treatment methods into a treatment train (series of Structural BMPs). The Water Quality Management Plan shall address treatment for the Project to assure that runoff from the site is treated to the "maximum extent practicable".

The swales shall be treated as water quality features and shall be maintained differently than grass areas. Specifically, pesticides, herbicide, and fertilizers, which may be used on the grass areas, shall not be used in the vegetation swales.

Filtration

Filtration shall be implemented as a treatment method and shall use drop-in infiltration devices or inline devices.

Drop-infiltration devices at all curb inlets within the internal parking lots shall be implemented to provide potential pollutant removal. Existing examples of these filtration devices include the Drain Pac Storm Drain Inserts and Fossil Filters. These types of devices are efficient at removing oil and grease, debris, and suspended solids from treated waters. Some of these devices have also exhibited high efficiencies at removing heavy metals and other pollutants.

Inline devices suggested for use onsite include the Continuous Deflection Separator (CDS® unit). Once the runoff has entered the storm drain, an in-line diversion would direct the treatment flow to a CDS® unit. The CDS® unit is a non-blocking, non-mechanical screening system, which would provide a second line of defense for solids removal. Adsorption materials can be added within the CDS® unit to aid in the removal of oil and grease. The treated flow will exit the CDS® unit and continue downstream.

To assure the efficiency of these filtration devices, monitoring shall be conducted. The use of street sweeps on the parking lots and streets shall aid in reducing the amounts of sediment and debris that flow through the devices. This will extend the effectiveness of the devices during a storm and will lower the frequency of required maintenance. The devices shall be checked and cleaned, if necessary, once a month during the

rainy season, following any precipitation and at the end of the dry season prior to the first precipitation event of the rainy season.

Consideration shall be given to using these filtration units in other areas besides the parking lot inlets. Another potential location is at the downstream end of the tributary pipes that feed the discharge point. Siting these units at a downstream point would allow for the treatment of a greater amount of runoff.

CUMULATIVE

5.11-5 No mitigation measures are recommended.

9.0 Inventory of Significance After Mitigation

9.0 INVENTORY OF SIGNIFICANCE AFTER MITIGATION

LAND USE AND RELEVANT PLANNING

No unavoidable significant impacts related to Land Use and Relevant Planning have been identified following compliance with the San Bernardino County General Plan and Development Code policies and standards.

RECREATION

No significant impacts related to Recreational facilities have been identified in this Section.

PUBLIC SERVICES AND UTILITIES

Due to the inability of water providers to confirm service to the project, project as well as cumulative impacts are concluded as significant and unavoidable. This conclusion is further supported by the significant and unavoidable conclusion cited in Section 5.11, *Hydrology and Drainage*, due to inconclusive testing of potential overdraft conditions for the groundwater basin associated with the North Shore Hydrologic Subunit.

If the County of San Bernardino approves the project, the County shall be required to adopt findings in accordance with Section 15091 of the CEQA Guidelines and prepare a Statement of Overriding Considerations in accordance with Section 15093 of the CEQA Guidelines.

No additional unavoidable significant impacts related to public services and utilities have been identified following implementation of the recommended mitigation measures and compliance with applicable County, service or utility provider requirements, County Codes and Ordinances.

AESTHETICS/LIGHT AND GLARE

Significant and unavoidable impacts related to Aesthetics/Light and Glare have been identified for viewshed alterations involving existing residents to the north, east and west of the project site. Additionally, significant and unavoidable impacts have been identified for views from State Route 38, a scenic highway, to the south and from the south shore of Big Bear Lake. If the County of San Bernardino approves the project, the County shall be required to cite their findings in accordance with Section 15091 of CEQA and prepare a Statement of Overriding Considerations in accordance with section 15093 of CEQA.

No additional significant impacts related to Aesthetic/Light and Glare have been identified following implementation of mitigation measures and/or compliance with applicable standards, requirements and/or policies by the County of San Bernardino.

TRAFFIC AND CIRCULATION

Following implementation of recommended mitigation measures, Traffic and Circulation impacts would be reduced to a less than significant level.

AIR QUALITY

The following air quality impacts would remain significant and unavoidable following mitigation:

- ROG and NO_X from construction activities;
- Project Operations: Exceedance of State and/or Federal emission levels (ROG, CO and PM_{10}) from project operations; and
- Project implementation would result in a significant unavoidable impact with respect to consistency with the AQMP.

If the County of San Bernardino approves the project, the County shall be required to cite their findings in accordance with Section 15091 of CEQA and prepare a Statement of Overriding Considerations in accordance with Section 15093 of CEQA.

NOISE

No unavoidable significant impacts related to noise have been identified following implementation of recommended mitigation measures and compliance with applicable requirements set forth by the County of San Bernardino and the Big Bear Municipal Water District.

BIOLOGICAL RESOURCES

Significant and unavoidable impacts related Biological Resources have been identified for impacts to Bald Eagle populations. If the County of San Bernardino approves the project, the County shall be required to cite their findings in accordance with Section 15091 of CEQA and prepare a Statement of Overriding Considerations in accordance with section 15093 of CEQA.

No additional significant impacts related to Biological Resources have been identified following implementation of mitigation measures and/or compliance with applicable standards, requirements and/or policies by the County of San Bernardino.

CULTURAL RESOURCES

No significant impacts related to Cultural Resources have been identified following implementation of mitigation measures referenced in this Section.

GEOLOGY AND SOILS

No significant impacts related to Geology and Soils have been identified following implementation of mitigation measures and/or compliance with applicable standards,

policies and/or County of San Bernardino Development Code and standards set forth in the Uniform Building Code.

HYDROLOGY AND DRAINAGE

Due to inconclusive testing of potential overdraft conditions for the groundwater basin associated with the North Shore Hydrologic Subunit, project and cumulative impacts are concluded to be significant and unavoidable.

If the County of San Bernardino approves the project, the County shall be required to adopt findings in accordance with Section 15091 of the CEQA Guidelines and prepare a Statement of Overriding Considerations in accordance with Section 15093 of the CEQA Guidelines.

No additional significant impacts related to hydrology and water quality have been identified following implementation of the recommended mitigation measures and/or through regulatory compliance.

10.0 Effects Found Not To Be Significant

10.0 EFFECTS FOUND NOT TO BE SIGNIFICANT

The County of San Bernardino conducted an Initial Study in February, 2002 to determine significant effects of the project. In the course of this evaluation, certain impacts of the project were found to be less than significant due to the inability of a project of this scope to create such impacts or the absence of project characteristics producing effects of this type. The effects determined not to be significant are not required to be included in primary analysis sections of the Draft EIR. In accordance with CEQA Guidelines Section 15128, the following section provides a brief description of potential impacts found to be less than significant. A copy of the Initial Study is found in Appendix 15.1.

AGRICULTURAL RESOURCES

- *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

- *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*

- *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?*

The project site is not known to contain soils that have been designated as prime or unique agricultural soils and agricultural activities have not historically occurred at the project site. The project would not adversely impact prime or locally important agriculture as none occur within the project area. The entire site is zoned residential and is not under a Williamson Act contract. No further discussion of agricultural resources is required in an EIR.

BIOLOGICAL RESOURCES

- *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

No habitat conservation plans exist in the project area; this project will therefore not pose any conflict with existing plans for biological resource conservation.

GEOLOGY AND SOILS

- *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

The proposed project does not include the use of septic tanks or alternative wastewater disposal systems.

HAZARDS AND HAZARDOUS MATERIALS

- *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

- *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

- *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

The project is a residential subdivision that includes the development of a boat dock for use by the residents of the development project. The storage and use of boats and fuel would be typical of any residential land use. The boat dock would not be an improved marina or include the storage of any fuels on-site. No other hazardous materials would be stored on-site or transported through the property as a result of the subdivision. The project would not require additional analysis of hazardous materials in an EIR.

- *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, would it create a significant hazard to the public or the environment?*

The project site is not identified by the County of San Bernardino as a hazardous waste site (Map "Identified Hazardous Waste Sites," December 1, 1994). The County Fire Department HazMat Division responded to a Project Notice for Tentative Tract No. 16136 that "No hazardous materials conditions apply to this project" (July 24, 2001).

- *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*

- *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

The project is not located within an airport land use plan or within the flight path of the Big Bear Airport, which is located 3.5 miles to the east. There are no nearby airstrips. The proposed residential development would not pose a safety hazard for any residents or other visitors to the site resulting from proximity of the Big Bear airport.

LAND USE AND PLANNING

- *Physically divide an established community?*

The project lies within the community of Fawnskin. Fawnskin is primarily developed to the west of the project site, with scattered residences south and east of the site. Because the project and the entire community of Fawnskin is accessible via State Highway 38, there will be no physical division of the existing community.

- *Conflict with any applicable habitat conservation plan or natural community conservation plan?*

No habitat conservation or natural community conservation plans exist in the project area; this project will therefore not pose any conflict with existing plans for conservation.

MINERAL RESOURCES

- *Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

- *Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

The site is not within an area designated by the State for locally important mineral resources and it does not lie within the County of San Bernardino's Mineral Resource Zone. The San Bernardino Mountains however are rich in mineral resources; known occurrences include gold, silver, lead, zinc, iron, manganese, and tungsten. Claims have been operated extensively but most have been non productive for at least 15 years. Just north of the project site is Holcomb Valley where William F. Holcomb discovered placer gold in May 1860. The mapped gold placer area begins approximately 1.5 miles north of the project site's northeastern boundary and the nearest placer gold claim (Wayne Placers) is located in section 8, approximately one mile to the northeast. One-half mile to the northeast is a site (Polique Canyon) identified as metal prospect or nonmetallic deposit, which has not been operated. All other mapped claims, mines, and quarries are further to the north of the project site *(Geology of the San Bernardino Mountains North of Big Bear Lake, California, pp 51 – 67).* No impacts to mineral resources would occur as a result of the project's implementation.

NOISE

- *For a project located within an airport land use plan or, where such a plan has bet been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

- *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

The site is not within proximity to an airport or airstrip. The Big Bear City airport is located approximately 3 miles to the east of the Project site. No impact will occur from aviation noise.

POPULATION AND HOUSING

- *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

- *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

The project is a 95-lot residential development on currently vacant land. There would be no displacement of existing housing or people

TRANSPORTATION/TRAFFIC

- *Result in inadequate parking capacity?*

There is no public parking associated with the development project. Each individual lot would have typical residential parking provisions.

AIR TRAFFIC PATTERNS

- *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.*

No changes to air traffic patterns would result from the proposed residential subdivision project.

- *Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).*

According to the Initial Study, the residential development would have no impact on existing public transportation systems or programs. No bike lanes exist in the vicinity of State Highway 38.

11.0 Organizations and Persons Consulted

11.0 ORGANIZATIONS AND PERSONS CONSULTED

LEAD AGENCY

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Hicks and Hartwick – Representative

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Victorville, California 92392-0919

Mr. Timothy E. Cook, Engineering Manager – Southern California Division

12.0 Bibliography

12.0 BIBLIOGRAPHY

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13.0 Mitigation Monitoring Program

13.0 MITIGATION MONITORING PROGRAM

Section 2.0 of this EIR identifies the mitigation measures that will be implemented to reduce the impacts associated with the Moon Camp Project. The California Environment Quality Act (CEQA) was amended in 1989 to add Section 21081.6, which requires a public agency to adopt a monitoring and reporting program for assessing and ensuring compliance with any required mitigation measures applied to proposed development. As stated in Section 21081.6 of the Public Resources Code,

> *". . . the public agency shall adopt a reporting or monitoring program for the changes to the project which it has adopted, or made a condition of project approval, in order to mitigate or avoid significant effects on the environment."*

Section 21081.6 provides general guidelines for implementing mitigation monitoring programs and indicates that specific reporting and/or monitoring requirements, to be enforced during project implementation, shall be defined prior to final certification of the EIR.

The mitigation monitoring table below lists those mitigation measures that may be included as conditions of approval for the project. These measures correspond to those outlined in Section 2.0 and discussed in Section 5.0. To ensure that the mitigation measures are properly implemented, a monitoring program has been devised which identifies the timing and responsibility for monitoring each measure. The developer will have the responsibility for implementing the measures, and the various County of San Bernardino departments will have the primary responsibility for monitoring and reporting the implementation of the mitigation measures.

MITIGATION MEASURE:
RECREATION 5.2-2 The proposed project shall be conditioned to incorporate a pedal path easement along the south side of North Shore Drive prior to map recordation.
IMPLEMENTATION AND VERIFICATION:
1) Pedestrian easement must be incorporated into the site design. 2) Plans must be submitted to the Planning Division for review and approval. 3) The Planning Division shall verify compliance with the approved site design.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) The easement shall be included on the tract map prior to map recordation.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-1a The fire flow requirement shall be 1750 gpm @ 2 hours based on homes in the range of 3,600 to 4,800 square feet, and 2,000 gpm @ 2 hours for homes greater than 4,800 square feet.
IMPLEMENTATION AND VERIFICATION:
1) Submit evidence to the County of San Bernardino Fire Department that the water pressure meets the required fire flow. 2) The County of San Bernardino Fire Department shall verify compliance during site inspections. 3) Fire flow requirements during construction shall meet San Bernardino County Fire Department requirements.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to construction. 2) Prior to Occupancy. 3) During construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
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APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-1b All residences less than 5,000 square feet shall be subject to the standard fire sprinkler requirement (NFPA 13D). Homes above 5,000 square feet shall be subject to the NFPA13R sprinkler requirement.
IMPLEMENTATION AND VERIFICATION:
1) A note on the CDP shall list this requirement. 2) Submit evidence to the County Fire Department that all homes adhere to the respective sprinkler requirement. 3) The County of San Bernardino Fire Department shall verify compliance during site inspection.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of final map. 2) Prior to recordation of final map. 3) Prior to Occupancy.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-1c A Fuels Management Plan, with specifications, shall be prepared and subject to approval by the County of San Bernardino Fire Department and San Bernardino National Forest Service. The Fuels Management Plan shall implement the fire safety requirements of the FS1 Fire Safety Overlay District, including a 30-foot minimum setback requirement from the National Forest. The fuel modification zone shall be located entirely within the project's boundaries. The minimum fuel modification zone requirements may be greater in steeper areas (up to 300 ft.), as determined by the Fire Department.
IMPLEMENTATION AND VERIFICATION:
1) Submit a Fuels Management Plan to the County of San Bernardino Fire Department and San Bernardino National Forest Service. 2) The County of San Bernardino Fire Department and San Bernardino National Forest Service shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to recordation of the final map.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-1d Cul-de-sac lengths shall be no longer than 350 feet.
IMPLEMENTATION AND VERIFICATION:
1) Final map shall reflect compliance in road design. 2) Submit copy of building plans to the Building and Safety Division for approval. 3) The Building and Safety Division shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to the issuance of grading permits/road improvement plans. 3) Prior to Occupancy.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-1e A Homeowner's Association or a Special District shall be established to implement the Fuels Management Plan. The Fuels Management Plan shall specify any professional assistance, if necessary, to implement the action portion of the plan. The Plan shall determine if a Registered Professional Forrester is necessary for professional guidance to implement the Plan. The HOA or Special District is to be responsible for fuel modification in common areas.
IMPLEMENTATION AND VERIFICATION:
1) Establish a Homeowner's Association or Special District to implement the Fuels Management Plan. 2) The County of San Bernardino Fire Department and the San Bernardino National Forest Service shall verify compliance with the implementation of the Fuels Management Plan by the HOA or Special District.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to Recordation.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-5a Prior to issuance of building permits, the Project Applicant shall fund all on-site and off-site sewer improvements required to support development of the Project site. Such improvements shall be to the satisfaction of the BBARWA, and may include replacement of existing sewer lines rather than construction of parallel lines.
IMPLEMENTATION AND VERIFICATION:
1) Submit funding to BBARWA for all on-site and off-site sewer improvements required to support development of the Project site. 2) The applicant shall submit to the County Planning Division copies of funding payments to BBARWA for sewer improvements, thereby documenting/verifying the funding payments made.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of building permits. 2) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
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APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-5b Prior to issuance of building permits, the Project Applicant shall provide evidence to the County of San Bernardino that the BBARWA has sufficient transmission and treatment plant capacity to accept sewage flows from the Project site.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall submit evidence that BBARWA has sufficient capacity to accept flows from the Project site. 2) The Department of Special Districts and/or BBARWA shall verify compliance with the approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of grading permits. 2) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-5c The Project Applicant shall relocate the BBARWA 10" force main by installing new pipe (and/or bonding for the relocation) so that it is aligned within the south shoulder of the relocated State Route 38. The 10" force main shall be accessible for BBARWA to maintain and repair the sewer force main. The force main shall not pass through residential lots within the proposed tract.
IMPLEMENTATION AND VERIFICATION:
1) Relocate sewer mains to be aligned with SR-38; and/or bond for the relocation. 2) The Department of Special Districts and/ or BBARWA shall verify compliance with the improved plans.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the recordation of the final map. 2) Prior to the recordation of the final map.

SUBMITTED:	**DATE SUBMITTED:**
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APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-5d The Project Applicant shall install air release valves and vaults at high elevation points on the new force main to minimize odors. Air release valves shall be large enough to enclose 55-gallon drum carbon filters to control odors.
IMPLEMENTATION AND VERIFICATION:
1) Submit evidence to the Building and Safety Division that air-release valves have been installed. 2) The Building and Safety Division shall verify compliance with the approved plans.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to recordation of the final map.

SUBMITTED:	**DATE SUBMITTED:**
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APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-6a Values of production rates and pumping levels for on-site water supply wells shall be obtained through step-drawdown and constant rate pumping tests. Water samples shall be taken during the inspection for testing and analysis in accordance with standard requirements.
IMPLEMENTATION AND VERIFICATION:
1) Submit production rates and pumping levels through pumping tests to the Division of Environmental Health Services and the County Geologist. 2) Division of Environmental Health Services and the County Geologist shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the approval of building permits. 2) Prior to the approval of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-6b If either or both of the two existing on-site wells are utilized as a water source for the project, the Project Applicant shall equip the wells to meet DWP and/or County Special Districts Department standards and dedicate these facilities and water rights to the appropriate water purveyor. Within the proposed tract, no individual private irrigation wells shall be permitted.
IMPLEMENTATION AND VERIFICATION:
1) Wells must be equipped to meet DWP and/or County Special Districts Department standards. 2) Water rights must be dedicated to the appropriate water purveyor. 3) The DWP and/or County Special Districts shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the approval of building permits. 2) Prior to recordation of the final tract map. 3) Prior to the approval of building permits.

SUBMITTED:	**DATE SUBMITTED:**
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2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
PUBLIC SERVICES AND UTILITIES 5.3-6c After a determination has been made regarding the water purveyor, the Project Applicant shall advance fair-share funds to the appropriate water agency (CSA and/or DWP) towards constructing a new reservoir and pipeline improvement at Cline-Miller Reservoir (with an estimated project cost at $481,100). These facilities would be dedicated to the appropriate water agency.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall advance fair-share funds towards constructing a new reservoir and pipeline improvement. 2) These facilities shall be dedicated to the appropriate water agency. 3) The applicant shall submit evidence/verification documenting that fair-share funds have been deposited (to CSA and/or DWP) and that the facilities have been dedicated to the appropriate water agency.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of building permits. 2) Prior to the issuance of building permits. 3) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
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APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:

PUBLIC SERVICES AND UTILITIES

5.3-6d The following water conservation measures are the minimum measures that shall be complied with in conjunction with domestic water supply to the project. A Homeowners Association shall be responsible for enforcing the water conservation measures. Additional measures may be imposed as a result of a contract for water supply between CSA 53-C and the City of Big Bear Lake DWP:

- Landscape shall not be irrigated between the hours of 9:00 a.m. and 6:00 p.m.
- Residences, buildings and premises shall be limited to watering every other day.
- Landscape irrigation shall be limited to what is needed and shall not be excessive. Water from landscape irrigation shall not be allowed to run off into streets.
- Water shall not be allowed to leak from any waterline, faucet, or any other facility, either within or outside a private residence, business establishment or on private property. All such leaking waterlines, faucets, and other facilities shall be repaired immediately to prevent leakage.
- Sidewalks, paved driveways, and parkways shall not be washed off with hoses, except as required for sanitary purposes.
- Non-commercial washing of cars, and boats or any other vehicle shall only be done with an automatic shut-off nozzle on a hose, or with a bucket.
- New landscaping shall not exceed more than one-thousand square feet of turf on a parcel or lot or twenty-five percent of the available landscape area.
- A model landscaping and irrigation guide shall be prepared for the tract and required by homeowner association rules. The guide shall specify a plant palate that emphasizes native plants and cultivars that are suitable for the mountain climate. Plant materials shall be low water consuming and fire resistant. Irrigation shall emphasize drip and bubbler type emitters with limit aerial spray irrigation methods. The guide shall be reviewed and approved by the Land Use Services Department.

IMPLEMENTATION AND VERIFICATION:

1) Applicant shall submit evidence to the Planning Division that water conservation measures are included within the HOAs Conditions Covenants and Restrictions (CC&Rs).
2) The applicant shall submit evidence/documentation to the Planning Division verifying that the Homeowners Association CC&Rs includes provisions requiring compliance with the approved water conservation measures.

COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to recordation of the final map.

SUBMITTED:	**DATE SUBMITTED:**
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APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)			**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-1a Construction equipment staging areas shall be located away from existing residential uses. Appropriate screening (i.e., temporary fencing with opaque material) shall be used to buffer views of construction equipment and material, when feasible. Staging locations shall be indicated on project Grading Plans.
IMPLEMENTATION AND VERIFICATION:
1) Locate construction staging areas away from residential uses. 2) Utilize appropriate screening for construction staging areas. 3) Indicate staging locations on the grading plan, erosion control plan and/or SWWP. 4) The Building and Safety Division shall verify compliance with the approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) During Construction. 2) During Construction. 3) During Construction. 4) During Construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-1b All construction-related lighting associated with the construction of new roadways, the realignment of State Route 38, and the installation of utilities shall be located and aimed away from adjacent residential areas. Lighting shall use the minimum wattage necessary to provide safety at the construction site. A construction safety lighting plan shall be submitted to the county for review concomitant with Grading Permit applications for the subdivision of the lots.
IMPLEMENTATION AND VERIFICATION:
1) Locate and aim constructed-related lighting away from residential areas. 2) Lighting shall use minimum wattage necessary. 3) Submit a construction safety lighting plan to the county for review. 4) The Building and Safety Division shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) During Construction. 2) During Construction. 3) Prior to the issuance of Grading Permits. 4) During construction.

SUBMITTED:	**DATE SUBMITTED:**
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2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2a Roof pitches shall not exceed 9/12 and no higher than two-story for any portion of the structure footprint for lots 62-92.
IMPLEMENTATION AND VERIFICATION:
1) Provide a note on the Composite Development Plan listing this requirement. 2) Submit a copy of the appropriate plans to the Building and Safety Division for approval. 3) The Building and Safety Division shall verify compliance with the approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation. 2) Prior to the issuance of building permits. 3) During Construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2b All homes shall provide a two-car garage with automatic garage doors.
IMPLEMENTATION AND VERIFICATION:
1) Provide a note on the Composite Development Plan listing this requirement. 2) Submit a copy of the appropriate plans to the Building and Safety Division for approval. 3) The Building and Safety Division shall verify compliance during site inspection.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to the issuance of building permits. 3) During construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2c A view envelope for each property shall be established by creating a line starting at 6 feet at each side lot line and moving up at a 30 degree angle until both lines meet at the middle of the property. The area located under these lines is the view envelope. Structures shall not protrude outside the view envelope. The view envelope orients the building ridgeline parallel to the view corridors on narrower lots providing views for residents located behind the property.
IMPLEMENTATION AND VERIFICATION:
1) Establish a view envelope. 2) Structures must not protrude outside the envelope. 3) Delineate on the Composite Development Plan. 4) Submit plans to the Planning and Building and Safety Division for approval. 5) The Planning and Building and Safety Division shall verify compliance during site inspection.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the recordation of the final map. 2) Prior to the recordation of the final map. 3) Prior to the recordation of the final map. 4) Prior to issuance of Building Permits. 5) During construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2d New development shall be subordinate to the natural setting and minimize reflective surfaces. Building materials including siding and roof materials shall be selected to blend in hue and brightness with the surroundings. Colors shall be earth tones, shades of grays, tans, browns, greens, pale yellows, and shall be consistent with the mountain character of the area.
IMPLEMENTATION AND VERIFICATION:
1) Colors must be consistent with the mountain character of the area. 2) Establish (include this measure) in the Home Owners Association Conditions Covenants and Restrictions. 3) Provide a note on the Composite Development Plan listing this requirement. 4) Design guidelines and plans must be submitted to the Planning and Building and Safety Division for approval.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) On-going. 2) Prior to recordation of the final map. 3) Prior to recordation of the final map. 4) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2e Outside parking/storage areas associated with the boat dock activities shall be completely screened from view by the placement of landscaping and plantings which are compatible with the local environment and, where practicable, are capable of surviving with a minimum of maintenance and supplemental water.
IMPLEMENTATION AND VERIFICATION:
1) Parking and storage areas associated with boat dock activities must be screened from view. 2) Specify (include this measure) in the Homeowners Association Conditions Covenants and Restrictions. 3) Submit a copy of landscape plans to the Planning Division for approval. 4) The Building and Safety Division shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) On-going. 2) Prior to the recordation of the final map. 3) Prior to issuance of Grading Permits. 4) Prior to occupancy of the first residential unit.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2f Construction plans for each individual lot shall include the identification and placement of vegetation with the mature height of trees listed. Landscaping and plantings should not obstruct significant views, within or outside of the project, either when installed or when they reach mature growth. The removal of existing vegetation shall not be required to create views.
IMPLEMENTATION AND VERIFICATION:
1) Provide a note on the Composite Development Plan listing this requirement. 2) Landscape plans must be submitted to the Planning Division for review. 3) The Building and Safety Division shall verify compliance with approved plans during the site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to the issuance of building permits. 3) Prior to the issuance of Occupancy Permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-2g A Note shall be placed on the Composite Development Plan stating that during construction plans review and prior to issuance of building permits for each lot, the building inspector shall refer to the Mitigation Monitoring and Compliance Program regarding these aesthetic impact mitigation measures. The building inspector shall coordinate with the Advance Planning Division the review and approval of building plans in relation to these aesthetic impact mitigation measures, prior to approval and issuance of building permits.
IMPLEMENTATION AND VERIFICATION:
1) The Building and Safety Division must review building plans in relation to aesthetic impact mitigation measures. 2) The Building and Safety Division shall verify compliance with the approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to approval and issuance of building permits. 2) Prior to occupancy.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:			
AESTHETICS/LIGHT AND GLARE 5.4-3a Any entry sign for the development shall be a monument style sign compatible with the mountain character, preferably, rock or rock-appearance.			
IMPLEMENTATION AND VERIFICATION:			
1) The applicant shall include all proposed signage (compatible with the mountain character), on the landscaping plan. 2) The Building and Safety Division shall verify compliance during site inspections.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) Prior to approval of the Landscape Plan. 2) Prior to occupancy of the first residential unit.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:			
AESTHETICS/LIGHT AND GLARE 5.4-3b Prior to recordation of the tract map (and/or any ground disturbance, whichever occurs first), landscaping plans for lettered lots B and C shall be submitted to and approved by the San Bernardino County Planning Department.			
IMPLEMENTATION AND VERIFICATION:			
1) Landscaping plans shall be submitted to the San Bernardino County Planning Division for review and approval. 2) The San Bernardino County Building and Safety Division shall verify compliance with the approved plans during site inspection.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) Prior to the recordation of the tract map. 2) Prior to occupancy of the first residential unit.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-4a All exterior lighting shall be designed and located as to avoid intrusive effects on adjacent residential properties and undeveloped areas adjacent to the project site. Low-intensity street lighting and low-intensity exterior lighting shall be used throughout the development to the extent feasible. Lighting fixtures shall use shielding, if necessary to prevent spill lighting on adjacent off-site uses.
IMPLEMENTATION AND VERIFICATION:
1) The intrusive effects of exterior lighting shall be minimized. 2) The Building and Safety Division shall verify compliance during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) On-going. 2) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-4b Lighting used for various components of the development plan shall be reviewed for light intensity levels, fixture height, fixture location and design by an independent engineer, and reviewed and approved by the County Building and Safety Division.
IMPLEMENTATION AND VERIFICATION:
1) The various lighting components of the development plan shall be submitted to the County Building and Safety Division for review and approval. 2) The Building and Safety Division shall verify compliance with the approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of Building Permits. 2) During Construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-4c The project shall use minimally reflective glass. All other materials used on exterior buildings and structures shall be selected with attention to minimizing reflective glare.
IMPLEMENTATION AND VERIFICATION:
1) Submit a copy of CC&Rs and/or design guidelines to the Planning Division for review and approval. 2) Provide a note on the Composite Development Plan listing this requirement. 3) The Building and Safety Division shall verify compliance during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the recordation of the final map. 2) Prior to recordation of the final map. 3) During Construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-4d Vegetated buffers shall be used along State Route 38 to reduce light intrusion on residential development and on forested areas located adjacent to the project site.
IMPLEMENTATION AND VERIFICATION:
1) Vegetation buffers on the open space lots shall be included on the Landscaping Plans which shall be submitted to the San Bernardino County Planning Division for review and approval. 2) Vegetation Buffers on individual lots adjacent to State Route 38 shall be included in the CC&Rs. 3) These vegetation buffers will be verified by the Building and Safety Division.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to approval of the Landscaping Plan. 2) Prior to recordation of the final map. 3) Prior to issuance of occupancy permits (for residential lots adjacent to State Highway 38).

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:			
AESTHETICS/LIGHT AND GLARE 5.4-4e Mitigation Measures 5.4-4a through 5.4-4d shall be included within the Conditions, Covenants and Restrictions (CC&Rs) of the Home Owner's Association (HOA).			
IMPLEMENTATION AND VERIFICATION:			
1) Submit a copy of the CC&Rs to the Planning Division for review and approval. 2) Building and Safety Division shall verify compliance with approved CC&Rs during site inspection.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) Prior to recordation of final map. 2) During construction.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**
CORRECTION REQUIRED: (attach copies of correspondence)			**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-4f All outdoor light fixtures shall be cutoff luminaries and shall only use high- or low-pressure sodium lamps.
IMPLEMENTATION AND VERIFICATION:
1) Submit a copy of the CC&Rs and/or design guidelines to the Planning Division for review and approval. 2) The Building and Safety Division shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of final map. 2) During Construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AESTHETICS/LIGHT AND GLARE 5.4-4g The Project Applicant/Developer shall install light colored, reflective roof products. Such roofs shall utilize light colored, reflective materials that meet the performance standards developed by the Energy Star Labeled Roof Program, as well as the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standards 90.1 and 90.2 on energy efficient buildings. This condition shall be verified by the County of San Bernardino Building and Safety Division prior to issuance of building permits.
IMPLEMENTATION AND VERIFICATION:
1) Submit a copy of the CC&Rs and/or design guidelines to the Planning Division for review and approval. 2) Provide a note on the Composite Development Plan listing this requirement. 3) The Building and Safety Division shall verify compliance with approved plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final map. 2) Prior to recordation of the final map. 3) During construction.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
TRAFFIC AND CIRCULATION 5.5-1 For existing traffic conditions, the intersection of Stanfield Cutoff and Big Bear Boulevard currently requires the eastbound right turn lane to be converted to an eastbound through lane, through the intersection. The eastbound right turn lane is restricted to an eastbound through lane, and involves roadway widening. The project's pro rata share of these off-site road improvements is estimated to be $17,748.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence to the Planning Division that the project's pro rata share of off-site road improvements has been satisfied.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
TRAFFIC AND CIRCULATION 5.5-3 For future traffic conditions, the intersection of Stanfield Cutoff and North Shore Drive shall require a traffic signal. The project's pro rata share of the signal is $56,523.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence to the Planning Division that the project's pro rata share of off-site road improvements has been satisfied.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
TRAFFIC AND CIRCULATION 5.5-4a Parking shall be restricted on State Route 38.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence to the Planning Division that parking is restricted on State Route 38.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
TRAFFIC AND CIRCULATION 5.5-4b A 150-foot eastbound left turn pocket shall be striped for traffic on North Shore Drive turning left into the project entry locations.
IMPLEMENTATION AND VERIFICATION:
1) Submit evidence of left turn pocket to the Department of Public Works, and the Department of Public Works shall verify compliance.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the occupancy of the first residential unit.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
TRAFFIC AND CIRCULATION 5.5-4c For future traffic conditions, intersection geometrics as recommended in Table 1b of the Kunzman Associates June 2003 *Traffic Analysis report*, shall be implemented.
IMPLEMENTATION AND VERIFICATION:
1) Submit intersection geometries to the Department of Public Works for review and approval and, the Department of Public Works shall verify intersection geometries.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the recordation of the final map.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:			
TRAFFIC AND CIRCULATION 5.5-4d All streets internal to the project shall be constructed to full ultimate cross-sections.			
IMPLEMENTATION AND VERIFICATION:			
1) Submit evidence of compliance to the Department of Public Works and, the Department of Public Works shall verify compliance.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) Prior to the issuance of the first building permit.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	
INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**
CORRECTION REQUIRED: (attach copies of correspondence)			**DATE:**

MITIGATION MEASURE:			
TRAFFIC AND CIRCULATION 5.5-4e A STOP sign shall be installed to control outbound traffic on all site access roadways onto North Shore Drive.			
IMPLEMENTATION AND VERIFICATION:			
1) Submit evidence of stop sign installation on access roadways, to the Department of Public Works and, the Department of Public Works shall verify compliance.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) Prior to the occupancy of the first residential unit.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	
INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**
CORRECTION REQUIRED: (attach copies of correspondence)			**DATE:**

MITIGATION MEASURE:			
TRAFFIC AND CIRCULATION 5.5-4f The County of San Bernardino shall periodically review traffic operations in the vicinity of the site once the project is constructed in order to assure that the traffic operations are satisfactory.			
IMPLEMENTATION AND VERIFICATION:			
1) The County of San Bernardino Public Works Department shall verify compliance with the mitigation measure.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) During Project implementation.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
TRAFFIC AND CIRCULATION 5.5-4g Landscape plantings and signs shall be limited to 36 inches in height within 25 feet of project driveways to assure good visibility.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall submit a copy of CC&Rs to the Planning Division for review and approval. 2) Limitations on landscape plantings and signs on individual lots shall be included in the CC&Rs. Compliance with these limitations will be verified by the Building and Safety Division.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the recordation of the final tract map. 2) Prior to the issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AIR QUALITY 5.6-1 In accordance with the County Development Code and SCAQMD Rules, the Project Applicant shall incorporate the following measures during the construction phase of the Project to the satisfaction of the SCAQMD and County of San Bernardino. Compliance with this measure is subject to periodic field inspections by the SCAQMD and County of San Bernardino. <u>Grading:</u> ▪ Apply non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas (previously graded for ten days or more); ▪ Replace ground cover in disturbed areas as quickly as possible; ▪ Enclose, cover, water two times daily or apply non-toxic soil binders in accordance to manufacturer's specifications to exposed piles (i.e., gravel, sand, dirt) with 5% or greater silt content; ▪ Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph; and ▪ All trucks hauling dirt, sand, soil, or other loose materials shall be covered and shall maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer). <u>Paved Roads:</u> ▪ Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads.
IMPLEMENTATION AND VERIFICATION:
1) Submit evidence to the Building and Safety Division that mitigation measures are being implemented. 2) The Building and Safety Division shall verify compliance with the mitigation measure.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
AIR QUALITY 5.6-2 To the extent feasible, the project shall incorporate the installation of EPA-certified wood burning stoves or fireplaces. If this is not feasible, then the installation of a ceramic coating on the honeycomb inside a catalytic combustor shall be investigated as a feasible alternative. Alternatively, the use of natural gas fireplaces may be used as a feasible alternative.
IMPLEMENTATION AND VERIFICATION:
1) Provide a note on the Composite Development Plan and include in the Conditions Covenants and Restrictions. 2) Submit evidence of the installation of appropriate heating devices. 3) The Building and Safety Division shall verify installation during site inspection.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to Recordation. 2) During the construction phase. 3) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
NOISE 5.7-1a Construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday to Saturday and prohibited on Sundays and Federal Holidays.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall submit evidence of construction hours to the Building and Safety Division, and include the limitation of construction hours on all grading plans. 2) The Building and Safety Division shall verify construction does not take place during prohibited times.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of grading permits. 2) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
NOISE 5.7-1b All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, to the satisfaction of the County Engineer.
IMPLEMENTATION AND VERIFICATION:
1) Submit evidence of properly operating and maintained mufflers on all construction equipment to the County Building and Safety Division. 2) The County Building and Safety Division shall verify compliance with the mitigation measure.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) During the construction phase. 2) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:			
NOISE 5.7-1c Stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receptors, to the satisfaction of the County Engineer.			
IMPLEMENTATION AND VERIFICATION:			
1) The County Building and Safety Division shall verify emitted noise is directed away from sensitive receptors during site inspection.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) During the construction phase.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
NOISE 5.7-1d Stockpiling and staging areas shall be located as far as practical from noise sensitive receptors during construction activities, to the satisfaction of the County Engineer.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence to the County Building and Safety Division that construction staging areas are located away from sensitive receptors. The applicant shall indicate the location of the construction staging areas on the grading plans, erosion control plans, and/or SWWP. 2) The County Building and Safety Division shall verify that staging areas are not located near sensitive receptors during site inspection.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of grading permits. 2) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-1a Prior to vegetation clearing, grading, or other disturbance, the project site shall be surveyed during a year with precipitation at least 40 percent of average for the area to determine presence or absence of special status plant species and vegetation types. Surveys shall focus on special status vegetation types, and Threatened or Endangered, and CNPS List 1B and 2 species whose presence could not be determined during surveys due to lack of rainfall. The location and extent of special status species populations shall be mapped and the size of the populations accurately documented. Pebble plain habitat acreages will be recalculated following the survey using criteria established by the Habitat Management Guide for Pebble Plain Habitat on the National Forest System (2002). Should avoidance/retention on-site of the 4.91 acres of Pebble Plain habitat in permanent open space under a Conservation Easement Agreement not occur, the Project Applicant shall pay compensation for the loss of special status botanical resources identified on the project site during the survey by funding the purchase, establishment of a conservation easement, and management of off-site habitat within the conservation easement by an entity approved by the CDFG. Off-site habitat containing the same species as those identified within resources impacted by the proposed project shall be purchased at a ratio of 3:1 (i.e., three acres of habitat purchased for preservation for each acre impacted by development). Prior to the initiation of clearing or grading activities on the project site, the conservation easement will be established, the management entity will be approved by the CDFG, and a non-wasting endowment will be established for the monitoring and management of the preservation site by the management entity in perpetuity. If additional surveys during a year with precipitation at least 40 percent of average do not encounter additional special status plant resources, the Project Applicant is responsible for mitigating impacts to a minimum of 11.8-acres of pebble plain and open Jeffrey pine forest in the western half of the project site that is known to be occupied by the Federally-listed Threatened ash-gray Indian paintbrush. As such, the applicant would be required to fund the purchase and maintenance of 35.4-acres of offsite pebble plain and open Jeffrey pine forest habitat that contains special status plant species, including Ash-gray Indian paintbrush and others known to occur on the site.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence of biological surveys to the Planning Division. 2) The conservation easement(s) shall be established and recorded on the tract map. 3) The applicant shall submit evidence to the County Planning Division that the conservation easement(s) is/are established, the management entity is approved, and a non-wasting endowment is established for the monitoring and management of the preservation site by the management entity in perpetuity.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to vegetation clearing, grading, or other disturbance. 2) Prior to recordation of the tract map 3) Prior to vegetation clearing, grading, or any other land disturbance.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.

APPROVED BY:		DATE APPROVED:	
INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**
CORRECTION REQUIRED: (attach copies of correspondence)			**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-1b Trees identified on Exhibits 3 and 4 of the Bald Eagle Survey Report (Appendix E, see attached) as eagle perch locations shall be preserved in place upon project completion and shall not be removed under any circumstances. Any development that may occur within the project site and in the individual lots must avoid impacts to these trees and their root structures. All construction or landscaping improvements, including irrigation, will be prohibited on or around the exposed root structures or within the dripline of these trees. These restrictions on development of the individual tentative tracts must be clearly presented and explained to any potential prospective developers and/or homeowners prior to assumption of title and close of escrow. This measure shall be identified as a Note on the Composite Development Plan.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall include this measure as a note on the Composite Development Plan. 2) The Building and Safety Division shall verify the implementation of appropriate tree preservation during construction.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation. 2) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-1c Prior to vegetation clearing, grading, or other disturbance, the project site shall be surveyed to identify all large trees (i.e., greater than 20-inches in diameter at 4.5 feet from the ground) within 600 feet from the high water line. Trees identified on the project site as having a diameter in excess of 20-inches at four feet from the ground within 600 feet of the shoreline shall be documented and tagged. Any development that may occur within the project site and in the individual lots must avoid impacts to tagged trees and their root structures. All construction or landscaping improvements, including irrigation, will be prohibited on or around the exposed root structures or within the dripline of these trees. These restrictions on development of the individual tentative tracts must be clearly presented and explained to any potential prospective developers and/or homeowners prior to assumption of title and close of escrow. This measure shall be identified as a Note on the Composite Development Plan.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall include this measure as a note on the Composite Development Plan. 2) Forester to perform and certify compliance. 3) The applicant shall submit evidence to the Planning Division that tagged trees are protected. 4) The Building and Safety Division shall verify tree protection during site inspection.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the tract map. 2) Prior to vegetation clearing, grading, or any other land disturbance. 3) Prior to vegetation clearing, grading, or any other land disturbance. 4) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-1d Seven days prior to the onset of construction activities, a qualified biologist shall survey within the limits of project disturbance for the presence of any active raptor nests. Any nest found during survey efforts shall be mapped on the construction plans. If no active nests are found, no further mitigation would be required. Results of the surveys shall be provided to the CDFG. If nesting activity is present at any raptor nest site, the active site shall be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code. Nesting activity for raptors in the region of the project site normally occurs from February 1 to June 30. To protect any nest site, the following restrictions on construction are required between February 1 and June 30 (or until nests are no longer active as determined by a qualified biologist): (1) clearing limits shall be established a minimum of 300 feet in any direction from any occupied nest and (2) access and surveying shall not be allowed within 200 feet of any occupied nest. Any encroachment into the 300/200 foot buffer area around the known nest shall only be allowed if it is determined by a qualified biologist that the proposed activity shall not disturb the nest occupants. Construction during the nesting season can occur only at the sites if a qualified biologist has determined that fledglings have left the nest.
IMPLEMENTATION AND VERIFICATION:
1) Submit evidence of biologist consultant services contract/agreement. 2) The applicant shall submit evidence of biological surveys to the Planning Division. 3) The Planning Division shall verify that no active raptor nests were found.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of building permits. 2) Prior to initiating the construction phase. 3) Prior to initiating the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-1e Vegetation removal, clearing, and grading on the project site shall be performed outside of the breeding and nesting season (between March and September) to minimize the effects of these activities on breeding activities of migratory birds and other species.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall include a note on the grading plans that vegetation removal and grading will be performed outside the breeding season (i.e., March to September). 2) Applicant shall submit evidence to the Planning Division that vegetation removal and grading will be performed outside the breeding season. 3) The Building and Safety Division shall verify compliance during construction/grading.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of grading permits. 2) Prior to issuance of grading permits. 3) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-1f The use of the boat dock for motorized boating shall be prohibited between the dates of December 1 and April 1. No motorized boats shall be allowed to launch or moor in the vicinity of the boat dock at any time during this period. This restriction shall be clearly displayed on signage at the entrance to the parking lot and on the boat dock visible from both land and water. This requirement shall also be published in the Homeowner's Association CC&Rs.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit to the Planning Division a copy of the HOAs CC&Rs inclusive of the restriction of this measure. 2) The applicant shall install the required signage.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the tract map. 2) During project construction, and prior to use of the boat dock.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-2a Street lamps on the project site shall not exceed 20 feet in height, shall be fully shielded to focus light onto the street surface and shall avoid any lighting spillover onto adjacent open space or properties. Furthermore, street lights shall utilize low color temperature lighting (e.g., red or orange).
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence to the Planning Division that street lamps conform to the guidelines. 2) The Public Works Division shall verify that street lamps conform to these guidelines.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to final approval of road improvement plans. 2) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-2b Outdoor lighting for proposed homes on the individual tentative tracts shall not exceed 1,000 lumens. Furthermore, residential outdoor lighting shall not exceed 20 feet in height and must be shielded and focused downward to avoid lighting spillover onto adjacent open space or properties. These restrictions on outdoor lighting of the individual tentative tracts must be clearly presented and explained to any potential prospective developers and/or homeowners prior to assumption of title and close of escrow. This requirement shall also be published in the Homeowner's Association CC&Rs.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit to the Planning Division a copy of the HOA's CC&Rs inclusive of the restriction of this measure. 2) The individual lot owners shall submit evidence to the Building and Safety Division that the outdoor lighting conforms to these guidelines.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the tract map. 2) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-2c To limit the amount of human disturbance on adjacent natural open space areas, signs shall be posted along the northeastern and eastern perimeter of the project site where the property boundary abuts open space with the following statement: "Sensitive plant and wildlife habitat. Please use designated trails and keep pets on a leash at all times." In addition, a requirement stating that residents shall keep out of adjacent open space areas to the north with the exception of designated trails will be published in the Homeowner Association CC&Rs and a map of designated hiking trails will be provided to all residents.
IMPLEMENTATION AND VERIFICATION:
1) Sign design and text message shall be included in the Landscape Plan submitted to the Planning Division for review and approval. 2) The applicant shall submit to the Planning Division a copy of the HOA's CC&Rs, inclusive of the restrictions of this measure. 3) The applicant shall install the signs.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the tract map. 2) Prior to recordation of the tract map. 3) Prior to issuance of the first occupancy permit.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-2d Prior to recordation of the final map, a landscaping plan for the entire tract shall be prepared (inclusive of a plant palette) with native trees and plant species, and, shall be submitted to the County of San Bernardino for review and approval by a qualified biologist. The review shall determine that no non-native or invasive plant species are to be used in the proposed landscaping. The biologist should suggest appropriate native plant substitutes. A note shall be placed on the Composite Development Plan indicating that all proposed landscaping (including landscaping on individual lots) shall conform with the overall approved tract map landscaping plan. A requirement shall be included stating that residents shall include a restriction of the use of tree and plant species to only native trees/plants approved per the overall tract map landscaping plan, the Homeowner Association CC&Rs shall also restrict (individual lot owners) to use only native tree and plant species approved per the overall tract map landscaping plan.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit a landscaping plan for the entire tract for review and approval by a qualified biologist, prior to recordation of the final map. 2) The applicant shall include a note on the Composite Development Plan indicating the approved native plant materials. 3) The applicant shall submit a copy of the HOA's CC&Rs, inclusive of the restrictions of this measure to the Planning Division and Building and Safety Division. 4) The individual lot owners shall submit landscaping plans (which conform with the overall approved tract map landscaping plan) to the Planning Division and Building and Safety Division for review and approval.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the final tract map. 2) Prior to recordation of the final tract map. 3) Prior to recordation of the final tract map. 4) Prior to the issuance of individual building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-2e Garages with automatic door openers shall be required. No exterior construction, grading or vegetation clearing shall be permitted between December 1 and April 1, which is the wintering period for bald eagles (i.e., the season when bald eagles are present in the Big Bear area).
IMPLEMENTATION AND VERIFICATION:
1) The applicant and/or subsequent individual lot owners shall submit evidence that automatic garage door openers are installed. 2) The applicant and/or subsequent individual lot owners shall not perform any exterior construction, grading, or vegetation clearing between December 1 and April 1, which will be verified by the Building and Safety Division. 3) Both requirements shall be noted on the Composite Development Plan and included in the Homeowners Association Conditions Covenants and Restrictions.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of occupancy permits. 2) During the construction phase. 3) Prior to Recordation.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
BIOLOGICAL RESOURCES 5.8-3 Per the direction of the California Department of Fish and Game, all unavoidable impacts to State and Federal jurisdictional lakes, streams, and associated habitat shall be compensated for with the creation and/or restoration of in-kind habitat on-site and/or off-site at a minimum 3:1 replacement-to-impact ratio. Additional requirements may be required through the permitting process depending on the quality of habitat impacted, project design and other factors.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit evidence (copies) of the required Federal and State Resources Agency's Permits (inclusive of details of compensation habitat), to the San Bernardino County Planning Division.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of grading permits, vegetation removal, and/or any other land-disturbing activity.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
CULTURAL RESOURCES 5.9-1 Project-related grading, grubbing, trenching, excavations, and/or other earth-moving activities in the project area shall be monitored by a qualified archaeologist. In the event that a material of potential cultural significance is uncovered during such activities on the project site, all earth-moving activities in the project area shall cease and the archeologist shall evaluate the quality and significance of the material. Earth-moving activities shall not continue in the area where a material of potential cultural significance is uncovered until resources have been completely removed by the archaeologist and recorded as appropriate.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit to the Planning Division a copy of a contract with a qualified archaeologist. 2) A qualified archaeologist shall perform the field monitoring. 3) The applicant shall submit the qualified archaeologists report of findings to the County Planning Division.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to grading, vegetation removal, and/or any other land-disturbing activity. 2) During the construction phase. 3) During the construction phrase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
CULTURAL RESOURCES 5.9-2a Grading shall be monitored during excavation in areas identified as likely to contain paleontologic resources by a qualified paleontological monitor. Monitoring shall be accomplished for any undisturbed subsurface older alluvium, which might be present in the subsurface. The monitor shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit to the Planning Division a copy of a contract with a qualified paleontologist. 2) A qualified paleontologist shall perform the field monitoring. 3) The applicant shall submit the qualified paleontologist's report of findings to the County Planning Division.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to grading, vegetation removal, and/or any other land-disturbing activity. 2) During the grading phase. 3) During the grading phase.

SUBMITTED:	DATE SUBMITTED:
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	DATE:	INSPECTED BY:	DATE:

CORRECTION REQUIRED: (attach copies of correspondence)	DATE:

MITIGATION MEASURE:			
CULTURAL RESOURCES 5.9-2b Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.			
IMPLEMENTATION AND VERIFICATION:			
1) Submit evidence to the Planning Division that recovered specimens will be preserved.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) During the construction phase.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:			
CULTURAL RESOURCES 5.9-2c Identification and curation of specimens into a museum repository with permanent retrievable storage shall occur for paleontological resources.			
IMPLEMENTATION AND VERIFICATION:			
1) Submit evidence that specimens will be stored for paleontological resources to the Planning Division.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) During the construction phase.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
CULTURAL RESOURCES 5.9-2d A report of findings shall be prepared with an appended itemized inventory of specimens. The report shall include pertinent discussion of the significance of all recovered resources where appropriate. The report and inventory when submitted to the appropriate Lead Agency shall signify completion of the program to mitigate impacts to paleontologic resources.
IMPLEMENTATION AND VERIFICATION:
1) Submit the report of finding to the Planning Division for review.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.10-1 The stability of south facing cut slopes shall be analyzed as part of the design-level geotechnical investigation. Utilizing 2:1 buttressed slopes using on site native soil materials, or constructing geotextile-reinforced soil buttresses for planned unstable cut slopes are typical engineering designs for stabilizing slopes. Either of these methods, or other methods must be approved by the San Bernardino County Department of Building and Safety.
IMPLEMENTATION AND VERIFICATION:
1) The design-level geotechnical investigation shall be submitted to the County Geologist for review/approval. 2) The Building Safety Division (i.e., County Geologist) shall verify compliance with the design-level geotechnical investigation.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the tract map. 2) During the grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.10-2a Due to the potential for erosion associated with younger alluvial deposits within the two major on-site stream channels, increased surface drainage quantities associated with development on-site shall be directed away from the stream channels.
IMPLEMENTATION AND VERIFICATION:
1) Demonstrate in the SWWP that surface drainage shall be directed away from stream channels. 2) The Department of Public Works shall verify compliance during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of grading permits. 2) During the construction phase. 3) During the construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.10-2b Prior to the issuance of Grading Permits, the Project Applicant shall prepare a Soil Erosion and Sedimentation Plan for submittal and approval by the County Building and Safety Department.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit a copy of the Soil Erosion and Sedimentation Plan to the Building and Safety Division. 2) The Building and Safety Division shall review/approve the Soil Erosion and Sedimentation Plan prior to issuance of grading permits.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of Grading Permits. 2) During the grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.10-3 Engineering design for all structures and roadways shall be based on the current California Uniform Building Code at the time of project development. Construction plans shall be in accordance with seismic design standards set forth by the County's Development Code and Uniform Building Code.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall submit a copy of the construction plans to the Building and Safety Department for review and approval. 2) The Building and Safety Department shall verify compliance with the construction plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of Grading Permits. 2) During the grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.10-4 Residential structures shall be located in areas which provide a minimum of five feet of freeboard above the high water line for any structures.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall submit a copy of the construction plans to the Building and Safety Department for review and approval. 2) The Building and Safety Department shall verify compliance with the construction plans during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of grading permits. 2) Prior to grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.10-5 Prior to grading permit issuance, a quantitative geotechnical analysis and design-level geotechnical engineering report shall be required and submitted to the County of San Bernardino Department of Building and Safety for their approval.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit a quantitative geotechnical analysis and design-level geotechnical investigation to the County Geologist for review and approval. 2) The Building and Safety Division (County Geologist) shall verify compliance with the approved geotechnical analysis and design-level geotechnical investigation.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to recordation of the tract map. 2) During grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.11-1 The proposed cross culverts shall be sized for 100-year burn and bulking flow rates. The burn and bulking method would increase the runoff from the natural areas. The method provided in the Los Angeles County Hydrology Manual is recommended. In addition, the cross culverts shall all be designed with headwalls to prevent CMP crushing, and shall be maintained adequately.
IMPLEMENTATION AND VERIFICATION:
1) Applicant shall submit evidence to the Department of Public Works and the Building and Safety Division that proposed cross culverts shall be sized for 100-year flow rates. 2) The Department of Public Works and the Building and Safety Division shall verify compliance during site inspections.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to issuance of grading permits. 2) During the grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.11-2a Within three months of project approval, the Project Applicant shall submit a plan for a detailed geohydrologic investigation. The plan must present the possible sources of groundwater selected for the project and the methodology proposed to investigate those sources. If the on-site wells are to be utilized to serve this project, it must be determined if either could draw water from Big Bear Lake. The plan must be prepared by a California Registered Geologist.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall submit a plan for a detailed geohydrologic investigation to the County Geologist, and to the Division of Environmental Health Services. 2) The Building and Safety Division (County Geologist) and the Division of Environmental Health Services shall verify compliance with recommendations of the investigation.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Within three months of project approval. 2) Prior to issuance of building permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.11-2b Within six months of plan approval, the Project Applicant shall submit the results of the geohydrologic investigation. The report must be prepared by a California Registered Geologist.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall, within six months of project approval, submit results of the geohydrologic investigation prepared by a California Registered Geologist to the Building and Safety Division (County Geologist) for review/approval. 2) The Building and Safety Division (County Geologist) shall verify compliance with recommendations.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Within six months of plan approval. 2) During the grading/construction phase.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS 5.11-2c Concurrently or within three months of approval by the geohydrologic report, the Project Applicant shall submit a groundwater monitoring plan in accordance with San Bernardino County's "Guidelines for Preparation of a Groundwater Monitoring Plan." The plan must be prepared by a California Registered Geologist.
IMPLEMENTATION AND VERIFICATION:
1) The applicant shall, concurrently or within three months of approval of the hydrogeologic report, submit a groundwater monitoring plan prepared by a California Registered Geologist, to the County Geologist and the Division of Environmental Health Services for review/approval. 2) The County Building and Safety Division (County Geologist) and the Division of Environmental Health Services shall verify compliance with the approved Groundwater Monitoring Plan.
COMPLIANCE RECORD:

WHEN REQUIRED:	1) Concurrently or within three months of approval by the geohydrologic report. 2) Prior to issuance of the first residential building permit.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

MITIGATION MEASURE:
GEOLOGY AND SOILS

5.11-3 Prior to Grading Permit issuance and as part of the Project's compliance with the NPDES requirements, a Notice of Intent (NOI) shall be prepared and submitted to the Santa Ana Regional Water Quality Control Board providing notification and intent to comply with the State of California general permit. Also, a Storm Water Pollution Prevention Plan (SWPPP) shall be completed for the construction activities on-site. A copy of the SWPPP shall be available and implemented at the construction-site at all times. The SWPPP shall outline the source control and/or treatment control BMPs to avoid or mitigate runoff pollutants at the construction-site to the "maximum extent practicable." At a minimum, the following shall be implemented from the *California Storm Water Best Management Practice Handbook - Construction Activity*:

- CA 1 Dewatering Operations – This operation requires the use of sediment controls to prevent or reduce the discharge of pollutants to storm water from dewatering operations.
- CA 2 Paving Operations – Prevent or reduce the runoff of pollutants from paving operations by proper storage of materials, protecting storm drain facilities during construction, and training employees.
- CA 3 Structural Construction and Painting – Keep site and area clean and orderly, use erosion control, use proper storage facilities, use safe products and train employees to prevent and reduce pollutant discharge to storm water facilities from construction and painting.
- CA 10 Material Delivery and Storage – Minimize the storage of hazardous materials on-site. If stored on-site, keep in designated areas, install secondary containment, conduct regular inspections and train employees.
- CA 11 Material Use – Prevent and reduce the discharge of pesticides, herbicides, fertilizers, detergents, plaster, petroleum products and other hazardous materials from entering the storm water.
- CA 20 Solid Waste Management - This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas.
- CA 21 Hazardous Waste Management - This BMP describes the requirements to properly design and maintain waste areas.
- CA 23 Concrete Waste Management – Prevent and reduce pollutant discharge to storm water from concrete waste by performing on and off-site washouts in designated areas and training employees and consultants.
- CA 24 Sanitary Septic Water Management – Provide convenient, well-maintained facilities, and arrange regular service and disposal of sanitary waste.
- CA 30 Vehicle and Equipment Cleaning – Use off-site facilities or wash in designated areas to reduce pollutant discharge into the storm drain facilities.
- CA 31 Vehicle and Equipment Fueling – Use off-site facilities or designated areas with enclosures or coverings to reduce pollutant discharge into the storm drain facilities.
- CA 32 Vehicle and Equipment Maintenance – Use off-site facilities or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities. In addition, run a "dry site" to prevent pollution discharge into storm drains.
- CA 40 Employee and Subcontractor Training – Have a training session for employees and subcontractors to understand the need for implementation and usage of BMPs.
- ESC 2 Preservation of Existing Vegetation – Minimize the removal of existing trees and shrubs since they serve as erosion control.
- ESC 10 Seeding and Planting – Provide soil stability by planting and seeding grasses, trees, shrubs, vines, and ground cover.
- ESC 11 Mulching – Stabilize cleared or freshly seeded areas with mulch.
- ESC 20 Geotextiles and Mats – Natural or synthetics material can be used for soil stability.
- ESC Dust Control – Reduce wind erosion and dust generated by construction activities by using dust control measures.
- ESC 23 Construction Road Stabilization – All on-site vehicle transport routes shall be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.
- ESC 24 – Stabilized Construction Entrance – Stabilize the entrance pad to the construction area to reduce amount of sediment tracked off-site.

- ESC 30 Earth Dikes – Construct earth dikes of compacted soil to divert runoff or channel water to a desired location.
- ESC 31 Temporary Drains and Swales – Use temporary drains and swales to divert off-site runoff around the construction-site and stabilized areas and to direct it into sediment basins or traps.
- ESC 40 Outlet Protection – Use rock or grouted rock at outlet pipes to prevent scouring of soil caused by high velocities.
- ESC 41 Check Dams – Use check dams to reduce velocities of concentrated flows, thereby reducing erosion and promoting sedimentation behind the dams. Check dams are small and placed across swales and drainage ditches.
- ESC 50 Silt Fence – Composed of filter fabric, these are entrenched, attached to support poles, and sometimes backed by wire fence support. Silt fences promote sedimentation behind the fence of sediment-laden water.
- ESC 51 Straw Bale Barrier – Place straw bales end to end in a level contour in a shallow trench and stake them in place. The bales detain runoff and promote sedimentation.
- ESC 52 Sand Bag Barriers – By stacking sand bags on a level contour, a barrier is created to detain sediment-laden water. The barrier promotes sedimentation.
- ESC 53 Brush or Rock Filter – Made of 0.75 to 3-inch diameter rocks placed on a level contour or composed of brush wrapped in filter cloth and staked to the toe of the slope provides a sediment trap.
- ESC 54 Storm Drain Inlet Protection – Devices that remove sediment from sediment laden storm water before entering the storm drain inlet or catch basin.
- ESC 55 Sediment Trap – A sediment trap is a small, excavated, or bermed area where runoff for small drainage areas can pass through allowing sediment to settle out.

IMPLEMENTATION AND VERIFICATION:

1) The applicant shall submit a copy of the Notice of Intent and SWPPP to the Santa Ana Regional Water Quality Control Board for review and approval and a copy of the approved Notice of Intent and SWPPP to the County Building and Safety Division.
2) The Santa Ana Regional Water Quality Control Board and the County Building and Safety Division shall verify compliance with the Notice of Intent and SWPPP.

COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to grading permit issuance. 2) Prior to grading permit issuance.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	DATE:

MITIGATION MEASURE:

GEOLOGY AND SOILS

5.11-4a Prior to Grading Permit issuance, a Water Quality Management Plan shall be developed and shall include both Non-Structural and Source Control BMPs. The WQMP shall conform to the San Bernardino County Draft NPDES permit and WQMP standards. The following are the minimum required controls to be implemented as a part of the *Water Quality Management Plan (WQMP) for Urban Runoff*.

- Education for Property Owners, Tenants and Occupations – The Property Owners Association is required to provide awareness educational material, including information provided by San Bernardino County. The materials shall include a description of chemicals that should be limited to the property and proper disposal, including prohibition of hosing waste directly to gutters, catch basins, storm drains or the lake.
- Activity Restrictions – The developer shall prepare conditions, covenants and restriction of the protection of surface water quality.
- Common Area Landscape Management – For the common landscape areas on-going maintenance shall occur consistent with County Administrative Design Guidelines or city equivalent, plus fertilizer and pesticide usage consistent with the instructions contained on product labels and with regulation administered by the State Department of Pesticide Regulation or county equivalent.
- Common Area Catch Basin Inspection – Property Owners Associations shall have privately owned catch basins cleaned and maintained, as needed. These are intended to prevent sediment, garden waste, trash and other pollutants from entering the public streets and storm drain systems.
- Common Area Litter Control – POAs shall be required to implement trash management and litter control procedures to minimize pollution to drainage waters.
- Street Sweeping Private Streets and Parking Lots – Streets and Parking lots shall be swept as needed, to prevent sediment, garden waste, trash and other pollutants from entering public streets and storm drain systems.

The following controls from the *California Storm Water Best Management Practice Handbook - Municipal* shall be employed:

- SC10 Housekeeping Practices – This entails practices such as cleaning up spills, proper disposal of certain substances and wise application of chemicals.
- SC32 Used Oil Recycling – May apply to maintenance and security vehicles.
- SC72 Vegetation Controls – Vegetation control typically includes chemical (herbicide) application and mechanical methods. Chemical methods are discussed in SC10. Mechanical methods include leaving existing vegetation, cutting less frequently, hand cutting, planting low maintenance vegetation, collecting and properly disposing of clippings and cuttings, and educating employees and the public.
- SC73 Storm Drain Flushing – Although general storm drain gradients are sufficiently steep for self-cleansing, visual inspection may reveal a buildup of sediment and other pollutants at the inlets or outlets, in which case flushing may be advisable.

IMPLEMENTATION AND VERIFICATION:

1) The applicant shall submit a Water Quality Management Plan to the County Building and Safety Division to review compliance with the County NPDES.
2) The County Building and Safety Division shall verify compliance with the Water Quality Management Plan.

COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of a grading permit. 2) Prior to the issuance of a grading permit.

SUBMITTED:	DATE SUBMITTED:
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	DATE:	INSPECTED BY:	DATE:

CORRECTION REQUIRED: (attach copies of correspondence)	DATE:

MITIGATION MEASURE:

GEOLOGY AND SOILS

5.11-4b The Water Quality Management Plan (WQMP) shall include Structural or Treatment BMPs. The structural BMPs utilized shall focus on meeting potential TMDL requirements for noxious aquatic plants, nutrients, sedimentation and siltation. The structural BMPs shall conform to the San Bernardino County NPDES permit and the San Bernardino WQMP standards.

Consistent with the WQMP guidelines contained in the Draft National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for San Bernardino County, Structural BMPs shall be required for the proposed Project. They shall be sized to comply with one of the following numeric sizing criteria or be considered by the permittees to provide equivalent or better treatment.

Volume Based BMPs shall be designed to infiltrate or treat either:

- The volume of runoff produced from the 85th percentile 24-hour storm event, as determined from the local historical rainfall record; or
- The volume of the annual runoff produced by the 85th percentile 24-hours rainfall event, determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998); or
- The volume of annual runoff based on unit basin storage volume, to achieve 80% or more volume treatment by the method recommended in California Stormwater Best Management Practice Handbook – Industrial/Commercial (1993); or
- The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event.

OR

Flow – based BMPs shall be designed to infiltrate or treat either:

- The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour; or
- The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or
- The maximum flow rate of runoff, as determined from the local historical rainfall record that achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two.

The following are the minimum required controls to be implemented as a part of the *Water Quality Management Plan (WQMP) for Urban Runoff*.

- Control of Impervious Runoff – Surface runoff shall be directed to landscaped areas or pervious areas.
- Common Area Efficient Irrigation – Physical implementation of the landscape plan consistent with County Administrative Design Guidelines or city equivalent, which may include provision of water sensors, programmable irrigation timers, etc.
- Common Area Runoff-Minimizing Landscape Design – Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration.
- Catch Basin Stenciling – "No Dumping – Flows to Lake" or equivalent effective phrase shall be stenciled on catch basins to alert the public as to the destination of pollutant discharging into storm drain.
- Debris Posts – These shall be installed to prevent large floatable debris from entering the storm drains. They shall be placed upstream of the cross culverts.
- Inlet Trash Racks – These shall be installed where appropriate to reduce intake and transport through the storm drain system of large floatable debris. Trash racks shall be provided where drainage from open areas enters storm drain or cross culverts.

IMPLEMENTATION AND VERIFICATION:			
1) The applicant shall submit a Water Quality Management Plan to the County Building and Safety Division to review compliance with the County NPDES, TMDLs and other WQMP standards. 2) The County Building and Safety Division shall verify compliance with the Water Quality Management Plan.			
COMPLIANCE RECORD:			
WHEN REQUIRED:	1) Prior to the issuance of a grading permit. 2) Prior to the issuance of a grading permit.		
SUBMITTED:		**DATE SUBMITTED:**	
1.		1.	
2.		2.	
APPROVED BY:		**DATE APPROVED:**	

INSPECTED BY:	DATE:	INSPECTED BY:	DATE:

CORRECTION REQUIRED: (attach copies of correspondence)	DATE:

MITIGATION MEASURE:

GEOLOGY AND SOILS

5.11-4c Storm water treatment under the NPDES Permit and the future TMDL requirements shall include the construction of treatment BMPs. Treatment BMPs appropriate for on-site use shall include infiltration trenches and basins, swales, inlet filtration, and/or water quality basins. All storm water runoff shall be treated before leaving the site to reduce pollutants in Big Bear Lake.

Infiltration Trenches and Basins

Infiltration Trenches and/or Basins shall be used on site to meet potential future TMDLs for noxious aquatic plants and nutrients. Infiltration trenches and basins treat storm water runoff through filtration. A typical infiltration trench is essentially an excavated trench that is lined with filter fabric and backfilled with stones. Depth of the infiltration trench shall range from three to eight feet and shall be located in areas with permeable soils, and water table and bedrock depth situated well below the bottom of the trench. Trenches shall not be used to trap coarse sediments since large sediment would likely clog the trench. Grass buffers may be installed to capture sediment before it enters the trench to minimize clogging. Infiltration basins shall be used for drainage areas between five and 50 acres. Infiltration basins shall be either in-line or off-line, and may treat different volumes such as the water quality volume or the 2-year or 10-year storm.

Swales

The project shall implement either vegetative swales, enhanced vegetated swales utilizing check dams and wide depressions, a series of small detention facilities designed similarly to a dry detention basin, or a combination of these treatment methods into a treatment train (series of Structural BMPs). The Water Quality Management Plan shall address treatment for the Project to assure that runoff from the site is treated to the "maximum extent practicable".

The swales shall be treated as water quality features and shall be maintained differently than grass areas. Specifically, pesticides, herbicide, and fertilizers, which may be used on the grass areas, shall not be used in the vegetation swales.

Filtration

Filtration shall be implemented as a treatment method and shall use drop-in infiltration devices or inline devices. Drop-infiltration devices at all curb inlets within the internal parking lots shall be implemented to provide potential pollutant removal. Existing examples of these filtration devices include the Drain Pac Storm Drain Inserts and Fossil Filters. These types of devices are efficient at removing oil and grease, debris, and suspended solids from treated waters. Some of these devices have also exhibited high efficiencies at removing heavy metals and other pollutants.

Inline devices suggested for use onsite include the Continuous Deflection Separator (CDS® unit). Once the runoff has entered the storm drain, an in-line diversion would direct the treatment flow to a CDS® unit. The CDS® unit is a non-blocking, non-mechanical screening system, which would provide a second line of defense for solids removal. Adsorption materials can be added within the CDS® unit to aid in the removal of oil and grease. The treated flow will exit the CDS® unit and continue downstream.

To assure the efficiency of these filtration devices, monitoring shall be conducted. The use of street sweeps on the parking lots and streets shall aid in reducing the amounts of sediment and debris that flow through the devices. This will extend the effectiveness of the devices during a storm and will lower the frequency of required maintenance. The devices shall be checked and cleaned, if necessary, once a month during the rainy season, following any precipitation and at the end of the dry season prior to the first precipitation event of the rainy season.

	Consideration shall be given to using these filtration units in other areas besides the parking lot inlets. Another potential location is at the downstream end of the tributary pipes that feed the discharge point. Siting these units at a downstream point would allow for the treatment of a greater amount of runoff.

IMPLEMENTATION AND VERIFICATION:

1) The applicant shall submit a copy of the Stormwater treatment BMPs to the County Building and Safety Division for review.
2) The County Building and Safety Division shall review BMPs to verify compliance with NPDES and TMDL requirements.

COMPLIANCE RECORD:

WHEN REQUIRED:	1) Prior to the issuance of grading permits. 2) Prior to the issuance of grading permits.

SUBMITTED:	**DATE SUBMITTED:**
1.	1.
2.	2.
APPROVED BY:	**DATE APPROVED:**

INSPECTED BY:	**DATE:**	**INSPECTED BY:**	**DATE:**

CORRECTION REQUIRED: (attach copies of correspondence)	**DATE:**

14.0 Comments and Responses

14.0 COMMENTS AND RESPONSES

14.1 CEQA REQUIREMENTS

In accordance with Section 15088, 15089 and 15132 of the California Environmental Quality Act (CEQA) Guidelines, the County of San Bernardino has prepared the Environmental Impact Report (EIR) for the Moon Camp Tentative Tract #16136 Residential Subdivision Project (SCH #2002021105).

This Comments and Responses section combined with the Draft EIR, which was circulated from March 30, 2004 to May 13, 2004, make up the Final EIR. CEQA requires a 45-day public review period for a project of this nature. Although the public review period ended on May 13, 2004, the County did accept comment letters after this date, as late as July 2, 2004, to which responses will be provided. Any additional County recommendations or requirements during the certification process will make up the final components of this EIR.

The following is an excerpt from the CEQA Guidelines, Section 15132:

"The Final EIR shall consist of:

(a) The Draft EIR or a version of the draft.

(b) Comments and recommendations received on the Draft EIR either verbatim or in summary.

(c) A list of persons, organizations and public agencies commenting on the Draft EIR.

(d) The responses of the Lead Agency to significant environmental points raised in the review and consultation process.

(e) Any other information added by the Lead Agency."

This Comments and Responses section includes all of the above-required components and shall be attached to the revised Draft EIR to make up the Final EIR. Each comment letter is followed by the corresponding responses. A response is provided for each comment raising significant environmental issues, as received by the County during the Draft EIR review period. Added or modified text is double underlined (example) while deleted text is struck out (~~example~~).

14.2 LIST OF COMMENTORS: 45-DAY DRAFT EIR REVIEW

FEDERAL, STATE AND LOCAL GOVERNMENT AGENCIES

1. Wes Reeder, County of San Bernardino
2. Greg Holmes, Department of Toxic Substances Control
3. Leslie MacNair, California Department of Fish and Game
4. Dennis Castrillo, California Governor's Office of Emergency Services
5. Jeffrey M. Smith, Southern California Association of Governments
6. Allison L. Stewart, United States Department of Agriculture
7. Terry Roberts, California Governor's Office of Planning and Research: State Clearinghouse and Planning Unit

PRIVATE/SPECIAL INTEREST GROUPS

8. Rogelio A. Rawlins, The Gas Company
9. Janet Davidson, Friends of Fawnskin
10. Sandy Steers, Friends of Fawnskin
11. Kassie Siegel, Center for Biological Diversity
12. Thomas Brandau, Friends of Fawnskin
13. Sandy Steers, Friends of Fawnskin
14. Ervin Nichols, The Sierra Club
15. Phillip R. Goode, William H. Marquette, and John R. Varsik, Big Bear Solar Observatory
16. Dorothy Myers, San Bernardino Audubon Society

INDIVIDUALS

17. Betty Conroy
18. Peg Allen
19. Barbara J. Finlayson-Pitts, Ph.D. and James N. Pitts, Jr., Ph. D.,
20. Herbert V. Clotts
21. Robert R. Henrich
22. Donald L. Eads, M.D.
23. Mary Lu Drake
24. Christine Florio
25. Everett H. Greenberg
26. Robert S. Drake
27. Joseph and Barbara Francuz
28. Jane E. MacNett
29. James C. McGrew and Lola E. McGrew
30. Roman M. Silberfeld
31. William C. Hazewinkel
32. Robert R. Henrich
33. Lindi Holland
34. Anne Browning McIntosh, AICP
35. James C. McGrew
36. Ervin Nichols

37. Peter J. Tennyson
38. Nancy Walker
39. Joseph and Barbara Francuz
40. Martha Brown
41. Robin and Scott Eliason
42. Marla J. Henrich
43. Dr. Gerald and Natalie Marks
44. William Hazewinkel and Nancy Walker
45. Beverly Ornelas
46. Sandy Steers
47. R. Lee and Marilyn Whitney
48. Thomas and Kimberly Brickley
49. Roman Silberfeld
50. Peter J. and Mary Tennyson
51. Gary and Judith Schkade
52. Stephen Youngerman
53. Marc and Mildred Mandel

COMMENT NO. 1

INTEROFFICE MEMO

DATE April 15, 2004

PHONE (909) 387-4240
MAIL CODE 0181

FROM WES REEDER, County Geologist
Building and Safety Division

TO MATT SLOWIK, Senior Associate Planner
Advance Planning Division

SUBJECT COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT, MOONCAMP DEVELOPMENT PROJECT, FAWNSKIN

Comments were previously provided for the Administrative Draft Environmental Impact Report (Interoffice memorandum dated September 12, 2002) and the Screencheck Draft Environmental Impact Report (August 5, 2003). Many of those previous comments are still applicable to the Draft Environmental Impact Report (DEIR).

Generally, there are two areas of concern, which include groundwater and the need for geotechnical and geologic design-level investigations.

Groundwater

The DEIR concludes that impacts related to water are considered as significant and unavoidable. The mitigation listed in table 2.2 of the DEIR includes a requirement for a video inspection of the existing on-site water wells prior to issuance of building permits. However, it is unclear just what "impact" this is intended to mitigate. The way this issue is presented in the DEIR is inconsistent with my understanding of the nature of the anticipated impacts and inconsistent with our previous discussions. 1-1

The water issue includes several subissues that appear to have been lumped into one overall impact. These subissues are: 1-2

- Current lack of a designated water purveyor
- Overdraft of the underlying aquifer
- Possible connection of the on-site wells with the waters of Big Bear Lake
- Need for additional off-site wells and/or construction of a new water reservoir

As you are aware, release of the DEIR was delayed several months pending publication of the Focused Geohydrologic Evaluation by Geoscience Support Services, Inc. for the City of Big Bear Lake Department of Water and Power (DWP). The report, dated December 3, 2003 was intended to supercede a previous Geohydrologic Investigation conducted by Geoscience in July 2000. However, the DEIR spends much time discussing the older report. In addition, page 5.11-6 states that the western one-third of the site lies within the Grout Creek Hydrologic Subunit and references the 2000 Geoscience report. This is incorrect. The DEIR then continues to discuss groundwater conditions within the Grout Creek Hydrologic Unit, although no project-related wells are currently proposed there. 1-3

The conclusion of the recently released 2003 study is simple and clear. The entire Moon Camp site is located within Subunit A of the North Shore Hydrologic Subunit. Subunit A is estimated to have an average groundwater recharge of 29-acre feet per year. According to page 5.3-16 of the DEIR, the DWP has estimated an Average Daily Demand for project water at 41,400 gallons. This equates to approximately 46 acre-feet per year. Therefore, there is a net deficit of 12-acre feet (46-29=12). The DEIR misses this point altogether. 1-4

The DEIR is inconsistent with respect to the overdraft discussion. Page 5.11-20 states "*the proposed project may result in groundwater overdraft*". Page 5.11-23 states that the groundwater basin "*is in a state of overdraft*". Page 8-15 states that "*a potential groundwater overdraft condition would occur*" due to the project. To indicate that groundwater overdraft may occur, would occur and is occurring is inconsistent. 1-5

The possible connection between the on-site wells and the waters of Big Bear Lake was mentioned in both of the Geoscience reports and in the DEIR. However, it is not treated as a separate issue. It should be considered independent from the impact of groundwater overdraft in that it may be possible to mitigate this impact by relocating wells up slope and away from the lake. 1-6

Page 5.3-16 of the DEIR states that the project applicant "*would be required to deposit funds with the DWP for new well construction unless a proven source of supply is provided by the developer at locations satisfactory to DWP and not exceeding sub-basin safe yields*". However, it is unknown whether DWP will be the water purveyor. In addition, if new wells are considered as part of the project description (on or off site) their potential impacts should be included in the environmental analysis. 1-7

Page 5.3-17 of the DEIR indicates that the existing Cline Miller Reservoir is not capable of serving the project. Apparently, a new reservoir 300% to 400% larger would be required. In addition, a 12-inch transmission pipeline would be required to connect the project to the new reservoir. It is unclear why these are not considered part of the project description. 1-8

Geotechnical/Geologic Design Criteria

To date, only a geologic feasibility study has been submitted and approved through the Building and Safety Division. Design-level geologic and geotechnical investigations are required prior to recordation and prior to issuance of grading or building permits. The need for additional studies was indicated in the DEIR but placed as mitigation for expansive soils (see Section 5.10-5 on page 5.10-15 and elsewhere in the DEIR). The requirement for an engineering geology investigation and a liquefaction analysis has nothing to do with the potential for expansive soils. 1-9

The DEIR implies that specific design has been recommended and approved for this project. Section 5.10-1 on page 5.10-15 (and elsewhere) states "*south facing cut slopes **shall** utilize 2:1 buttressed slopes using on site native materials, or by constructing geotextile-reinforced soil buttresses where cut slopes are planned*". (Emphasis added.) The design and methods utilized for cut slope stability must be approved by Building and Safety. As stated, no design-specific reports have been submitted for technical review. The DEIR should simply state that there is a potential for instability of south facing cut slopes and that this instability can be mitigated through standard engineering design as recommended in the required geologic and geotechnical reports. 1-10

WR:ljg

cc: Randy Scott, Division Chief, Advance Planning Division

Response to Commentor No. 1
Wes Reeder, County of San Bernardino
April 15, 2004

1-1 The purpose of the video logs is to determine if any modifications to the existing non-operative wells are necessary prior to use. Analysis and Mitigation Measure 5.3-6a of the Draft EIR have been updated to reflect the nature of the video inspection logs and requirement for step-drawdown and constant rate pumping tests.

Page 5.3-16, Paragraph 5 of the Draft EIR has been revised in the Final EIR as follows:

> Potential Water Supply Wells FP-2 and FP-3. As stated above, the project site includes two existing on-site water wells located within the North Shore Hydrologic Subunit that could potentially supply water to the project. ~~The two wells referenced may have potential to meet the Moon Camp area demand requirements.~~ The wells, which were drilled in 1987, are located on the Moon Camp property and are not currently in operation. The most recent data available regarding the wells was collected in 1987 and is summarized in Table 5.3-2, *Summary of Data on Wells FP-2 and FP-3*.

Page 5.3-17, Paragraph 1 of the Draft EIR has been revised in the Final EIR as follows:

> Although the yields indicate that the wells show adequate potential to supply water to the project, the North Shore Hydrologic Subunit has been identified to likely be in a state of overdraft and more specifically, subarea A is estimated to have a recharge rate of approximately 29-acre feet per year, which is not enough to meet the 46 acre-feet per demand of the proposed project. ~~Although overdraft conditions have been noted for the groundwater basin, the yield of the wells (as tested in 1987), show adequate water supply potential. However, prior to use, video logs should be run on each well to examine the condition of the casing and screen. Based on review of the video logs, it can be determined if any modifications are necessary prior to use. Following the video inspection (and redevelopment if necessary), updated values of production rates and pumping levels should be obtained through step-drawdown and constant rate pumping tests. Water samples should also be taken during testing and analyzed in accordance with standard requirements for a potable water supply.~~

Page 5.3-23, Mitigation Measure 5.3-6a of the Draft EIR has been revised in the Final EIR as follows:

5.3-6a	~~Prior to approval of building permits, a video inspection of water supply casings and screen shall be conducted in order to update~~ Values of production rates and pumping levels for on-site water supply wells shall be obtained through step-drawdown and constant rate pumping tests. Water samples shall be taken during the inspection for testing and analysis in accordance with standard requirements.

1-2 The sub-issues identified by the Commentor are addressed in Section 5.3, *Public Services and Utilities*, and Section 5.11, *Hydrology and Drainage*. Also, refer to Response to Comment Nos. 1-3 to 1-6.

1-3 Section 5.11, *Hydrology and Drainage*, of the Draft EIR has been revised to state the applicable use of data included within the 2000 and 2003 reports prepared by Geosciences (GSS). The GSS 2003 report includes current data on groundwater supplies in the North Shore and Grout Creek Hydrologic Subunits. The findings in the GSS 2003 report regarding groundwater supplies are assumed to supercede the GSS 2000 report findings. However, the data regarding groundwater quality and well operations in the GSS 2000 report are still applicable and cited in the Final EIR, where appropriate. The Final EIR text has been updated to cite that the project is located entirely within tributary subarea A of the North Shore Hydrologic Subunit. Although the project is located within subarea A of the North Shore Hydrologic Subunit, groundwater conditions are also analyzed for the Grout Creek Hydrologic Subunit because water resources from this area could potentially be utilized as a water resource for the project. The EIR concludes that future studies and analysis will be required to provide proof of a proven water supply source for the project, regardless of whether the water resources come from the North Shore and/or Grout Creek Hydrologic Subunits or any other source.

Page 5.11-6, beginning with Paragraph 5 of the Draft EIR has been revised in the Final EIR as follows:

As stated above, ~~T~~the groundwater conditions cited in this EIR are based on two separate reports prepared by Geoscience Support Services, Inc. (GSS). The GSS 2000 report includes data on the groundwater quality, on-site well operations (Wells-FP-2 and FP-3) and groundwater supply potential. ~~in 2000 and a~~ The GSS 2003 report ~~Focused Geohydrologic Evaluation of the Maximum Perennial Yield for the North Shore and Grout Creek Hydrologic Subareas, prepared in 2003~~ includes current data on groundwater supplies in the North Shore and Grout Creek Hydrologic Subunits. The findings in the GSS 2003 report regarding groundwater supplies are assumed to supercede the 2000 findings. The GSS 2003 report presents a focused geohydrologic evaluation of the maximum perennial yield of the North Shore and Grout Creek Subunits that includes dividing each subunit into smaller tributary subareas. However, the data regarding groundwater quality and well operations in the GSS 2000 report are still applicable and cited in this section.

It is also noted that the wells analyzed in the GSS 2000 report are not included in the GSS 2003 report, as they are non-operational. Well FP-2 is located on the Moon Camp project site.

Although the project area is located entirely within tributary subarea A of the North Shore Hydrologic Subunit, potential groundwater resources are analyzed for both the North Shore and the Grout Creek Hydrologic Subunits as they are both considered potential sources to supply water to the project.

~~According to the 2000 report, the entire project site is within subunit A of the North Shore subarea of Big Bear Lake. The western one-third lies within the Grout Creek subarea. The North Shore subarea is similar in several respects to the Grout Creek subarea. For example, a considerable amount of the water bearing (older alluvial) material present is above the known groundwater surface. Only a band of these materials adjacent to Big Bear Lake are continuously saturated.~~

~~According to a recent geohydrologic investigation of the Moon Camp Area by Geoscience Support Services (GSS, 2000), the older alluvial deposits represent the main water-bearing formation beneath the site. Groundwater-level data from two U.S. Forest Service wells located within the project area suggest that Big Bear Lake provides recharge to the aquifer beneath the project area. Additional groundwater recharge emanates from gravity drainage from the higher elevations north of the Moon Camp area.~~

~~Based on studies by GSS (2000), the main water-bearing zones within the older alluvial deposits consist of intermixed and interlayered sand and gravels. However, lithologic data from the two U.S. Forest Service wells indicate that these sand and gravel aquifers are not continuous over wide areas and tend to follow subsurface channels (GSS, 2000). In mid 2000, groundwater beneath the southern margin of the site was approximately 5 to 10 feet below the level in the lake. More recent groundwater level observations from the three exploratory borings drilled for the liquefaction analysis appears to be similar with respect to the level of the lake.~~

~~The results from GSS 2000 geohydrologic investigation indicate the recoverable amount of groundwater in the Moon Camp area is estimated at 230 acre-feet per year. Based on the nature of the aquifer materials, thickness of the aquifer and the discharge rate of existing wells in the Moon Camp area is estimated at 230 acre-feet per year. Based on the nature of the aquifer materials, thickness of the aquifer and the discharge rate of existing wells in the Moon Camp area, the potential to develop a 100 gallon per minute (gpm) water well supply is considered by GSS (2000) to be good. Chemical analyses of the groundwater from the two on-site water wells indicate that the groundwater is of superior quality. However, the iron concentration (0.69 mg/l) in one well exceeds the state maximum concentration limit for iron (0.3 mg/l) (GSS, 2000).~~

The following insert, to be added following Paragraph 3 on Page 5.11-8 of the Draft EIR, is included in the Final EIR:

NORTH SHORE HYDROLOGIC SUBUNIT

Groundwater in the North Shore Hydrologic Subunit generally occurs in the unconsolidated alluvial deposits on the lower slopes of the surrounding mountains and in the fractures and weathered portions of the bedrock. Groundwater in the alluvium occurs at depths ranging from approximately 5 feet (ft) in the western portions of the Subunit and near the RV Park wells to approximately 50 ft near Division Well Nos. 6 and 7 (refer to Figure 2 in the GSS 2003 report for well location in the North Shore and Grout Creek Subunits).

Groundwater flows by gravity drainage from areas of high elevation (the mountain slopes) into areas of low elevation, ultimately collecting in the sediments beneath Big Bear Lake. Groundwater recharge likely occurs as deep percolation of runoff through the younger alluvium and fractures in the bedrock during periods of prolonged precipitation.

The primary sources of groundwater discharge from the North Shore Subunit are underflow and groundwater pumping from wells within the Subunit. The DWP currently operates four vertical production wells within the North Shore Subunit (RV Park Well Nos. 1 and 2 and Division Well Nos. 6 and 7). Combined average annual groundwater production from DWP wells between 1993 and 2002 is 282 acre-feet per year acre-ft/yr. Pumping data for the 20 private wells in the Subunit were not available. However, assuming that they are domestic sources and that an average single family home uses approximately 200 gallons per day per year (gpd/yr), it is estimated that production from these wells is approximately 4.5 acre-ft/yr.

Groundwater levels in the central portion of the North Shore Hydrologic Subunit, as measured in RV Park Well No. 1, have declined approximately 20 feet between 1996 and 2002. The groundwater level in this well is relatively stable, however, with most of the decline occurring after year 2000, a period of relatively dry climatic conditions. Groundwater levels in Division Well No. 6, located in the eastern portion of the Subunit, have declined approximately 80 ft between 1992 and 2003. Recent groundwater level declines in the eastern portion of the Subunit can also be correlated with dry climatic conditions, although the greater degree of decline is also a reflection of higher groundwater production in the area.

Estimates of Average Annual Groundwater Recharge (North Shore Subunit)

Estimates of average annual groundwater recharge were assigned to each tributary subarea using the watershed model. Required input parameters for the watershed model for which no measured data were available were obtained from the EPA database of hydrologic parameters. Based on the watershed modeling results, the estimates of average annual groundwater recharge for the North Shore Hydrologic Subunit range from approximately 150 to 430 acre-ft/yr with a midpoint of approximately 290 acre-ft/yr. This range of recharge is approximately 2 to 7 percent of average annual precipitation for the Subunit, which is within the range of accepted recharge estimates for other groundwater basins in southern California (3 to 7 percent) determined by the Metropolitan Water District of Southern

California (MWD). The midpoint of the range is approximately 4.5 percent of precipitation for the Subunit.

Estimates of average annual groundwater recharge for the six tributary subareas range from 27 acre-ft/yr (subarea E) to 73 acre-ft/yr (subarea B) (refer to Table 5.11-3, *Summary of Groundwater Recharge Results North Shore Tributary Subareas*). These groundwater recharge estimates represent the average of the watershed model output range, which is based on the average of typical and possible input values. The data suggests that the RV Park wells are producing groundwater at a rate (approximately 14 acre-ft/yr), which is well within their subarea's (subarea B) average annual groundwater recharge. Combined average annual groundwater production from Division Well Nos. 6 and 7 is exceeding that subarea's (subarea F) average annual groundwater recharge. However, it is important to note that these wells are in the alluvial portion of the subarea, which is in hydraulic continuity with the alluvial portions of the adjacent hydrologic subunit (i.e. the Division Subunit to the south). Accordingly, production from these wells should be evaluated in the context of the groundwater basin in this area and not the watershed tributary to the wells.

Maximum Perennial Yield (North Shore Subunit)

According to the GSS 2003 report, the midpoint of the estimated range of average annual groundwater recharge (approximately 290 acre-feet per year) is considered a good estimate of maximum perennial yield for the North Shore Hydrologic Subunit, given the available data.

The following insert, to be added below Table 5.11-3 on Page 5.11-8 of the Draft EIR, is included in the Final EIR:

GROUT CREEK HYDROLOGIC SUBUNIT

Groundwater within the Grout Creek Subunit occurs in both the bedrock and alluvium. The Cedar Dell slant wells (located in subarea C) are drilled into the Mesozoic granitic rock and typically produce approximately 20 gallons per minute, collectively. Groundwater in the alluvium occurs at depths ranging from approximately 20 to 90 ft and flows to the south toward Grout Bay (Big Bear Lake) at a gradient of 0.024 to 0.043 ft/ft. Pumping test and lithologic data from the Barbara Lee Lane Well and specific capacity data from Wells 12P01, 13C01, and Northshore Well Nos. 1, 2, and 3 were used to estimate aquifer transmissivity. Estimates range from 700 to 1,900 gpd/ft.

Groundwater recharge likely occurs within the Grout Creek streambed during periods of extended runoff, near the contact between the bedrock and alluvium and, to a lesser extent, as percolation of precipitation directly on the alluvium. Groundwater recharge also occurs through fractures in the bedrock formations.

The primary sources of groundwater discharge from the Grout Creek Subunit are underflow and groundwater pumping from wells within the Subunit. DWP currently

operates two vertical production wells, two slant wells in bedrock, and one spring within the Grout Creek Subunit. Average annual groundwater production from DWP wells within the Subunit from 1989 to 2002 has been approximately 134 acre-ft/yr. With the exception of pumping from Barbara Lee Lane Well No. 1, all of the municipal groundwater production in the Grout Creek Hydrologic Subunit is from tributary subarea C. Pumping data for the 29 private wells in the Subunit were not available. However, assuming that they are domestic sources and that an average single family home uses about 200 gpd/yr, it is estimated that production from these wells is approximately 6.5 acre-ft/yr.

Estimates of Average Annual Groundwater Recharge (Grout Creek Subunit)

Groundwater level elevations in North Shore Well Nos. 1 and 3, both located at the discharge end of tributary subarea C, have been relatively stable between 1995 and 2003, with seasonal fluctuations and a minor decline during the relatively dry climatic cycle from 1999 to December 2003. The average annual groundwater recharge of the Grout Creek Subunit was estimated using the underflow method and the watershed model.

The underflow method indicated an average annual groundwater recharge estimate of approximately 200 acre-ft/yr. It should be noted, however, that the underflow calculation only accounts for outflow in the alluvial aquifer and does not account for outflow through the bedrock in the Subunit. It is assumed that some outflow occurs within the bedrock aquifer, which is one reason why the underflow estimate for the Grout Creek Subunit is lower than the perennial yield estimate from the watershed model (described below).

Based on the watershed modeling results, the average annual groundwater recharge for the Grout Creek Hydrologic Subunit (subareas A through D) is estimated to range from approximately 260 to 840 acre-ft/yr with a midpoint of approximately 550 acre-ft/yr (refer to Table 5.11-4, *Summary of Groundwater Recharge Results Grout Creek Tributary Subareas*). This range of recharge is approximately 2 to 8 percent of average annual precipitation for the Subunit. The midpoint of the range is approximately 5 percent of precipitation for the Subunit. Assumed input parameters for the watershed model are based on the average of EPA' s suggested parameter ranges.

The relative disparity between the average annual recharge estimates obtained from the underflow analysis and watershed model is partly due to the estimated nature of the input parameters used in each analysis. In the case of the underflow analysis, the transmissivity parameter is estimated based on review of lithologic logs and pumping tests in wells within the Big Bear area that are perforated in similar aquifer materials. More representative values can be obtained via formal aquifer pumping tests using the wells in the Subunit. For the watershed model, 18 of the 20 required input parameters are estimated from the EPA' s database, which is not specific to the mountains of Southern California. Additionally, the underflow analysis does not account for all of the recharge within the bedrock. As data is collected in the future, the range of recharge will become less.

Estimates of average annual groundwater recharge for the four tributary subareas range from 66 acre-ft/yr (subarea D) to 217 acre-ft/yr (subarea C). These average annual recharge values represent the average of the watershed model output range, which is based on the average of typical and possible input values. These data suggest that average annual groundwater production from the Grout Creek Hydrologic Subunit (approximately 134 acre-ft/yr), which occurs almost entirely from tributary subarea C, is within the average annual recharge for both the tributary subarea and the hydrologic subunit.

Maximum Perennial Yield (Grout Creek Subunit)

The maximum perennial yield of the Grout Creek Hydrologic Subunit is within the range of average annual groundwater recharge specified by the watershed model, but is more likely to be in the lower end of the range than the upper end. As mentioned previously, by definition, maximum perennial yield is the amount of water that can be developed economically, legally and politically. In consideration of this, subareas A and B of the Grout Creek Subunit are remote and are located on land under the jurisdiction of the United States Forest Service (USFS). There is no established distribution system in subareas A and B of the Grout Creek Subunit. Furthermore, access to the area would likely require a lengthy negotiation process with the USFS. Given these factors, developing groundwater resources in these subareas is not currently practical.

At this time, it is recommended to use the sum of the midpoint recharge estimates for tributary subareas C and D (217 acre-ft plus 66 acre-ft; see Table 5.11-4) as the maximum perennial yield for the Grout Creek Subunit (total of 283 acre-ft/yr). It should be emphasized that as groundwater production is initiated in each subarea, it will be very important to monitor groundwater levels in dedicated non-pumping monitoring wells (i.e., "key wells") located in each tributary subarea from which groundwater is extracted. As was recommended for the North Shore Hydrologic Subunit, future management of the groundwater resources in each tributary subarea should rely more on established groundwater level thresholds than the perennial yield estimates.

The results of the groundwater recharge analysis for the Grout Creek Subunit are as follows:

Table 5.11-4
Summary of Ground Water Recharge Results
Grout Creek Tributary Subareas

Tributary Subarea	Area (acres)	Annual Precipitation	Average Annual Ground Water	Average Annual Ground Water	Average of Ground Water
A	1,074	33.44	74	249	161
B	850	29.01	50	160	105
C	1,668	29.93	104	331	217

D	592	26.74	32	99	66
Total (A to D)	4,184	119	260	839	549
Total (C and D only)	2,260	56.67	136	430	283

Tributary subareas A and B are excluded from the totals because they are not currently practicable to developed due to their remote locations and are located on land under the jurisdiction of the U.S. Forest Service.

1-4 Section 5.11, *Hydrology and Drainage*, of the Draft EIR has been revised to compare the water demand generated by the proposed project and the recharge rate of tributary subarea A of the North Shore Hydrologic Subunit in which the project area is located. According to the 2003 GSS report, the groundwater recharge rate of the subarea A is approximately 29-acre feet per year and the anticipated water demand for the proposed project is approximately 46 acre-feet per year. Thus, the Commentor is correct in their evaluation that there is a net deficit of 17-acre feet per year (46-29=17) in tributary subarea A in regards to the anticipated water demand of the project.

Page 5.11-23, Paragraph 2 of the Draft EIR has been revised in the Final EIR as follows:

As stated in Section 5.3, *Public Services and Utilities*, the project would require approximately 46 acre-feet per year of water to meet the average daily water demand for the proposed residential uses. If water was obtained from existing well(s) (FP-2 and/or FP-3), which are located in subarea A of the North Creek Hydrologic Subunit, subarea A alone would not have the requisite water resources to meet the ADD over the course of a one-year period, as it only averages approximately 29 ac-ft/yr of groundwater recharge. Thus, it can be concluded that additional water resources beyond what is available from on-site wells or wells located within subarea A of the North Shore Hydrologic Subunit would need to be obtained to meet the water demands of the project.

~~Regarding the two existing wells located within the Moon Camp Project site, no mention was given in the latest GSS report as to the potential hydrologic interconnection of the groundwater aquifer with Big Bear Lake. Given the proximity of these wells to the lake, it appears highly probably that the water extracted from one or both of these wells could include some component of lake water.~~

Based upon the conclusions rendered by GSS and subsequent peer review, additional review is necessary to conclude hydrologic subunit effects. Although mitigation measures requiring further testing are referenced, based upon the evidence presented to date, it is concluded that impacts to groundwater resources are~~overdraft is~~ a significant adverse effect and until additional technical review is conducted to verify conditions, the Project would result in an unavoidable impact.

1-5 Section 5.11, *Hydrology and Drainage*, of the Draft EIR has been revised to state that based upon the information/studies available as of the publication of the Draft EIR, there is the potential that the groundwater basin is in a state of overdraft. This conclusion is based upon the available data from the 2003 GSS report and the necessity to conduct additional studies to determine the state of groundwater conditions in the North Shore and Grout Creek Hydrologic Subunits.

Page 5.11-23, the first bullet point of the Draft EIR has been revised in the Final EIR as follows:

> It is stated that the reason for the recent groundwater level declines in the eastern portion of North Shore can be correlated with dry climatic conditions although the greater degree of decline is also a reflection of higher groundwater production in the area. Based on Mr. Magorien's review of the data, the production rate from Division Well No. 6 (see report Table 4) is the much more correlatable with the drop in water levels. Based upon information/studies available as of the publication of the Draft EIR, there is the potential that~~It appears~~ the North Shore Subunit is in an overdraft situation given ~~their~~the analyzed pumping rates.

Page 5.11-23, Paragraph 1 of the Draft EIR has been revised in the Final EIR as follows:

> Based on the information presented in the 2003 GSS report, as well as the 2000 report, it is concluded by Mr. Magorien in the peer review that the groundwater basin associated with the North Shore Hydrologic Subunit in which the Moon Camp Project area is situated~~, is in~~ has the potential to be in a state of overdraft. Any additional groundwater withdrawals from this Subunit will only exacerbate this potential overdraft condition. Considerably more investigative studies involving exploratory drilling and aquifer testing to assess the actual nature of the groundwater regime in the vicinity of the Moon Camp Project are is warranted. Furthermore, although there appears to be groundwater resources available within the neighboring Grout Creek hydrologic unit, a more thorough hydrogeologic investigation is also warranted for this hydrologic unit before additional groundwater resources can be exploited for a project the size of Moon Camp.

Page 5.11-27, Mitigation Measure 5.11-2 of the Draft EIR has been revised in the Final EIR as follows:

> **GROUNDWATER**
>
> Refer to Mitigation Measures 5.3-6a and 5.3-6b for mitigation regarding operations and groundwater quality from existing on-site wells.
>
> ~~5.11-2 Based upon the technical analysis presented, a potential groundwater overdraft condition would occur and no additional mitigation measures~~

~~have been identified.~~

5.11-2a Within three months of project approval, the Project Applicant shall submit a plan for a detailed geohydrologic investigation. The plan must present the possible sources of groundwater selected for the project and the methodology proposed to investigate those sources. If the on-site wells are to be utilized to serve this project, it must be determined if either could draw water from Big Bear Lake. The plan must be prepared by a California Registered Geologist.

5.11-2b Within six months of plan approval, the Project Applicant shall submit the results of the geohydrologic investigation. The report must be prepared by a California Registered Geologist.

5.11-2c Concurrently or within three months of approval by the geohydrologic report, the Project Applicant shall submit a groundwater monitoring plan in accordance with San Bernardino County's "Guidelines for Preparation of a Groundwater Monitoring Plan." The plan must be prepared by a California Registered Geologist.

1-6 According to the GSS 2000 and 2003 reports, there exists a potential connection between groundwater levels of the on-site wells and water of Big Bear Lake.

The following paragraph, to be added below Paragraph 3 on Page 5.11-23 of the Draft EIR, will be included in the Final EIR:

Interference with Big Bear Lake Water Levels

Regarding the two existing wells located within the Moon Camp Project site, no mention was given in the latest 2003 GSS report as to the potential hydrologic interconnection of the groundwater aquifer with Big Bear Lake. The GGSS 2000 report states that the water level in the lake is approximately 5 to 10 feet higher than the water level elevation of Well FP-2, indicating that there is the potential for recharge from the lake. Thus, given the proximity of the existing on-site wells to the lake, it appears highly probable that the water extracted from one or both of these wells could include some component of lake water. It may be possible to mitigate this impact by relocating wells up slope and away from the lake. However, further study is necessary to determine the interconnection of lake water to the subareas of the North Shore and Grout Creek Subunits.

1-7 The Commentor is correct is his comments. Section 5.3, *Public Services and Utilities*, of the Draft EIR has been revised to clarify that the Big Bear Department of Water and Power (DWP) and/or the County Special District could be the water purveyor for the project and that funds would be deposited to the appropriate agency, as necessary.

Page 5.3-16, Paragraph 2 and the proceeding text of the Draft EIR has been revised in the Final EIR as follows:

Water Demand. The DWP has estimated the ADD for the Fawnskin area to be approximately ~~450~~ 250 gallons per day per EDU (gpd/EDU). [Note to Reviewer: The updated calculation is based upon further analysis by SO & Associates Engineers, dated September 7, 2004.] The letter report has been incorporated in to the EIR Appendix.] The MDD considers water usage over an 8 to 10-hour period each day. The Project's ADD and MDD are as follows:

Average daily demand (ADD) = 92 EDU x 250 gpd/EDU
= 25.77 AF/year

Maximum day demand (MDD) = 2.5 x ADD/1,440 minutes per day
= 57,500 gpd (about 40 gpm)

Assuming the ADD calculated above, the project would require approximately 25.77 acre-feet of water per year to supply the proposed residential uses.

Fire Flow Requirements. The existing water distribution system was originally designed for approximately 750-gpm fire flow for two hours. The current requirement per the County Fire Department for the Fawnskin area is between 1,000 gpm and 1,500 gpm depending on the building square footage. The fire flow may be further increased in the future. As such, the water distribution system was analyzed to handle the maximum day demand of the proposed development plus fire flow up to 1,500 gpm.

Water Supply and Storage Requirements. The State Health Department requires storage to account for one peak day usage. The DWP typically experiences one peak day during a summer holiday when tourists and part-time residents become full-time users. The coefficient of ~~450~~ 250 gpd/EDU and corresponding MDD is representative of that day and is the basis for calculating the water demand and storage requirement for the proposed Project as presented in prior discussions and outlined below:

Domestic Water Supply requirement (max day) = 40.0 gallons per minute

Operational Storage = (0.3 x MDD) = 17,250 gallons
Emergency Storage = (1.0 x MDD) = 57,500 gallons
Subtotal (without fire storage) = 74,750 gallons

Fire Storage (1,500 gpm x 2 hours) = 180,000 gallons
Total Storage Requirement = 255,000 gallons

Based on proposed development requirements (at MDD), ~~two new wells would be required~~ the project would need to have a water supply that~~to~~ could provide a minimum of 72.0 gallons per minute. As discussed below and in Section 5.11, *Hydrology and Drainage*, two existing on-site wells could potentially supply a portion of the water demand to the project. The project site is located within tributary subarea A of the North Shore Hydrologic Subunit. The groundwater recharge for subarea A is estimated to be approximately 29 acre-feet per year. Since the project would require approximately 46 acre-feet per year, it is concluded that on-site wells alone could not supply the necessary water resources to support the proposed residential uses. If the on-site wells were utilized to supply a portion of the water supply to the project, ~~T~~the Project Applicant would be required to deposit funds with the DWP and/or BBCSD to equip the wells to meet the appropriate water agency's standards.~~for new well construction unless a proven source of supply is provided by the developer at locations satisfactory to DWP and not exceeding sub-basin safe yields.~~ As stated in Section 5.11, ~~Hydrology and Drainage, the testing of overdraft conditions for~~ the groundwater basin associated with the North Shore Hydrologic Subunit ~~is inconclusive~~has the potential to be in an overdraft situation, thus, it has been concluded that impacts to groundwater resources are significant and unavoidable. Therefore, additional studies and analysis will need to be provided by the Project Applicant to indicate a proven source of water supply for the project.

1-8 The modifications necessary to the water distribution system, including the Cline Miller Reservoir and associated piping, were identified as recommendations in the Water Feasibility Study (March 2002) to accommodate the necessary water storage and distribution requirements for the project. Although the Project Applicant would fund the identified improvements, any modifications to the water distribution system would be subject to approval by the appropriate water agency. The water agency would conduct any additional environmental review, as required by CEQA, for the identified water system improvements. These improvements to the water distribution system were incorporated into the EIR as mitigation measures.

1-9 The Commentor is correct in his comments. Currently, there is insufficient information concerning the expansive nature of the alluvial soils beneath the project site. This impact would need to be evaluated in design-level geotechnical analysis/studies, which include a quantitative geotechnical analysis and a design-level geotechnical engineering report. Implementation of the recommended mitigation measures from the design-level geotechnical engineering report would reduce potential impacts regarding expansive soils to less than significant levels.

Page 5.10-14, Paragraph 2 of the Draft EIR have been revised in the Final EIR as follows:

Currently, there is insufficient information concerning the expansive nature of the alluvial soils beneath the project site. This impact will need to be evaluated in ~~additional~~ design level geotechnical analysis/studies~~.~~, which include ~~1)~~ a quantitative geotechnical analysis~~, 2), a design level geotechnical engineering report,~~ and ~~3)~~ a design-level engineering geology report. Implementation of the

recommended mitigation measures ~~of~~ from the design-level geotechnical engineering report ~~the recommended mitigation measure and conclusions rendered in the referenced reports~~ would reduce impacts to less than significant levels.

Page 5.10-15, Mitigation Measure 5.10-5 of the Draft EIR have been revised in the Final EIR as follows:

EXPANSIVE SOILS

5.10-5 Prior to grading permit issuance, ~~geologic analysis/studies shall be required including 1)~~ a quantitative geotechnical analysis and~~of liquefaction, 2) a~~ design-level geotechnical engineering report shall be required and submitted to the County of San Bernardino Department of Building and Safety for their approval. ~~and 3) a design level engineering geology report.~~

1-10 The Commentor is correct in his comments. Section 5.10, *Geology and Soils*, of the Draft EIR has been revised to state that the potential for instability of south facing cut slopes can be mitigated by standard engineering design as recommended in the geologic and geotechnical reports.

Page 5.10-15, Mitigation Measure 5.10-1 of the Draft EIR has been revised in the Final EIR as follows:

SLOPE STABILITY

5.10-1 The stability of ~~S~~south facing cut slopes shall be analyzed as part of the design-level geotechnical investigation. ~~u~~Utilize~~e~~ing 2:1 buttressed slopes using on site native soil materials, or ~~by~~ constructing geotextile-reinforced soil buttresses ~~where~~for planned unstable cut slopes ~~are planned~~ are typical engineering designs for stabilizing slopes. Either of these methods, or other methods must be approved by the San Bernardino County Department of Building and Safety~~Geologist for slope reinforcement may be utilized~~.

COMMENT NO. 2

Department of Toxic Substances Control

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Cypress, California 90630

Terry Tamminen
Agency Secretary
Cal/EPA

Arnold Schwarzenegger
Governor

April 30, 2004

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NOTICE OF COMPLETION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE MOON CAMP RESIDENTIAL SUBDIVISION TT NO. 16136 PROJECT (SCH #2002021105)

Dear Mr. Slowik:

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

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

1) A copy of the NOC should be filed with the State Clearinghouse, 1400 Tenth Street, P.O. Box 3044, Sacramento, California 95812-3044, telephone number (916) 445-0613. **2-1**

2) DTSC's comments dated March 11, 2002, regarding the Notice of Preparation of a draft EIR have not been properly addressed in the currently submitted draft EIR. If a DTSC comment in the aforementioned letter is not applicable to the project site, it should be stated in the draft EIR. **2-2**

3) The Initial Study Environmental Checklist Form, Section VII, Hazards and Hazardous Materials, subsection (d) of the NOP states that the project site is not identified by the County of San Bernardino as a hazardous waste site (December 1, 1994). It also states that the County Fire Department HazMat Division responded to a Project Notice for Tentative Tract No: 16136 that "No hazardous materials conditions apply to this project" (July 24, 2001). The draft EIR needs to identify any known or potentially contaminated sites within the proposed Project area. For all identified sites, the draft EIR should evaluate **2-3**

whether conditions at the site pose a threat to human health or the environment. A Phase I Assessment may be sufficient to identify these sites. Following are the databases of some of the regulatory agencies:

- National Priorities List (NPL): A list is maintained by the United States Environmental Protection Agency (U.S.EPA).
- CalSites: A Database primarily used by the California Department of Toxic Substances Control.
- Resource Conservation and Recovery Information System (RCRIS): A database of RCRA facilities that is maintained by U.S. EPA.
- Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS): A database of CERCLA sites that is maintained by U.S.EPA. 2-3
- Solid Waste Information System (SWIS): A database provided by the California Integrated Waste Management Board which consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations.
- Leaking Underground Storage Tanks (LUST) / Spills, Leaks, Investigations and Cleanups (SLIC): A list that is maintained by Regional Water Quality Control Boards.
- Local County and City maintain lists for hazardous substances cleanup sites and leaking underground storage tanks.

4) The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may be contaminated, and the government agency to provide appropriate regulatory oversight. If hazardous materials/wastes were stored at the site, an environmental assessment should be conducted to determine if a release has occurred. If so, further studies should be carried out to delineate the nature and extent of the contamination, and it will be necessary to estimate the potential threat to public health and/or the environment posed by the site. It may also be necessary to determine if an expedited response action is required to reduce existing or potential threats to public health or the environment. If no immediate threat exists, the final 2-4

remedy should be implemented in compliance with state regulations and policies. 2-4

5) All environmental investigation and/or remediation should be conducted under a workplan which is approved by a regulatory agency that has jurisdiction to oversee hazardous waste cleanup. 2-5

Prior to approving the draft EIR, please address all of DTSC's comments. As the lead agency, it is your responsibility to ensure that all of DTSC's concerns are properly addressed.

DTSC provides guidance for preparation of a PEA, and cleanup oversight, through its Voluntary Cleanup Program (VCP). For additional information on the VCP, please visit DTSC's web site at www.dtsc.ca.gov.

If you have any questions regarding this letter, please contact Mr. Johnson P. Abraham, Project Manager, at (714) 484-5476.

Sincerely,

Greg Holmes
Unit Chief
Southern California Cleanup Operations Branch
Cypress Office

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

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

Response to Commentor No. 2
Greg Holmes, Department of Toxic Substances Control (DTSC)
April 30, 2004

2-1 A copy of the Notice of Completion (NOC) has been filed with the State Clearinghouse. The State Clearinghouse has indicated that they submitted the Draft EIR to selected state agencies for review (refer to Comment Letter Number 7, dated May 14, 2004).

2-2 In a letter dated March 2002, the DTSC provided the following comments regarding the Notice of Preparation (NOP) for the Draft EIR:

- The Draft EIR needs to provide the site history and past operations of the site.
- The Draft EIR should identify and determine whether current and/or historic uses at the site have resulted in any release of hazardous wastes/substances at the project site.
- If any past uses have resulted in the release of hazardous materials, appropriate mechanisms and/or remediation of the site needs to be identified.
- The site may fall under the "Border Zone of a Contaminated Property" if the site is located within 2,000 feet of an adjacent contaminated site.
- Project implementation may require soil excavation and filling, which will require appropriate sampling prior to the disposal of the excavated soil.
- If the project requires modifications or demolition to any existing structures, appropriate measures need to be taken regarding potential contaminates.
- If during construction activities, soil and/or groundwater contamination are suspected, construction in the project area should cease and the appropriate health and safety procedures should be implemented.

The Initial Study prepared for the proposed project in February 2002 addressed the potential impacts associated with Hazards and Hazardous Materials. The Initial Study concluded that the project would include hazardous materials that are typical of residential developments (i.e., household chemicals, pesticides, etc.). It is also stated that the project would include the storage of fuels associated with the marina facility. All hazardous materials would be subject to all local, state and federal regulations pertaining to the transport, use and storage of such material, which would ensure that any potentially significant impact regarding hazardous materials would be reduced to less than significant levels (please refer to Response VII (a-c) in the Initial Study).

Response VII (d) in the Initial Study indicates that the project site is not identified as a hazardous waste site per the County of San Bernardino "Identified Hazardous Waste Sites" map, dated December 1, 1994. To confirm that the project site is not