SECTION 3.0 – ENVIRONMENTAL ANALYSIS

3.1 ENVIRONMENTAL ISSUES ADDRESSED

An Initial Study (IS) was prepared for the Proposed Project in December 2010 (see Appendix A). Based on the findings documented in the IS, the LACFCD determined which issue areas required further analysis in the EIR. Environmental issue areas are listed by the level of significance of their impacts in Table 3.1-1 below, as determined by the IS process. Only those issue areas identified as having potentially significant impacts in the IS are further analyzed in this EIR.

Table 3.1-1: Summary of Environmental Impacts Identified in the Initial Study

No Impact	Less Than Significant Impact	Potentially Significant Impact
	Aesthetics (light, glare)	Aesthetics (scenic vistas, scenic resources within a state scenic highway, visual character)
Agriculture and Forest Resources		
		Air Quality
Biological Resources (habitat conservation plan)		Biological Resources (sensitive species, riparian habitat, wetlands, wildlife movement, local policies/ordinances)
		Cultural Resources
Geology and Soils (Alquist-Priolo Earthquake Fault Zoning, seismic ground shaking, liquefaction, landslides, unstable soil, expansive soil, septic tanks)		Geology and Soils (soil erosion)
		Greenhouse Gas Emissions
Hazards and Hazardous Materials (safety hazard at airport or private airstrip)	Hazards and Hazardous Materials (wildland fires)	Hazards and Hazardous Materials (transport/disposal, public, school, hazardous materials site, emergency response plan)
Hydrology and Water Quality (deplete groundwater, increase surface runoff, result in flooding, place housing or structures within a flood hazard area, expose people or structures to risk of flooding)	Hydrology and Water Quality (inundation)	Hydrology and Water Quality (water quality, drainage)
Land Use and Planning (habitat conservation plan)	Land Use and Planning (community)	Land Use and Planning (land use plan)
		Mineral Resources
Noise (permanent ambient noise levels, airport, private airstrip)		Noise (noise levels, vibration, temporary ambient noise levels)
Population and Housing		
Public Services (fire protection, police protection, schools, other public facilities)		Public Services (parks, covered under Recreation)
		Recreation

Table 3.1-1: Summary of Environmental Impacts Identified in the Initial Study

No Impact	Less Than Significant Impact	Potentially Significant Impact
Transportation and Traffic (air traffic)		Transportation and Traffic (circulation, level of service, design hazards, emergency access, alternative transportation)
Utilities and Service Systems (wastewater requirements, wastewater treatment facilities)	Utilities and Service Systems (water supply, wastewater treatment, landfill, regulations)	Utilities and Service Systems (stormwater drainage)

The LACFCD used the IS, as well as agency and public input received during the public comment period (September 28, 2011, to November 11, 2011), to determine the final scope for this EIR. The issue areas and their corresponding subchapter numbers discussed in the EIR include:

- 3.4 – Aesthetics
- 3.5 – Air Quality
- 3.6 – Biological Resources
- 3.7 – Cultural Resources
- 3.8 – Geology and Soils
- 3.9 – Greenhouse Gas Emissions
- 3.10 – Hazards and Hazardous Materials
- 3.11 – Hydrology and Water Quality
- 3.12 – Land Use and Planning
- 3.13 – Mineral Resources
- 3.14 – Noise and Vibration
- 3.15 – Recreation/Public Services
- 3.16 – Transportation and Traffic
- 3.17 – Utilities and Service Systems

Chapters 3.4 through 3.17 provide a detailed discussion of the environmental setting, impacts associated with the Proposed Project, cumulative impacts, and mitigation measures designed to reduce significant impacts.

3.2 ORGANIZATION OF ENVIRONMENTAL ANALYSIS

To assist the reader in comparing information about the various environmental issues, each chapter contains the following information.

- Introduction
- Existing Environmental Setting
- Applicable Regulations
- Significance Criteria
- Methodology
- Impacts and Mitigation
    - Project Impacts
        - Mitigation Measures

        - Residual Impacts
    - Cumulative Impacts
        - Mitigation Measures
        - Residual Impacts

3.3 TERMINOLOGY USED IN THIS ANALYSIS

For each question listed in the IS checklist, a determination of the level of significance of the impact is provided. Impacts are categorized in the following categories:

- No Impact. A designation of no impact is given when no adverse changes in the environment are expected.

- Less Than Significant. A less than significant impact would cause no substantial adverse change in the environment.

- Less Than Significant with Mitigation. A potentially significant (but mitigable) impact would have a substantial adverse impact on the environment but could be reduced to a less-than-significant level with incorporation of mitigation measure(s).

- Potentially Significant. A significant and unavoidable impact would cause a substantial adverse effect on the environment, and no feasible mitigation measures would be available to reduce the impact to a less-than-significant level.

3.4 AESTHETICS

3.4.1 Introduction

This section describes the Proposed Project's potential to affect visual resources (aesthetics) in the Proposed Project area. The visual resources to be analyzed include both natural and human-made features that make up the physical characteristics of the landscape. In general, natural resources include the landform, water, soil, and vegetation, while human-made features include physical structures, roads, etc. The analysis describes the potential aesthetic impacts of the Proposed Project on the existing landscape and discusses the compatibility of the Proposed Project with existing conditions and the effect on visual resources.

As noted in the Initial Study (Appendix A), impacts associated with light or glare were found to have a less than significant impact and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.4.2 Existing Environmental Setting

The Proposed Project site is located within Devil's Gate Reservoir and within Hahamongna Watershed Park. Hahamongna Watershed Park is approximately 300 acres of parkland and open space located at the base of Arroyo Seco Canyon, in the floodplain behind Devil's Gate Dam.

The Proposed Project site is primarily a flood control facility, with flood control features including a dam and reservoir that provide flood control for the Arroyo Seco and downstream areas. The Proposed Project site consists of a broad sediment basin with maintenance roads and currently contains areas of riparian, upland, and non-native vegetation communities and disturbed/non-vegetated areas. The distribution of the vegetated and disturbed/non-vegetated areas changes depending on seasonal conditions, water flow, and sediment deposition. The Proposed Project site is surrounded by recreational uses and urban development.

Views from the Proposed Project vicinity include views of Hahamongna Watershed Park, the JPL facility to the north, residential development to the east and south, portions of the Arroyo Seco Channel to the south, the San Gabriel Mountains to the north, and the Verdugo Mountains to the south. Devil's Gate Dam and Reservoir is generally flat, with a slight incline to the north. The various vegetation communities often dominate views in the foreground during dry weather, and seasonal rains can result in the retention of water behind the dam and scouring or washing out the vegetation and trees. As shown in aerial photographs of Devil's Gate Reservoir, from 2003, 2010, and 2011, the vegetation communities vary from year to year in composition and density (see Figure 3.4-1 Devil's Gate Reservoir View, May 2003, Figure 3.4-2: Devil's Gate Reservoir View, February 2010, and Figure 3.4-3: Devil's Gate Reservoir View, February 2011). Overall, the conditions for the vegetation had become degraded due to the sediment that has been deposited in the reservoir by the Station Fire.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP; however, due to the extremely dynamic drainage and vegetation conditions on the Proposed Project site; aesthetic conditions change on a regular basis due to seasonal conditions, water flow/views, water storage, and sediment conditions. As discussed above, in 2011 these resources were

severely impacted by sediment deposition. Most of the vegetation and trees on the Proposed Project site were dead, washed out, or buried under sediment, reducing the visual quality and views of the Proposed Project site. Since the publication of the NOP, some of the vegetation and trees have re-established, improving visual quality and views of the Proposed Project site. In order to achieve a more conservative analysis of the potential impacts to aesthetics from the Proposed Project, 2013 conditions were also taken into account. Figures of existing conditions and visual simulations of sediment removal and reservoir management conditions are based on 2013 conditions. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

Scenic Highways

The Proposed Project site is located approximately 1.6 miles from State Highway 2 – Angeles Crest Highway (SR-2), an Officially Designated State Scenic Highway, and is located in close proximity to I-210, an Eligible State Scenic Highway (Caltrans 2011) (see Figure 2.1-1: Proposed Project Location and Vicinity Map). Views of the Proposed Project site are not available from SR-2. Views of the Proposed Project site are available from I-210; but because of the traveling speed on the freeway and the limited viewpoint these views are of a very brief duration.

Figure 3.4-1
Devil's Gate Reservoir Sediment Removal
and Management Project
Reservoir View, May 2003

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20346 - \\cgi-gisdata01\GIS_DATA\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.4-1 Devil's Gate Reservoir View, May 2003.mxd

Figure 3.4-2
Devil's Gate Reservoir Sediment Removal
and Management Project
Reservoir View, February 2010

Version Date: 9/9/2013

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Figure 3.4-3
Devil's Gate Reservoir Sediment Removal
and Management Project
Reservoir View, February 2011

Version Date: 9/9/2013

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Scenic Vistas

A scenic vista is generally defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the public. Hahamongna Watershed Park Master Plan area, including the Proposed Project site, does not contain any designated scenic vistas (City of Pasadena 2002). Views of expansive vistas are available from locations around the Proposed Project site. These vistas can include views of the Devil's Gate Dam and Reservoir, Hahamongna Watershed Park recreational facilities, JPL facilities, residential areas, the San Gabriel Mountains, and the Verdugo Mountains. While the Proposed Project site is not designated as a scenic resource, it is considered to be an important scenic area and does receive a high degree of use (City of Pasadena 2002).

Representative Viewpoints

Views of the Proposed Project site are available from residences located on the eastern edge of the reservoir in the community of Altadena and residences south of I-210 in the City of La Cañada Flintridge. Public view areas include the designated trails that surround the reservoir including the Flint Wash Trail and the Arroyo Seco Trail (part of the Santa Monica Mountains Conservancy's Rim of the Valley trail network), the Gabrielino Trail, a U.S. National Recreation trail (designated by USFS), the Altadena Crest Trail, and the Hahamongna Watershed Park West Rim Trail. These trails include both paved and unpaved portions that are popular trails for hikers, mountain bikers, and equestrians. In addition, a bench along the Flint Wash Trail provides a location to stop and view the reservoir. Beyond the designated trails noted above, multiple maintenance roads are used by the LACFCD, Southern California Edison (SCE), and the City of Pasadena, among others, for operations and maintenance of Devil's Gate Reservoir and other facilities in the area and also serve as unofficial trails when reservoir water levels and conditions allow.

A number of representative viewpoints were established to assess existing visual resources conditions. These viewpoints were selected to be representative of the locations from which the Proposed Project site could be seen and would be easily accessible by the public. The viewpoints were located based on their usefulness in evaluating existing landscapes and potential impacts on visual resources. Locations of the representative viewpoints are shown on Figure 3.4-4 and are described below.

View 1 is located immediately to the west of the Devil's Gate Dam, from a bench that provides a view of the reservoir from the Flint Wash Trail (see Figure 3.4-5: Viewpoint 1 Existing Conditions). The view faces a northeasterly direction and provides a view of the dam face, the reservoir, the San Gabriel Mountains, Oak Grove Drive, JPL facilities, and the residential area to the east of the dam. The view also includes other man-made features such as maintenance roads, electrical lines, and the debris boom line. From this location viewers would be in close proximity to and would have an open, unobstructed view of the Proposed Project site. This view is easily accessed by the public, and the bench provides the opportunity to enjoy the view for a longer period of time.

View 2 is located above the Devil's Gate Dam face on a walkway/access road that follows the top of the dam (see Figure 3.4-6: Viewpoint 2 Existing Conditions). The view faces a northerly direction and provides a view of the reservoir, the San Gabriel Mountains, JPL facilities, and the western edge of Hahamongna Watershed Park. The view also includes other man-made features such as maintenance roads, electrical lines, and the debris boom line. From this location viewers would be in close proximity to and would have an open, unobstructed view of the Proposed Project site. This view is easily accessed by the public.

Proposed Project Boundary

Proposed Project Viewpoint

SCALE= 1 inch = 708 feet

0 354 708 1,416

Feet

Figure 3.4-4
Devil's Gate Reservoir Sediment Removal and Management Project
Proposed Project Viewpoints

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20346 - \\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.4-4 Proposed Project Viewpoints.mxd

View 3 is located immediately east of the dam face, on the Arroyo Seco Trail. The view faces a westerly direction and provides views of the dam face, the reservoir, Oak Grove Drive, JPL facilities, I-210, the western edge of Hahamongna Watershed Park, and La Cañada High School (see Figure 3.4-7: Viewpoint 3 Existing Conditions). The view also includes other man-made features such as maintenance roads, electrical lines, residences, and the debris boom line. From this location viewers would be in close proximity to and would have an open, unobstructed view of the Proposed Project site. This view is easily accessed by the public.

View 4 is located on Normandy Court in La Cañada Flintridge. The view faces in a northerly direction, and includes views of I-210, Oak Grove Drive, and Devil's Gate Dam in the foreground with the reservoir, JPL facilities, and residences visible against the backdrop of the San Gabriel Mountains (see Figure 3.4-8: Viewpoint 4 Existing Conditions). From this location the Proposed Project site would be a distant feature and range from unobstructed to obstructed views of the Proposed Project site. Access of this view would be largely limited to local residences.

View 5 is located at the western edge of a parking lot at the corner of Windsor Avenue and Ventura Street, also the location of the Gabrielino Trailhead. This area is located at the northeastern end of the reservoir (see Figure 3.4-9: Viewpoint 5 Existing Conditions). The view faces a southwesterly direction, and provides a view of the JPL facilities, the City of Pasadena's spreading grounds, electrical lines, the reservoir, the Verdugo Mountains, the San Gabriel Mountains, and a distant view of the dam face, I-210, Oak Grove Drive, and the western edge of Hahamongna Watershed Park.

Visual Sensitivity

A visual analysis was conducted to determine the existing visual sensitivity at the Proposed Project site. The visual quality, viewer sensitivity, and overall viewer exposure (visibility, distance zone, number of viewers, duration of view) was described for each representative viewpoint and is summarized above in Table 3.4-1: Existing Visual Conditions.

As discussed above, while the Proposed Project site is not designated as a scenic resource, it is considered to be an important scenic area and does receive a high degree of use (City of Pasadena 2002). Viewer sensitivity would range from high to moderate-high.

From Viewpoint 1, the Proposed Project site is highly visible, and view duration would be moderate. Combined with visual quality, number of viewers, and viewer sensitivity, this viewpoint would have an overall visual sensitivity of moderate-high.

From Viewpoints 2 and 3, the Proposed Project site is highly visible, and view duration would be low-moderate. Combined with visual quality, number of viewers, and viewer sensitivity, this viewpoint would have an overall visual sensitivity of moderate-high.

From Viewpoint 4, when not obscured by trees or residences, the Proposed Project site is visible but less dominant due to distance and other more dominant visual elements (I-210, Devil's Gate Dam, San Gabriel Mountains). View duration from residences would be high. Combined with visual quality, number of viewers, and viewer sensitivity, this viewpoint would have an overall visual sensitivity of moderate-high.

Legend

Proposed Project Boundary

Proposed Project Viewpoint

Figure 3.4-5
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 1 Existing Conditions

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Table 3.4-1: Existing Visual Conditions

Viewpoint No. (Location, pole, etc.)	Viewpoint			Visual Quality	Viewer Sensitivity	Viewer Exposure				Overall Visual Sensitivity
	Location	Direction Facing	Figure No.			Visibility	Distance Zone	Number of Viewers	Duration of View	
View 1	Bench near the west side of the dam	East	3.4-5	Moderate to High: The view includes a reservoir with scenic qualities including vegetation and open space against the backdrop of the San Gabriel Mountains. Many built features are visible including the dam, JPL facilities, residences, electrical lines, a nearby road, the debris boom, etc.	High: A place where recreation takes place, with a bench present	High	Reservoir: 0-0.8 mile; Road: 0.05 mile; JPL: 1-3 miles; Mountains: ~4+ miles	Moderate-High: Recreation areas have over 10,000 users per year[1], nearby freeway and roadways very highly traveled	Moderate	Moderate-High
View 2	Top of dam	North	3.4-6	Moderate to High: Displays the same scenic qualities as View 1, as well as many of the same built features including JPL facilities, residences, electrical lines, and the debris boom	High: A natural place to stop and look at the view	High	Reservoir: 0-1.1 mile; JPL: 0.8-1.3 miles; Mountains: ~4+ miles	Moderate-High: Recreation areas have over 10,000 users per year,[1] nearby freeway and roadways very highly traveled	Low-moderate	Moderate-High
View 3	East of dam near trail	West	3.4-7	Moderate to High: Displays the same scenic qualities as View 1, with built features including the dam, electrical lines, boom, residential, etc. More dam infrastructure is apparent in the foreground, as well as a school and a freeway.	High: Located on a designated trail	High	Dam: 0-0.05 mile; Freeway: 0.4 mile; School: 0.5 mile	Moderate-High: Recreation areas have over 10,000 users per year,[1] nearby freeway and roadways very highly traveled	Low-moderate	Moderate-High
View 4	Normandy Court	North	3.4-8	Moderate to High: The view includes freeway and dam infrastructure in the foreground with reservoir, JPL facilities, and residences visible against the backdrop of the San Gabriel Mountains.	High: Views available from residences and from roadway.	Moderate-High	Freeway: 0.1 mile; Dam: 0.18 mile; Reservoir: 0.19-1.3 miles; JPL: 1.9-1.4 miles; Mountains: ~4+ miles	Low: Limited to residential uses and roadways with limited use	High	Moderate-High
View 5	Windsor Parking Lot	Southwest	3.4-9	Moderate to High: The view includes the reservoir; however, the characteristics are less natural, with spreading basins, stables, a disk golf course, and a freeway.	Moderate-High: a parking lot that is heavily used, trailhead, etc.	Moderate-High	Reservoir: 0-0.3 mile; JPL: 0.3-0.7 mile; Park: 0.4 mile; Freeway: 0.7 mile	Moderate-High: Recreation areas have over 10,000 users per year,[1] nearby freeway and roadways very highly traveled	Low-moderate	Moderate-High

[1] Personal communication, City of Pasadena Human Services & Recreation Department, April 2012.

Legend

- Proposed Project Boundary
- Proposed Project Viewpoint

Figure 3.4-6
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 2 Existing Conditions

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Legend

- Proposed Project Boundary
- Proposed Project Viewpoint

Figure 3.4-7
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 3 Existing Conditions

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Legend

Proposed Project Boundary

Proposed Project Viewpoint

Figure 3.4-8
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 4 Existing Conditions

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Legend

Proposed Project Boundary

Proposed Project Viewpoint

Figure 3.4-9
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 5 Existing Conditions

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From Viewpoint 5, the Proposed Project site is visible but less dominant due to distance and other more dominant visual elements (spreading grounds, JPL facilities). View duration would be low-moderate. Combined with visual quality, number of viewers, and viewer sensitivity, this viewpoint would have an overall visual sensitivity of moderate-high.

3.4.3 Applicable Regulations

LACFCD

Through easements granted in May of 1919 and March of 1965, the City of Pasadena granted the LACFCD, under a perpetual easement, the right to construct, reconstruct, inspect, maintain, repair, and operate Devil's Gate Dam, its spillway, bypasses, tunnels, and other support facilities as may be necessary for the construction and maintenance of a reservoir capable of impounding the waters of the Arroyo Seco for purposes of storage and control and to control such waters as may be necessary in the prevention of damage by flood (City of Pasadena 1919/1965).

City of Pasadena General Plan

The City of Pasadena General Plan Objectives and Policies pertaining to the Proposed Project are outlined below.

> OBJECTIVE 9 – Open Space Preservation and Acquisition: Preserve and acquire open space in Pasadena in order to enhance the quality of Pasadena life.
>
> Policy 9.5 – Stewardship of the Natural Environment: Encourage and promote the stewardship of Pasadena's natural environment, including water conservation, clean air, natural open space protection, and recycling. Encourage the use of native, water conserving, and regionally appropriate landscaping.

The General Plan Update Open Space and Conservation Element (City of Pasadena 2012c), provides a blueprint for natural open space and conservation. Implementation Measures found in this Element pertaining to the Proposed Project are outlined below.

> Protect Existing Open Space: Continue to preserve and restore the Arroyo Seco and Eaton Canyon.
>
> Zoning Changes: Protect the existing natural open space within the Hahamongna Watershed Park Master Plan area.

City of Pasadena Hahamongna Watershed Park Master Plan

Applicable Goals and Objectives of the Hahamongna Watershed Park Master Plan include the following:

Goal 2: The Devil's Gate flood control basin will be managed to provide protection to the developed and natural downstream areas.

Objectives:

- Facilitate the dam and reservoir maintenance operations in a manner that is compatible with the proposed features of the Master Plan and will result in minimal impacts to the surrounding area.
- Develop a sediment removal plan that minimizes the impact to the basin and to the surrounding neighborhoods.
- Develop a grading plan that allows habitat restoration and recreational activities to coexist with flood management and water conservation.

Goal 5: Enrich and promote the unique history and culture of Hahamongna Watershed Park.

Objectives:

- Develop design guidelines to ensure aesthetic compatibility and quality construction for any improvements made within Hahamongna Watershed Park.

Scenic Highways

The California Scenic Highway Program is administered by Caltrans. In general, a highway may be designated by Caltrans as scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. When a city or county nominates an eligible local highway for official scenic highway designation, it must identify and define the scenic corridor of the highway. The agency must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. The ordinances make up the scenic corridor protection program. In general, a designated scenic corridor is the land generally adjacent to and visible from the highway. A designated scenic corridor is generally identified using a motorist's line of vision. A reasonable boundary is selected when the view extends to the distant horizon (Caltrans 2013).

3.4.4 Significance Criteria

- *AESTHETICS-1: Would the project have a substantial adverse effect on a scenic vista?*
- *AESTHETICS-2: Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*
- *AESTHETICS-3: Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*
- *AESTHETICS-4: Cumulative Impacts*

3.4.5 Methodology

Chambers Group, Inc. (Chambers Group) has conducted a visual analysis of the Proposed Project site including the five LACFCD-chosen viewpoints. The implementation of the Proposed Project was analyzed using a visual analysis system which, in general, examines visual sensitivity and visual change. The

purpose of this analysis was to identify any significant impacts to visual resources as a result of the Proposed Project.

Existing Visual Sensitivity Factors

An analysis of the existing visual sensitivity of the Proposed Project site was made through an examination of the existing views and visual characteristics of the site. This was accomplished through a determination of public viewpoints, taking photographs from those viewpoints, and recording information including the visual quality of the site, potential viewer sensitivity, site visibility, and duration of views, among other information. These factors were qualified as follows:

Project Visual Sensitivity Factors

Viewpoints

Key viewpoints were selected to be representative of significant locations from which the project would be seen. Viewpoints were chosen based on their usefulness in evaluating existing landscapes and potential impacts on visual resources. Each viewpoint was photographed and its location and cardinal direction was recorded.

Visual Quality

Visual Quality is a measure of the overall impression or appeal of an area as determined by the landscape characteristics. This can include natural features such as landscapes, waterways, or natural open space or can include built features that are aesthetically pleasing such as a park or skyline or that have an associated public value. The five levels of visual quality can generally be defined as follows:

- *Low:* Landscape elements have low to no appeal, and the landscape is dominated by discordant built features. The landscape character is heavily altered.
- *Low-to-Moderate:* The landscape elements have low to moderate appeal due to some prominent, though not dominantly discordant, built features.
- *Moderate:* The landscape elements are moderately appealing; the landscape attributes have common or ordinary values. The landscape may contain discordant built features, but they are subordinate.
- *Moderate-to-High:* Landscape attributes have a mix of moderate and high values, containing built features that neither complement nor detract from overall visual quality.
- *High:* High visual appeal due to landscape elements including landforms, vegetative patterns, water characteristics, and cultural features. The viewpoint has distinctive landscape that attracts people to the view.

Viewer Sensitivity

Viewer Sensitivity is a factor used to represent the value of the visual landscape to the viewing public, including the extent to which the landscape is viewed. For example, a landscape may have high scenic qualities but be remotely located and, therefore, is seldom viewed. Sensitivity considers such factors as visual access (including duration and frequency of view), type and amount of use, public interest, adjacent land uses, and whether the landscape is part of a special or designated area. The three levels of viewer sensitivity can generally be defined as follows:

- *Low Sensitivity:* Areas that are remote from populated areas, major roadways, and protected areas or are severely degraded visually.
- *Medium Sensitivity:* Areas lacking specific, or designated, scenic resources protection but receive a high degree of use and/or are located in sufficiently close proximity to be within the viewshed of the protected area. Includes areas that are visible from well-traveled roads and highways.
- *High Sensitivity*: Areas that are either designated for scenic resources protection or receive a high degree of use.

Visibility

Visibility is how easily the view can be seen or accessed by the public. Visibility is determined during the site visit, based on viewing proximity, visible detail, lighting, and any screening or obscuring features; and is ranked low to high.

Distance Zones of Project Components

From the viewpoint chosen, the distance zones were identified to note the nearest elements and furthest elements in view, including the project site.

Type/Number of Viewers

This category identifies the type of area in which the viewer is located and the number of this type of viewer that could be expected. The types of areas would include: roadways, trails, parks, residential uses, etc. The number of viewers is qualified based on the type of viewer and ranked low to high.

Duration of View

This category identifies how long the view of the project site will be seen. If it is a designated lookout then the viewer can stand there as long as he or she wants; however, if the view is from a highway, the view would be relatively brief. The four levels of duration of view can generally be defined as follows:

- *Low:* Brief, less than one minute
- *Low to Moderate:* Less than 10 minutes

- *Moderate:* Less than one hour
- *High:* Over an hour (potentially indefinite)

Overall Visual Sensitivity

Under this category, the overall visual sensitivity of a site is derived from the combination of the above defined contributing and equally weighted factors of visual quality, viewer sensitivity, and overall viewer exposure (visibility, distance zone, number of viewers, duration of view) and is ranked from low to high. The summation of these factors is intuitive when all contributing factors receive the same ranking: if all factors are ranked high the summation will also be high; if all factors are ranked low the summation will also be low. When the contributing factors receive mixed rankings, a determination of summation is based on analyst judgment.

Project Visual Impact Factors

The visual impact a project may have on a site is qualified through the following factors:

Type of Visual Change

A description of what the visual change will entail; can include project and engineering details.

Visual Contrast

Describes the degree to which a project's visual characteristics or elements differ from the same visual elements established in the existing landscape. The degree of contrast can range from low to high. The elements in the landscape similar to those of a Proposed Project indicate a landscape more capable of accepting those project characteristics than a landscape where those elements are absent. This ability to accept alteration is often referred to as visual absorption capability and typically is inversely proportional to visual contrast; and is ranked from low to high.

Project Dominance

This section is a measure of a feature's apparent size relative to other visible landscape features and the total field of view. A feature's dominance is affected by its relative location in the field of view and the distance between the viewer and the feature. The level of dominance can range from low (subordinate) to moderate (codominant) to high (dominant).

View Blockage

Describes the extent to which any previously visible landscape features are blocked from view as a result of the project's scale and/or position. Absence of view blockage is ranked as none. When view blockage does occur, the degree of view blockage is ranked from low to high.

Overall Visual Change

This category offers a concluding assessment as to the degree of visual change that would be caused by a project. Overall visual change is derived by combining the three equally weighted

factors of visual contrast, project dominance, and view blockage. Overall visual change can range from low to high. The summation of these factors is intuitive when all contributing factors receive the same ranking: if all factors are ranked high the summation will also be high; if all factors are ranked low the summation will also be low. When the contributing factors receive mixed rankings, a determination of summation is based on analyst judgment.

Impact Significance

The determination of the level of impact a project may have on a project site is based on the relationship of the overall visual sensitivity to the expected overall visual change, as demonstrated in Table 3.4-2 below. Visual changes to a site with a high visual degree of sensitivity could be low without a potentially significant impact occurring. At the other end of the spectrum, visual changes to a site with a low degree of visual sensitivity could be high without a potentially significant impact occurring. The determinations are ranked as follows:

- **Not Significant –** visual changes are considered minor
- **Adverse but Less Than Significant –** visual changes may be viewed as negative but do not exceed environmental thresholds
- **Adverse and Potentially Significant -** visual changes are perceived as negative and may exceed environmental thresholds depending on project and site-specific circumstances
- **Significant -** visual changes are perceived as negative and do exceed environmental thresholds

Table 3.4-2: Visual Impact Significance

Overall Visual Sensitivity	Overall Visual Change				
	Low	Low to Moderate	Moderate	Moderate to High	High
Low	Less than Significant	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Low to Moderate	Less than Significant	Less than Significant	Less than Significant	Less than Significant	Potentially Significant
Moderate	Less than Significant	Less than Significant	Less than Significant	Potentially Significant	Potentially Significant
Moderate to High	Less than Significant	Less than Significant	Potentially Significant	Potentially Significant	Significant
High	Less than Significant	Potentially Significant	Potentially Significant	Significant	Significant

3.4.6 Impacts and Mitigation

AESTHETICS-1 *Have a substantially adverse effect on a scenic vista.*

Sediment Removal

Potential impacts to views are described below in Table 3.4-3: Sediment Removal.

Table 3.4-3: Sediment Removal Visual Change

Viewpoint No. (Location, pole, etc.)	Viewpoint		Visual Change				
	Location	Direction Facing	Type of Visual Change	Visual Contrast	Project Dominance	View Blockage	Overall Visual Change
View 1	Bench near the west side of the dam (near La Cañada Verdugo Road)	East	Area of vegetation and soil removal reduced in comparison to the Proposed Project. Large swaths of existing vegetation and topography will remain in the center and on the east and west sides of the Proposed Project site. Removal activities will occur seasonally over a five-year time frame.	High	Moderate	None	Moderate-High
View 2	Top of dam	North	Area of vegetation and soil removal reduced in comparison to the Proposed Project. Large swaths of existing vegetation and topography will remain in the center and on the east and west sides of the Proposed Project site. Removal activities will occur seasonally over a five-year time frame.	High	High	None	Moderate-High
View 3	East of dam near trail	West	Area of vegetation and soil removal reduced in comparison to the Proposed Project. Large swaths of existing vegetation and topography will remain in the center and on the east and	High	Moderate	None	Moderate-High

Table 3.4-3: Sediment Removal Visual Change

Viewpoint No. (Location, pole, etc.)	Viewpoint		Visual Change				
	Location	Direction Facing	Type of Visual Change	Visual Contrast	Project Dominance	View Blockage	Overall Visual Change
			west sides of the Proposed Project site. Removal activities will occur seasonally over a five-year time frame.				
View 4	Normandy Court	North	Area of vegetation and soil removal reduced in comparison to the Proposed Project. Large swaths of existing vegetation and topography will remain in the center and on the east and west sides of the Proposed Project site. Removal activities will occur seasonally over a five-year time frame.	Moderate-High	Moderate	None	Moderate
View 5	Windsor Parking Lot	Southwest	Area of vegetation and soil removal reduced in comparison to the Proposed Project. Large swaths of existing vegetation and topography will remain in the center and on the east and west sides of the Proposed Project site. Removal activities will occur seasonally over a five-year time frame.	Moderate-High	Moderate	None	Moderate

Table 3.4-4: Sediment Removal Visual Impact Significance summarizes the overall visual sensitivity and visual change associated with each of the viewpoints during sediment removal, and how these correspond to the impact significance.

Table 3.4-4: Sediment Removal Visual Impact Significance

Viewpoint	Overall Visual Sensitivity	Overall Visual Change	Impact Significance
View 1	Moderate-High	Moderate-High	Potentially Significant
View 2	Moderate-High	Moderate-High	Potentially Significant
View 3	Moderate-High	Moderate-High	Potentially Significant
View 4	Moderate-High	Moderate	Potentially Significant
View 5	Moderate-High	Moderate	Potentially Significant

The proposed sediment removal activities would change the visual characteristics of the Proposed Project site through the removal of sediment and associated vegetation and trees in the reservoir. Sediment removal activities would not result in obstruction or blockage of views due to the difference in elevation between viewpoints and the Proposed Project site. Construction equipment would also be visible in the basin. Views of construction equipment would be expected elements in the viewshed due to the ongoing IMP measures currently underway to keep debris from plugging the outlet works; however, the amount of equipment and duration will be greater for the Proposed Project than for the IMP measures.

With sediment removal, the topography of the reservoir would be lower, especially toward the downstream portion of the reservoir near the dam; and vegetation within the Proposed Project site would be removed. These elements would result in a high degree of contrast from existing visual characteristics and would result in a significant impact to scenic vistas. These highly contrasting elements would be highly visible from Viewpoints 1 through 3.

For Viewpoints 1 and 3, however, the codominant features of Devil's Gate Dam, the maintenance roads, electrical lines, and the debris boom line and other less dominant features of the San Gabriel Mountains, Oak Grove Drive, JPL facilities, and residential areas will remain unchanged. Sediment removal activities would also be visible from Viewpoint 4 and Viewpoint 5 but would be less dominant due to distance and other more dominant visual elements. The dominant features for Viewpoint 4 (I-210, Devil's Gate Dam, San Gabriel Mountains) and Viewpoint 5 (spreading grounds, JPL facilities) will remain unchanged.

Excavation and associated activities within the reservoir area are expected to take place during drier months, from April to December, as weather permits. During the wetter months, temporary changes to the visual characteristics of the Proposed Project site will be slightly less apparent with water storage in the basin. Some regrowth of riparian vegetation is likely to occur during this time. Both these factors will reduce the change in the visual characteristics associated with sediment removal. In addition, as discussed above, sediment removal activities would not introduce view-obstructing features.

Due to the multi-year duration of the sediment removal phase, the large-scale alteration, visibility of the site, and the level of viewer sensitivity, sediment removal activities will be a significant impact to scenic vistas (see Table 3.4-4).

Reservoir Management

Reservoir management would not result in obstruction or blockage of views. Construction equipment would also be visible in the basin for short periods of time.

Under Management Option 1, after sediment removal, approximately 120 acres of vegetation will be maintained annually. Vegetation conditions on the Proposed Project site will change annually from disturbed to low and dense. Due to the rapid growth of wetland herbaceous plants, it is expected that during the majority of the year the Proposed Project site will be appear vegetated. Therefore, Management Option 1 will result in a lower degree of contrast than seen during sediment removal and will result in a less than significant impact to scenic vistas.

Visual simulations were created for Viewpoints 1 through 4 to portray the expected conditions under reservoir management Option 2 at each of the chosen locations (see Figure 3.4-10 Viewpoint 1 Reservoir Management Conditions, Figure 3.4-11: Viewpoint 2 Reservoir Management Conditions, Figure 3.4-12: Viewpoint 3 Reservoir Management Conditions, , and Figure 3.4-13: Viewpoint 4 Reservoir Management Conditions). These views were selected based upon location, accessibility, topography, and potential visibility. Visual simulations were not created for Viewpoint 5 due to dominance of other visual elements (spreading grounds, JPL facilities). Potential impacts to views are described below and summarized in Table 3.4-5: Table 3.4-5: Reservoir Management Visual Change. Table 3.4-6: Reservoir Management Visual Impact Significance summarizes the overall visual sensitivity and visual change associated with each of the viewpoints during reservoir management and how these correspond to the impact significance.

Under Management Option 2, approximately 91.28 acres on the southern half of the reservoir will be maintained annually. After completion of the proposed sediment removal activities, the disturbed areas outside the reservoir management area are expected to experience natural regrowth by native vegetation, primarily Riparian Herbaceous vegetation. Riparian Herbaceous vegetation is an early successional stage of willow scrub and riparian forest communities. Composed of pioneer wetland herbaceous plants that rapidly colonize disturbed areas (Gray and Bramlet 1992), this vegetation community is expected to continue to populate and/or re-establish the Proposed Project site after the annual mowing or removal/grubbing activities. As with existing conditions, vegetation conditions on the Proposed Project site, including height and density, would change on a regular basis due to seasonal conditions, water flow/views, water storage, and sediment conditions. Under Option 2, at the end of the sediment removal phase, implementation of Mitigation Measures MM BIO-6, MM BIO-7, and MM BIO-8 would involve habitat restoration and enhancement and tree replacement in the remaining approximately 86.45 acres on the northern half of the reservoir. As with existing conditions, vegetation conditions on the Proposed Project site, including height and density, would change on a regular basis due to seasonal conditions, water flow/views, water storage, and sediment conditions. The vegetation and trees on the northern half of the reservoir are expected to appear as more dominant features than the vegetation in the southern portion. Therefore, Management Option 2 will result in a lower degree of contrast than seen during sediment removal or under Management Option 1 and will result in a less than significant impact to scenic vistas.

Table 3.4-5: Reservoir Management Visual Change

Viewpoint No. (Location, pole, etc.)	Viewpoint			Visual Change				
	Location	Direction Facing	Figure No.	Type of Visual Change	Visual Contrast	Project Dominance	View Blockage	Overall Visual Change
View 1	Bench near the west side of the dam (near La Cañada Verdugo Road)	East	3.4-10	Views of natural regrowth of native vegetation in the majority of the reservoir. Trees on border of reservoir management area expected to be dominant features.	Low	Low	None	Low
View 2	Top of dam	North	3.4-11	Views of natural regrowth of native vegetation in the majority of the reservoir. Trees on border of reservoir management area expected to be dominant features.	Low	Low-Moderate	None	Low
View 3	East of dam near trail	West	3.4-12	Views of natural regrowth of native vegetation in the majority of the reservoir. Trees on border of reservoir management area expected to be dominant features.	Low	Low	None	Low
View 4	Normandy Court	North	3.4-13	Views of natural regrowth of native vegetation in the majority of the reservoir. Trees on border of reservoir management area expected to be dominant features.	Low	Low	None	Low
View 5	Windsor Parking Lot	Southwest	NA	Views of natural regrowth of native vegetation in the majority of the reservoir. Trees on border of reservoir management area expected to be dominant features.	Low	Low	None	Low

Table 3.4-6: Reservoir Management Visual Impact Significance

Viewpoint	Overall Visual Sensitivity	Overall Visual Change	Impact Significance
View 1	Low-Moderate	Moderate	Less than Significant
View 2	Low-Moderate	Moderate	Less than Significant
View 3	Low-Moderate	Moderate	Less than Significant
View 4	Low-Moderate	Moderate	Less than Significant
View 5	Low-Moderate	Moderate	Less than Significant

Mitigation Measure

Achieving the sediment removal described for the Proposed Project would necessitate excavation activities throughout the entire Proposed Project site for an extended duration. These factors eliminate any feasible mitigation measure to reduce this impact.

Reservoir management under either option will not result in any significant impacts and, therefore, will not require mitigation. For reservoir management under Option 2, however, the less than significant impacts will be further reduced through the implementation of Mitigation Measures MM BIO-6, MM BIO-7, and MM BIO-8.

Residual Impacts After Mitigation

Due to the multi-year duration of the sediment removal phase, the large-scale alteration, visibility of the site, the level of viewer sensitivity, and the lack of feasible mitigation measures; impacts to scenic vistas from sediment removal activities will remain significant.

Reservoir management impacts to scenic vistas under both options will result in a lower degree of contrast than seen during sediment removal and will result in a less than significant impact to scenic vistas.

AESTHETICS-2 *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.*

Sediment Removal/Reservoir Management

The Proposed Project would not involve damage to rock outcroppings or historic buildings and would not involve the obstruction of views. Activities under sediment removal and both reservoir management options would involve the removal of vegetation, including native and non-native trees, from the site.

As described previously, the Proposed Project is not visible from the only designated state scenic highway in the vicinity of the Proposed Project, State Highway 2 (SR-2). Therefore, implementation of the Proposed Project would not damage scenic resources within the viewshed of a designated state scenic highway.

I-210, located to the south of the Proposed Project site, is identified as "Eligible" in the State Scenic Highway Program. The Proposed Project would impact the existing visual character of a portion of the

viewshed through the removal of vegetation including native and non-native trees from the site. Views of the Proposed Project site from I-210, however, are very brief in nature (are visible for approximately 0.3 miles) and are dominated by views of the JPL facilities and San Gabriel Mountains. Implementation of the Proposed Project would not obstruct views of these features. Impacts to scenic resources within a state scenic highway would be less than significant.

Mitigation Measure

No mitigation is necessary.

Residual Impacts After Mitigation

The Proposed Project site is not visible from any designated state scenic highway and is only briefly visible from an eligible state scenic highway; therefore, impacts related to state scenic highways from sediment removal and reservoir management under both options are less than significant.

AESTHETICS-3 *Potentially degrade the existing visual character or quality of the site and its surroundings.*

The visual character of the Proposed Project site consists of a flood control facility, with flood control features including a dam and reservoir that provide flood control for the Arroyo Seco and downstream areas, surrounded by passive and active recreational uses, residential uses, the San Gabriel Mountains, and the JPL facilities. While the Proposed Project site does contain man-made features such as maintenance roads, electrical lines, and a debris boom line, the dominant visual characteristics are that of an open area composed of sediment and native and non-native vegetation along with the San Gabriel Mountains. The distribution of the vegetated and disturbed/non-vegetated areas changes depending on seasonal conditions, water flow, and sediment deposition. The Proposed Project site has an overall moderate-to-high visual quality due to this mix of openness, sediment/vegetative patterns, and built features.

Sediment Removal

The proposed sediment removal activities would change the visual characteristics of the existing Proposed Project site through the removal of sediment and associated vegetation in the reservoir. The potential impacts to visual characteristics are described above in Table 3.4-3: Sediment Removal Visual Change.

Disturbed landscape areas, both man-made and natural, are currently found throughout the basin. The amount and distribution of these areas change on a regular basis and are expected visual elements in the Proposed Project site landscape. Construction equipment will also be visible in the basin. Views of construction equipment will be expected elements in the viewshed, due to the ongoing IMP measures currently underway to keep debris from plugging the outlet works; however, the amount of equipment and duration onsite will be greater for the Proposed Project than for the IMP measures.

Sediment and debris management are considered existing operational components of Devil's Gate Reservoir and are not considered significant impacts to the visual characteristics of the site (City of Pasadena 2002). During the sediment removal phase, the disturbed areas will replace the vegetated areas, resulting in a high degree of contrast between existing and sediment removal conditions. While the open character of the site will remain, the overall visual quality of the Proposed Project site will be lower due to the large-scale alteration and decrease of desirable elements.

Excavation and associated activities within the reservoir area are expected to take place during drier months, from April to December, as weather permits. During the wetter months, temporary changes to the visual characteristics of the Proposed Project site will be slightly less apparent with water storage in the basin. Some regrowth of riparian vegetation is also likely to occur during this time. Both these factors will reduce the temporary change in the visual characteristics associated with sediment removal. Nevertheless, due to the multi-year duration of the sediment removal phase, the large-scale alteration, visibility of the site, and the level of viewer sensitivity, sediment removal activities will be a significant impact to the visual character of the Proposed Project site.

Reservoir Management

Under both management options, construction equipment would also be visible in the basin but only for short periods of time.

As described previously, under Management Option 1, vegetation conditions on the Proposed Project site will change annually from disturbed to low and dense. Due to the rapid growth of wetland herbaceous plants, it is expected that during the majority of the year the Proposed Project site will appear vegetated. Therefore, Management Option 1 will result in a lower degree of contrast than seen during sediment removal and will result in a less than significant impact to visual characteristics.

Figures 3.4-10 through 3.4-13 show the expected visual conditions under Reservoir Management Option 2. Potential impacts to visual characteristics are described above in Table 3.4-4 Reservoir Management Visual Change. and Table 3.4-5 Reservoir Management Visual Impact Significance. Under Management Option 2, approximately 91.28 acres on the southern half of the reservoir will exhibit the annual changes from disturbed to low, dense Riparian Herbaceous vegetation; and habitat restoration and enhancement and tree replacement will take place in the remaining approximately 86.45 acres on the northern half of the reservoir. As with existing conditions, vegetation conditions on the Proposed Project site, including height and density, would change on a regular basis due to seasonal conditions, water flow/views, water storage, and sediment conditions. Therefore, Management Option 2 will result in a lower degree of contrast than seen during sediment removal or under Management Option 1 and will result in a less than significant impact to visual characteristics.

Mitigation Measure

No feasible mitigation measures were identified for sediment removal.

For reservoir management under Option 2, at the end of the sediment removal phase, implementation of Mitigation Measures MM BIO-6, MM BIO-7, and MM BIO-8 would involve habitat restoration and enhancement and tree replacement in the remaining approximately 86.45 acres on the northern half of the reservoir.

Residual Impacts After Mitigation

Due to the multi-year duration of the sediment removal phase, the large-scale alteration, visibility of the site, the level of viewer sensitivity, and the lack of feasible mitigation; impacts to visual character from sediment removal activities will remain significant.

Reservoir management impacts to visual character under both options will result in a lower degree of contrast than seen during sediment removal and will result in a less than significant impact to visual character.

Legend

Proposed Project Boundary

Proposed Project Viewpoint

Figure 3.4-10
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 1 Reservoir Management Conditions

Version Date: 10/21/2013

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Legend

Proposed Project Boundary

Proposed Project Viewpoint

Figure 3.4-11
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 2 Reservoir Management Conditions

Version Date: 10/21/2013

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Legend

- Proposed Project Boundary
- Proposed Project Viewpoint

Figure 3.4-12
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 3 Reservoir Management Conditions

Version Date: 10/21/2013

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Legend

Proposed Project Boundary

Proposed Project Viewpoint

Figure 3.4-13
Devil's Gate Reservoir Sediment Removal and Management Project
Viewpoint 4 Reservoir Management Conditions

Version Date: 10/21/2013

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AESTHETICS-4 *Cumulative Impacts*

Only four of the cumulative projects are within the immediate vicinity of the Proposed Project site and would have the potential to combine with the Proposed Project to create a cumulative aesthetic impact.

The NASA Jet Propulsion Laboratory (JPL) On-Site Parking Structure project is expected to blend in with and have a lower skyline than the existing JPL buildings (AEGISS, Inc. 2012).

The Hahamongna Watershed Park MBMU Project will also not introduce view-obstructing structures into the landscape (City of Pasadena 2002). Construction activities from the Hahamongna Watershed Park MBMU Project may take place during the same time as the Proposed Project's sediment removal phase and could increase the temporary change in the views of and the visual characteristics of Hahamongna Watershed Park. In addition, mature existing vegetation would for the most part screen views of one project from the other, reducing the potential for cumulative impacts to less than significant.

The Arroyo Seco Canyon Project will also not introduce view-obstructing structures into the landscape (Arroyo Seco Foundation 2013). Construction activities from the Arroyo Seco Canyon Project may take place during the same time as the Proposed Project's sediment removal phase and could increase the temporary change in views of the visual characteristics of Hahamongna Watershed Park. Most of the changes would be beneficial, as the Arroyo Seco Canyon Project includes the reduction in size of the East Arroyo Parking lot, expanding the existing spreading grounds, restoring riparian habitat, and improving passive recreational opportunities.

The Devil's Gate Water Conservation Project will also not introduce view-obstructing structures into the landscape. Construction activities for the Devil's Gate Water Conservation Project may take place during the same time as the Proposed Project sediment removal phase and could increase the temporary change in views of the visual characteristics of Hahamongna Watershed Park; however, impacts would be confined to the eastern edge of the reservoir and would be less than significant.

Mitigation Measure

None required.

Residual Impacts After Mitigation

Cumulative impacts related to aesthetics are less than significant.

3.5 AIR QUALITY

3.5.1 Introduction

This section describes the existing air quality environmental conditions, and discusses the consequences to air quality related to Proposed Project implementation.

An Air Quality Report (Appendix B) was conducted to analyze the potential air quality impacts that could occur with the sediment removal and management at the Proposed Project. The Air Quality Report was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the CEQA Air Quality Handbook prepared by the South Coast Air Quality Management District (SCAQMD) for quantification of emissions (SCAQMD 1993).

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.5.2 Existing Environmental Setting

Atmospheric Setting

The Proposed Project site will be located wholly within the South Coast Air Basin (SCAB), which includes all of Orange County, as well as the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The distinctive climate of the SCAB is determined by its terrain and geographical location. The SCAB is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

Temperature and Precipitation

The annual average temperature varies little throughout the 6,600-square-mile SCAB, ranging from the low 60s to the high 80s. The inland portion, having a less pronounced oceanic influence, shows greater variability in the annual minimum and maximum temperatures. The mean annual high and low temperatures in the project area — as determined from the nearest weather station in Altadena, which has a period of record from 1922 to 2010— are 74.1 degrees Fahrenheit (°F) and 50.0 °F, respectively. The overall climate is a mild Mediterranean, with average monthly maximum temperatures reaching to over 86 °F in the summer and dipping to 42 °F in the winter (Western Regional Climate Center 2013).

In contrast to a fairly steady pattern of temperature, rainfall is seasonally and annually highly variable. The total average annual precipitation is 22.01 inches, with 83 percent of precipitation occurring between November and March.

Humidity

Although the SCAB has a semi-arid climate, the air near the surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SCAB by offshore winds, the ocean effect is dominant. Periods of heavy fog, especially along the coastline, are frequent; and low stratus clouds, often referred to as "high fog" are a characteristic climatic feature. Annual average humidity ranges from a high of about 72 percent at the coast to about 58 percent in the eastern portion of the SCAB.

Wind

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season. Typical summer winds in the project area range from 4 to 7 miles per hour (mph) during the day and 2 to 6 mph during the night.

Between the periods of dominant airflow, periods of air stagnation may occur, both in the morning and evening hours. Whether such a period of stagnation occurs is one of the critical determinants of air quality conditions on any given day. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino counties. In the winter, the greatest pollution problems are carbon monoxide (CO) and nitrogen oxides (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

During the winter and fall months, surface high-pressure systems over the SCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally have a duration of a few days before predominant meteorological conditions are re-established. Within the project area, Santa Ana winds have a decidedly distinct pattern. Santa Ana winds from a northerly direction flow through the Cajon Pass and then follow the Santa Ana River in a southwestward direction to the coast. The highest wind speeds typically occur during the afternoon due to daytime thermal convection caused by surface heating. This convection brings about a downward transfer of momentum from stronger winds aloft. While the maximum wind speed during Santa Ana conditions is undefined, sustained winds of 60 mph with higher gusts are not uncommon in the project vicinity.

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, two similarly distinct types of temperature inversions control the vertical depth through which pollutants are mixed. These inversions are the marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the "mixing height." This mixing height can change under conditions when the top of the inversion does not change. The combination of winds and inversions is a critical determinant in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the project area.

Air Quality Environment

Criteria Air Pollutants

As required by the Federal Clean Air Act (FCAA), the Environmental Protection Agency (EPA) has identified criteria pollutants and established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), suspended particulate matter (PM), and lead. Suspended PM has standards for both PM with an aerodynamic diameter of 10 microns or less (respirable PM, or PM_{10}) and PM with an aerodynamic diameter of 2.5 microns or less (fine PM, or $PM_{2.5}$). The California Air Resources Board (CARB) has established separate standards for the State, i.e., the California Ambient Air Quality Standards (CAAQS). The CARB established CAAQS for all the federal pollutants and sulfates, hydrogen sulfide, and visibility-reducing particles.

For some of the pollutants, the identified air quality standards are expressed in more than one averaging time in order to address the typical exposures found in the environment. For example, CO is expressed as a one-hour averaging time and an eight-hour averaging time. Regulations have set NAAQS and CAAQS limits in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Table 3.5-1 summarizes the State and federal ambient air quality standards for all criteria pollutants.

Table 3.5-1: National and State Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone (O_3)	1 hour	0.09 ppm	—
	8 hour	0.070 ppm	0.075 ppm
Respirable particulate matter (PM_{10})	24 hour	50 $\mu g/m^3$	150 $\mu g/m^3$
	Mean*	20 $\mu g/m^3$	—
Fine particulate matter ($PM_{2.5}$)	24 hour	—	35 $\mu g/m^3$
	Mean	12 $\mu g/m^3$	15 $\mu g/m^3$
Carbon monoxide (CO)	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm ***
	Mean	0.030 ppm	0.053 ppm***
Sulfur dioxide (SO_2)	1 hour	0.25 ppm	0.075 ppm ***
	24 hour	0.04 ppm	—
Lead**	30-day	1.5 $\mu g/m^3$	—
	Rolling 3-month	—	0.15 $\mu g/m^3$
	Quarter	—	1.5 $\mu g/m^3$

Table 3.5-1: National and State Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
Sulfates	24 hour	25 µg/m^3	**No Federal Standard**
Hydrogen sulfide	1 hour	0.03 ppm	
Vinyl chloride**	24 hour	0.01 ppm	
Visibility-reducing particles	8 hour	Extinction coefficient of 0.23 per kilometer, visibility of ten miles or more due to particles when relative humidity is less than 70%.	

Abbreviations:
ppm = parts per million
µg/m^3 = micrograms per cubic meter
30-day = 30-day average
Quarter = Calendar quarter
* Mean = Annual Arithmetic Mean
** The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
*** The new 1-hour and annual mean NO_2 standards and 1-hour SO_2 standard are parts per billion (ppb) but in order to compare national and California standards directly, it has been converted to ppm.
Reference: Ambient Air Quality Standards. California Air Resources Board. June 7, 2012.

Pollutants of Concern

As discussed below, the area surrounding the project is nonattainment or maintenance for ozone, PM, NO_2, and CO. Since reactive hydrocarbons and nitrogen oxides are precursors to ozone, that is, are photochemically combined to create ozone, these are considered pollutants of concern. Following is a brief description of these pollutants of concern, including health effects and the relative level of contributed emissions.

- **Carbon monoxide** (CO) is a colorless, odorless gas produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). CO levels tend to be highest during the winter months and low wind speed when the meteorological conditions favor the accumulation of the pollutants. This occurs when relatively low inversion levels trap pollutants near the ground and concentrate the CO. CO is essentially inert to plants and materials but can have significant effects on human health. CO gas enters the body through the lungs, dissolves in the blood, and creates a solid bond to hemoglobin, not allowing it to form a loose bond with carbon dioxide (CO_2), which is essential to the CO_2/oxygen exchange to occur. This firm binding therefore reduces available oxygen in the blood and oxygen delivery to the body's organs and tissues.

  A review of CARB's 2010 Emission Inventory shows that the primary source of CO is from on-road motor vehicles, which contribute almost 60 percent of the total CO in the SCAB portion of Los Angeles County. Other off-road engines and vehicles (such as construction equipment and recreational boats) contribute another 32 percent. Higher levels of CO generally occur in areas with heavy traffic congestion (CARB 2011).

- **Volatile organic compounds** (VOC) are defined as any compound of carbon, excluding CO, CO_2, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. It should be noted that no state or national ambient air quality standard for VOC exists because they are not classified as criteria pollutants. They are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOC are also transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.

  VOC emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest single contributor to VOC emissions in the SCAB portion of Los Angeles County with almost 30 percent of the total VOC emissions, with most of that coming from light-duty vehicles. Another 21 percent is contributed by off-road sources like construction equipment and recreational boats. Solvent evaporation VOC sources in the area contribute another 21 percent and are primarily from the use of consumer products.

- **Nitrogen oxides** (NO_X) serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown, irritating gas formed by the combination of NO and oxygen. The SCAB is designated a maintenance area for NO_2, but the primary concern is from the combined NO_X and its relationship to ozone. NO_X is an ozone precursor. A precursor is a directly emitted air contaminant that, when released into the atmosphere, forms, causes to be formed, or contributes to the formation of a secondary air contaminant for which an ambient air standard has been adopted, or whose presence in the atmosphere will contribute to the violation of one or more standards. When NO_X and VOC are released in the atmosphere, they can chemically react with one another in the presence of sunlight to form ozone.

  A review of the 2010 Emission Inventory shows that 86 percent of the total NO_X emissions in the SCAB portion of Los Angeles County come from on- and off-road vehicles (50 percent from on-road and 39 percent from off-road). The largest portion of on-road NO_X emissions come from heavy-duty diesel trucks (36 percent of the total for on-road) and light-duty cars and trucks (28 percent). The largest contributors from off-road sources are construction and demolition equipment (55 percent of total off-road NO_X).

- **Particulate matter** (PM). Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers in diameter pose the greatest problems because they can get deep into lungs and the bloodstream. Being even smaller, $PM_{2.5}$ will travel further into the lungs. Exposure to such particles can affect both lungs and heart.

  A review of the 2010 Emission Inventory shows that almost 69 percent of the total PM_{10} emissions in the SCAB portion of Los Angeles County come from the category labeled Miscellaneous Processes. The largest portion of the PM_{10} emissions from miscellaneous

processes come from paved road dust (66 percent of the total for miscellaneous processes) and construction and demolition (13 percent). Whereas a significant portion of PM_{10} emissions come from dislocation processes, $PM_{2.5}$ is smaller and is more often a result of particulates coming from combustion sources. Subsequently, Miscellaneous Processes only represent 42 percent of the total $PM_{2.5}$, with paved road dust (39 percent of Miscellaneous Processes $PM_{2.5}$), cooking (32 percent), and residential fuel combustion (14 percent) being the main contributors.

Other Criteria Pollutants

The standards for other criteria pollutants are either being met, maintained, or are unclassified in the SCAB; and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future.

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. According to the California's latest Almanac, the Health and Safety Code defines a TAC as an air pollutant which may cause or contribute to an increase in mortality or serious illness or which may pose a present or potential hazard to human health. Almost 200 compounds have been designated as TACs in California. The 10 TACs posing the greatest known health risk in California, based primarily on ambient air quality data, are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, formaldehyde, methylene chloride, para-dichlorobenzene, perchloroethylene, and diesel particulate matter (DPM). As with the criteria pollutants, TACs are emitted from stationary sources, area-wide sources, and mobile sources (CARB 2013).

The Almanac relates that an analysis of 2007 State-wide health risks demonstrated that 79 percent of entire State's risks from TACs are attributed to DPM. CARB identified the PM emissions from diesel-fueled engines as a TAC in August 1998 under California's TAC program. In California, diesel engine exhaust has been identified as a carcinogen. DPM is emitted from both mobile and stationary sources; but in California, on-road diesel-fueled vehicles contribute approximately 38 percent of the statewide total, with an additional 60 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 1 percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations.

The primary existing source of TAC emissions in the Proposed Project area is I-210.

Sensitive Receptors

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when air quality impacts from projects are evaluated. These people include children, the elderly, persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather are defined as sensitive receptors by SCAQMD.

Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Exercise

places a high demand on respiratory functions, which can be impaired by air pollution even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

The Proposed Project is located adjacent to residential areas, and 10 schools are located within one-half mile: i.e., Crestview Preparatory, Franklin Elementary, Hillside School and Learning Center, Jackson Elementary, La Cañada High School, Nanny's Nursery, Odyssey Charter, and Woodbury Preschool Village.

Historical Ambient Conditions

Local Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the Proposed Project area are best documented by ambient measurements made by the SCAQMD. The SCAQMD has an extensive air-monitoring network that measures levels of several air pollutants throughout the SCAB. The SCAQMD has subdivided the SCAB into 38 Source-Receptor Areas (SRA), each containing one or more monitoring stations. These SRAs provide a general representation of the local meteorological and air quality conditions within the particular area.

The Proposed Project is located within the western portion of the San Gabriel Valley Area. The project site is in SRA 8 and has a monitoring station located only 5 miles southeast of the project site; however, this site (the Pasadena, S. Wilson Avenue Site) measures only ozone, CO, NO_2, and $PM_{2.5}$. The nearest site that measures PM_{10} is located in Burbank on West Palm (8 miles west).

Table 3.5-2: Ambient Air Quality Monitoring Summary summarizes 2006 through 2011 published monitoring data from the CARB's Aerometric Data Analysis and Management System (ADAM) for the Pasadena and Burbank Stations (CARB 2013).

The monitoring data shows that no violations of CO or NO_2 were recorded in the most recent six years; however, the Pasadena Station demonstrates the general air quality problems of the SCAB in that it exceeded both federal and State 8-hour ozone standards and the State 1-hour ozone standard in all the last six years, with the last two years being the cleanest. The State PM_{10} in Burbank and the federal $PM_{2.5}$ standards in Pasadena were exceeded in five of the six years, with the 2010 season not exceeding either. The federal PM_{10} standard was not exceeded in Burbank in any of the years.

Table 3.5-2: Ambient Air Quality Monitoring Summary

Air Pollutant	2006	2007	2008	2009	2010	2011
Ozone (O_3) – Pasadena						
Max 1 Hour (ppm)	**0.151**	**0.149**	**0.122**	**0.176**	**0.101**	**0.107**
Days > CAAQS (0.09 ppm)	26	13	16	12	1	5
Max 8 Hour (ppm)	**0.117**	**0.101**	**0.100**	**0.114**	**0.081**	**0.084**
Days > NAAQS (0.08 ppm)	23	11	16	12	3	5
Days > CAAQS (0.070 ppm)	35	21	26	19	6	13
Carbon Monoxide (CO) – Pasadena						
Max 8 Hour (ppm)	2.80	2.28	2.21	2.13	1.94	2.15
Days > NAAQS (9 ppm)	0	0	0	0	0	0
Days > CAAQS (9.0 ppm)	0	0	0	0	0	0
Nitrogen Dioxide (NO_2) – Pasadena						
Max 1 Hour (ppm)	0.120	0.092	0.105	0.080	0.071	0.102
Days > CAAQS (0.18 ppm)	0	0	0	0	0	0
Particulate Matter (PM_{10}) – Burbank						
Max Daily California Measurement	**69**	**107**	**61**	**76**	50	**60**
Days > NAAQS (150 µg/m^3)	0	0	0	0	0	0
Days > CAAQS (50 µg/m^3)	10	5	5	10	0	2
Particulate Matter ($PM_{2.5}$) – Pasadena						
Max Daily National Measurement	**45.8**	**68.8**	**66.0**	**51.9**	35.2	**43.8**
Days > NAAQS (35 µg/m^3)	1	3	2	3	0	1

Abbreviations:

> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
CAAQS = California Ambient Air Quality Standard NAAQS = National Ambient Air Quality Standard
Mean = Annual Arithmetic Mean **Bold** = exceedance
* No Data/Insufficient Data

Reference: ADAM Air Quality Data Statistics. California Air Resources Board. http://www.arb.ca.gov/adam/welcome.html. Accessed March 2013.

3.5.3 Applicable Regulations

Air pollutants are regulated at the national, State, and air basin levels; and each agency has a different degree of control. EPA regulates at the national level, CARB regulates at the State level, and SCAQMD regulates at the air basin level in the project area.

Regulatory Agencies

Environmental Protection Agency (EPA)

EPA is the federal agency responsible for overseeing state air programs as they relate to the FCAA, approving State Implementation Plans (SIP), establishing NAAQS, and setting emission standards for mobile sources under federal jurisdiction. EPA has delegated the authority to implement many of the

federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

California Air Resources Board (CARB)

CARB is the State agency responsible for establishing CAAQS, adopting and enforcing emission standards for various sources including mobile sources (except where federal law preempts their authority), fuels, consumer products, and toxic air contaminants. CARB is also responsible for providing technical support to California's 35 local air districts, which are organized at the county or regional level, overseeing local air district compliance with State and federal law, approving local air plans, and submitting the SIP to the EPA. CARB also regulates mobile emission sources in California, such as construction equipment, trucks, and automobiles.

For the purposes of managing air quality in California, the California Health and Safety Codes Section 39606(a)(2) gave CARB the responsibility "based upon similar meteorological and geographic conditions and consideration for political boundary lines whenever practicable" to divide the State into air basins. Los Angeles County is located within three different air basins: the Mojave Desert Air Basin; Salton Sea Air Basin, and the SCAB. The Proposed Project area is in the SCAB portion of Los Angeles County.

South Coast Air Quality Management District (SCAQMD)

The air pollution control agency designated the authority for regulating air quality for the SCAB is SCAQMD. SCAQMD is responsible for controlling emissions primarily from stationary sources and maintains air quality monitoring stations throughout the SCAB to document ambient conditions. The SCAB contains an area of 10,743 square miles that is home to over 16.7 million people — about half the population of the whole state of California. It is the second most populated urban area in the United States and one of the smoggiest.

Attainment Status

Federal

EPA has identified nonattainment and attainment areas for each criteria air pollutant. Under amendments to the FCAA, EPA has classified air basins, or portions thereof, as "attainment," "nonattainment," or "unclassifiable," based on whether or not the national standards have been achieved. EPA uses two categories to designate areas with respect to $PM_{2.5}$ and NO_2, which include (1) does not meet the standard (nonattainment) and (2) cannot be classified or better than national standards (unclassifiable/attainment). EPA uses four categories to designate for SO_2, but the only two that are applicable in California are nonattainment or unclassifiable. EPA uses three categories to designate for PM_{10}: attainment, nonattainment, and unclassifiable.

The FCAA uses the classification system to design cleanup requirements appropriate for the severity of the pollution and set realistic deadlines for reaching cleanup goals. If an air basin is not in federal attainment (that is, it does not meet federal standards) for a particular pollutant, the basin is classified as a marginal, moderate, serious, severe, or extreme nonattainment area, based on the estimated time it would take to reach attainment. Nonattainment areas must take steps towards attainment by a specific timeline. Table 3.5-3 shows the federal attainment designations and classifications for the SCAB.

State

The current State Area Designations were adopted by CARB December 28, 2012, and became effective April 1, 2013. The area designations are made on a pollutant-by-pollutant basis, for all pollutants listed above. The State designation criteria specify four categories: nonattainment, nonattainment-transitional, attainment, and unclassified. A nonattainment designation indicates one or more violations of the State standard have occurred. A nonattainment-transitional designation is a subcategory of nonattainment that indicates improving air quality, with only occasional violations or exceedances of the State standard. In contrast, an attainment designation indicates no violations of the State standard. Finally, an unclassified designation indicates either a lack of air quality data or an incomplete set of air quality data (CARB 2012). State attainment designations in the affected area are listed in Table 3.5-3.

Table 3.5-3: Designations/Classifications for the SCAB

Pollutant	State Designation	Federal Designation (Classification)
Ozone	Nonattainment	Nonattainment (Extreme)
Suspended Particulate Matter (PM_{10})	Nonattainment	Nonattainment (Serious)
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Nonattainment	Attainment
Sulfur Dioxide (SO_2)	Unclassifiable	Attainment
Lead	Attainment	Unclassifiable
Sulfates	Attainment	**No federal standards**
Hydrogen Sulfide (H_2S)	Unclassified	
Visibility Reducing Particles	Unclassified	

Federal Clean Air Act Requirements

The FCAA requires plans to provide for the implementation of all reasonably available control measures including the adoption of reasonably available control technology for reducing emissions from existing sources. The FCAA encourages market-based approaches to emission control innovations. Other federal requirements addressed include mechanisms to track plan implementation and milestone compliance for ozone and CO.

2007 Air Quality Management Plan (AQMP)

To ensure continued progress toward clean air and comply with State and federal requirements, the SCAQMD, in conjunction with CARB and Southern California Association of Governments (SCAG), prepared the 2012 revision to its AQMP. The AQMP incorporated the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories (SCAQDM 2012).

The AQMP was designed to address the federal 24-hour $PM_{2.5}$ air quality standards in the SCAB, to satisfy the planning requirements of the FCAA, and to provide an update on the strategy to meet the 8-hour ozone standard. The AQMP established basin-wide and episodic short-term $PM_{2.5}$ measures; 8-hour ozone implementation measures; and transportation control measures.

In the AQMP, $PM_{2.5}$ measures focused primarily on directly emitted $PM_{2.5}$ and NO_X reductions which could be feasibly achieved by the attainment date of 2014. Direct $PM_{2.5}$ emissions could be substantially reduced by episodically curtailing residential wood burning and open burning from agricultural or prescribed (e.g., brush clearing) sources. NO_X is a precursor to both $PM_{2.5}$ and ozone, and thus NO_X reductions are preferred since they are also needed for ozone.

The 8-hour ozone strategy is more complex since the deadline for attainment is 2023. SCAQMD has another scheduled AQMP for 2015. The AQMP pursues actions that need to be implemented over the next two to three years to work towards meeting the 8-hour ozone standards. Proposed measures to reduce ozone include emission reductions from coatings, consumer products, and RECLAIM facilities as well as early transitions to cleaner technologies.

SCAQMD Rules and Regulations

All projects are subject to SCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the Proposed Project may include, but are not limited to, the following:

- Rule 401 – Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark as or darker in shade than that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

- Rule 402 – Nuisance. This Rule prohibits discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing crops or raising fowl or animals.

- Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or man-made condition capable of generating fugitive dust.

- Rule 431.1 and 431.2 – Sulfur Content of Gaseous Fuels and Sulfur Content of Liquid Fuels. This Rule requires the use of low-sulfur fuel for stationary construction equipment.

- Rule 1108 – Emulsified Asphalt**.** This Rule sets limitations on VOC content in asphalt.

Toxic Air Contaminants

Air quality regulations also focus on TACs. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, no threshold level exists below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, EPA and CARB regulate hazardous air pollutants (HAPs) and TACs, respectively,

through statutes and regulations that generally require the use of the maximum or best available control technology (MACT or BACT) for toxics to limit emissions at the source. These, in conjunction with additional rules set forth by SCAQMD, establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the FCAA directed EPA to promulgate National Emissions Standards for HAPs (NESHAP). The NESHAP may be different for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources. The FCAA called on EPA to promulgate emissions standards in two phases. In the first phase (1992 through 2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001 through 2008), EPA is required to promulgate health risk-based emissions standards, where deemed necessary, to address risks remaining after implementation of the technology-based NESHAP standards.

The FCAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum for benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the FCAA required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Act) (AB 2588). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review must occur before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. DPM was added to the CARB list of TACs in 1998.

Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit that particular TAC. If a substance has a safe threshold at which no toxic effect occurs, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions (e.g., an ATCM limits truck idling to 5 minutes).

CARB published an Air Quality and Land Use Handbook, which provides guidance concerning land use compatibility with TAC sources. While not a law or adopted policy, the Handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities, to help protect children and other sensitive populations (CARB 2005).

At the local level, air pollution control or management districts may adopt and enforce CARB control measures. Under SCAQMD Regulation XIV (Toxics and Other Non-Criteria Pollutants), and in particular Rule 1401 (New Source Review), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and

operated in accordance with applicable regulations, including new source review standards and air toxics control measures. SCAQMD limits emissions and public exposure to TACs through a number of programs. SCAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

3.5.4 Significance Criteria

- *AIR QUALITY-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?*
- *AIR QUALITY-2: Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?*
- *AIR QUALITY-3: Would the project result in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*
- *AIR QUALITY-4: Would the project expose sensitive receptors to substantial pollutant concentrations?*
- *AIR QUALITY-5: Would the project create objectionable odors affecting a substantial number of people?*
- *AIR QUALITY-6: Cumulative Impacts*

3.5.5 Methodology

Short-term activities related to the sediment removal and emissions from ongoing reservoir management activities of criteria air pollutants were assessed in accordance with methodologies recommended by CARB and SCAQMD. Emissions were calculated using methodologies and formulas from various agencies including CARB, EPA, and the SCAQMD. Modeled emissions were compared with applicable SCAQMD thresholds to determine significance. Calculations were based, in part, on information about vehicle trip generation from the Proposed Project's Traffic Impact Analysis (Appendix J) prepared for this project. Information on off-road equipment and project scheduling and logistics was supplied by the LACFCD (Hall and Foreman 2013).

Regional Thresholds of Significance

The following regional significance thresholds (Table 3.5-4) for air quality have been established by the SCAQMD on a daily basis for construction and operations emissions. During construction or operation, if any of the identified daily air pollutant thresholds are exceeded by the Proposed Project, then the project's air quality impacts may be considered significant. The SCAQMD indicates in Chapter 6 of its CEQA Handbook that it considers a project to be mitigated to a level of insignificance if its primary effects are mitigated below the thresholds provided in Table 3.5-4.

Table 3.5-4: Regional Thresholds of Significance

Pollutant	Emissions in lbs/day	
	Construction	Operations
ROG	75	55
NO_X	100	55
CO	550	550
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150

Reference: Air Quality Significance Thresholds. South Coast Air Quality Management District. Revised October 2006.

Localized Significance Thresholds (LSTS)

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through Localized Significance Thresholds (LSTs), which is consistent with SCAQMD's Environmental Justice Enhancement Initiative I-4 (SCAQMD 2008). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable State or national ambient air quality standard. The LSTs are developed based on the ambient concentrations of that pollutant for each source receptor area and are applicable to NO_X, CO, PM_{10}, and $PM_{2.5}$. The LST guidelines states that, for LST purposes, emissions include only onsite activities and that the $PM_{2.5}$ and PM_{10} emissions include both fugitive dust and exhaust from the stationary/mobile equipment onsite.

The Proposed Project is located in SRA 8. It is assumed that construction will disturb no more than 5 acres per day in areas where sensitive receptors are within 25 meters (~82 feet). Using the 2006-2008 look-up tables provided in the LST Guidelines for a conservative 5 acres per day disturbed at a receptor distance of 25 meters, Table 3.5-5 shows the appropriate LSTs for construction activity. Since ongoing reservoir management activity will essentially be a reduced-intensity version of the Proposed Project, construction LSTs will be used for reservoir management.

Table 3.5-5: SCAQMD Localized Thresholds for Construction

Pollutant	Localized Significance Threshold (lbs/day)
Nitrogen Dioxide (NO_2)	148
Carbon Monoxide (CO)	1,540
Inhalable Particulate Matter (PM_{10})	12
Fine Particulate Matter ($PM_{2.5}$)	7

Reference: Final Localized Significance Threshold Methodology. South Coast Air Quality Management District. Revised July 2008.

On-Road Truck Emissions

To generate expected exhaust emissions, this AQR used CARB's EMFAC2011 Web-Based Data Access with emission rate data for Los Angeles County for the years 2015 and 2020. This AQR used EMFAC2011's aggregate model years, which is an average age of vehicles specific to Los Angeles County for the specific years modeled. Since the average fleet emissions in the State are getting cleaner each year, the more conservative first year of operation, year 2015, was used. This AQR used "T7 single

construction" as the most representative EMFAC2011 vehicle category for the sediment disposal trucks and generated an aggregate average emission factor for vehicle speeds 5 miles per hour (mph) to 45 mph for surface street mileage and 50 mph to 70 mph for highway mileage.

Off-Road Equipment Emissions

Off-road equipment brake horsepower and emission factors were obtained from the CalEEMod Users Guide. Since CalEEMod uses 2007OFFROAD default load factors and CARB has released an updated load factor list which demonstrates that, for most equipment types, the 2007OFFROAD model will result in a fairly significant overestimation of emissions, this AQR uses equipment load factors from the Carl Moyer Program Guidelines (CARB 2013).

Employee Vehicle Emissions

To generate expected exhaust emissions, this AQR used CARB's EMFAC2011 Web-Based Data Access as mentioned in the on-road trucks section. In order to more accurately represent the type of vehicles used by the potential employee work pool, a weighted average emission factor was generated using 69 percent of the pool using light-duty automobiles and the rest using light-duty trucks. The percentages were derived from the distributions of VMT from EMFAC2011.

Fugitive Dust Emissions

Emissions of PM_{10} and $PM_{2.5}$ from fugitive sources were calculated using various methods. Fugitive dust from excavation activities, grading, and material loading were calculated using EPA's AP-42 methods (USEPA 1995).

Localized Significance Thresholds

The SCAQMD's LST methodology was developed to be used as a tool to assist lead agencies to analyze localized impacts associated with project-specific level proposed projects. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The emissions used for the purpose of LST analysis include only onsite activities.

3.5.6 Impacts and Mitigation

AIR QUALITY-1 *Conflict with or obstruct implementation of the applicable air quality plan.*

Typically, assessments for air quality plan consistency use four criteria for determining project consistency with the current AQMP. The first and second criteria are from the SCAQMD. According to the SCAQMD, two key indicators of AQMP consistency are: (1) whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP; and (2) whether the project will exceed the assumptions in the AQMP based on the year of project build out and phase (SCAQMD 2006). The third criterion is compliance with the control measures in the AQMP. The fourth criterion is compliance with the SCAQMD regional thresholds.

Sediment Removal/Reservoir Management

Contribution to Air Quality Violations

As shown below in the impact discussions in AIR QUALITY-2 and AIR QUALITY-4, sediment removal activities have the potential to violate an air quality standard or contribute substantially to an existing or projected air quality violation. This is due to emissions of NOx exceeding the Daily Regional Thresholds during sediment removal, resulting in a potentially significant impact. Use of sediment removal dump trucks that meet EPA's emission standards for Model Year 2007 and use of off-road equipment that meets, at a minimum, EPA's emission standards for Tier 3 interim equipment, would result in a reduction of NOx emissions to less than the SCAQMD Regional Threshold for NOx. Every effort will be made to strive for the newest vehicles/equipment reasonably available. Implementation of Mitigation Measures MM AQ-1 and MM AQ-2 will result in a reduction of NOx emissions to less than the SCAQMD Regional Threshold for NOx; however, the actual vehicles/equipment used may not reach the levels required to reduce the NO_X emissions to a level of less than significant for the sediment removal phase. Therefore, the Proposed Project during sediment removal will not meet the first indicator.

As shown below in the impact discussions in AIR QUALITY-2 and AIR QUALITY-4, reservoir management activities under both options will not violate any air quality standards or contribute substantially to any existing or projected air quality violations; therefore, the Proposed Project during reservoir management will be consistent with the first indicator. No significant impact would occur under either reservoir management options.

AQMP Assumptions

One way to assess project compliance with the AQMP assumptions is to ensure that the population density and land use are consistent with the growth assumptions used in the air plans for the air basin. According to CARB transportation performance standards, the rate of growth in vehicle miles traveled (VMT) and trips should be held to the rate of population growth (SCAQMD 2006). Compliance with this performance standard is one way suggested by CARB of showing compliance with the growth assumptions used in the AQMP. If the total VMT generated by the Proposed Project at build out is at or below that predicted by the AQMP, then the Proposed Project's mobile emissions are consistent with the AQMP. It is assumed that the existing and future pollutant emissions computed in the AQMP were based on land uses from area general plans.

The Proposed Project under sediment removal and both reservoir management options does not create any overall population growth and therefore has no effect on growth assumptions used in the latest SCAQMD AQMP (SCAQMD 2012). Total long-term VMT generated by the Proposed Project is related to management activities and is considered minimal and will not affect consistency with the AQMP.

Mitigation Measures

MM AQ-1: LACFCD shall require all construction contractors during the sediment removal phase of the Proposed Project to use as many sediment removal dump trucks that meet EPA's emission standards for Model Year 2007 as reasonably feasible.

MM AQ-2: LACFCD shall require all construction contractors during the sediment removal phase of the Proposed Project to use off-road equipment that meets, at a minimum, EPA's emission standards for Tier 3 equipment.

Residual Impacts After Mitigation

Implementation of these mitigations would reduce the Proposed Project's combined NO_X emissions during the sediment removal phase; however while every reasonable effort will be made to strive for the newest vehicles/equipment, the actual vehicle/equipment fleet may not reach the levels required to reduce emissions to a level of less than significant; therefore, this impact remains significant and unavoidable.

Reservoir management activities under both options will not violate an air quality standard or contribute substantially to an existing or projected air quality violation; therefore, the Proposed Project during reservoir management will be consistent with the first indicator. No significant impact would occur under either reservoir management option.

AIR QUALITY-2 *Violate an air quality standard or contribute substantially to an existing or project air quality violation.*

Sediment Removal

Emissions will be related to the off-road equipment used to remove the sediment, including four front loaders with 4-cubic-yard buckets, two bulldozers, an excavator, a grader, water truck, and sorters/crushers. In addition, disposal trucks with 16 to 20 cubic yards of capacity are proposed to haul approximately 7,650 cubic yards of sediment per day. Removal of the sediment, vegetation, trees, and organic debris is expected to require an average of 50 truck trips per hour, with an estimated maximum of 425 truck round trips per day during excavation activities. The sediment disposal trucks will dispose of material either to the east and placed at the primary disposal site locations (the Waste Management Facility in Azusa, the Vulcan Materials Reliance Facility in Irwindale or the Manning Pit SPS in Irwindale) or to the west and placed in one of the facilities in Sun Valley. Removed vegetation and organic debris will be hauled to Scholl Canyon Landfill, located in the City of Glendale. It is estimated that for approximately three weeks during the first year of the Proposed Project, approximately 50 percent of the total trucking will be green waste debris trucked to the green waste facility at Scholl Canyon; and the remaining 50 percent of trucking will be sediment that will be distributed to the other sites. After the first year, during the first week approximately 25 percent of the total trucking will be green waste debris trucked to the Scholl Canyon Landfill; and the remaining 75 percent of trucking will be sediment distributed to the other sites. For the five years of sediment removal, it is estimated that for the total trips, approximately 3 percent will go to the Scholl Canyon Landfill, 78 percent will go to the Irwindale sites, and 19 percent will go to the Sun Valley sites.

Construction activities emissions, including dust emissions from soil disturbance and combustion pollutants from onsite construction equipment, from offsite trucks hauling sediment material, and from employees working on the Proposed Project would create a temporary addition of pollutants to the local airshed. These emissions were estimated using the following assumptions and methods.

Table 3.5-6: Unmitigated Sediment Removal Emissions provides a summary of the unmitigated emission estimates for sediment removal activity. Details of the air quality calculations are included in Appendix B.

Table 3.5-6: Unmitigated Sediment Removal Emissions

Category	Maximum Daily Emissions (lbs/d)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Off-Road	7.54	33.99	55.18	2.87	2.87
On-Road Trucks	7.15	34.87	314.93	5.33	4.91
Employees	0.07	2.44	0.24	0.00	0.00
Fugitive	0.00	0.00	0.00	27.30	4.44
Project Maximum Daily	**14.78**	**71.30**	**370.30**	**13.70**	**8.70**
SCAQMD Daily Threshold	75.00	550.00	100.00	150.00	55.00
Exceeds Threshold?	No	No	**Yes**	No	No

As shown in the above table, during the sediment removal portion project emissions of NO_X would exceed the Daily Regional Threshold, resulting in a potentially significant impact during sediment removal phase.

The two categories that combine to contribute most to the potentially significant impact are the emissions from on-road trucks and the off-road equipment.

On-Road

Reduction of impacts from on-road trucks during the sediment removal can be accomplished by requiring the contractor that receives the work to ensure that all disposal trucks used meet EPA's emission standards for Model Year 2007 and later. On December 21, 2000, EPA signed emission standards for Model Year 2007 and later, heavy-duty highway engines that require them to achieve a NO_X standard of 0.02 gram per brake-horsepower-hour (g/bhp-hr). This NO_X Standard was phased in for diesel engines between 2007 and 2010.

The EMFAC emission factor used to estimate emissions from the disposal trucks is based on a fleet average number that incorporates vehicles from various age brackets. The EMFAC2011 emission factor for these dump trucks in the year 2015 is 9.7926 grams per mile (g/m). In order to ascertain the effectiveness of requiring all dump trucks to meet EPA NO_X Standards, conversion of the g/m factor to the g/bhp-h factor is required. EPA published a conversion guideline based on brake-specific fuel consumption (BSFC). Applying the conversion factor for heavy-duty trucks would yield a fleet-wide average NO_X emission factor of 3.2308. Therefore the EPA's Standard for NO_X is 94 percent more stringent than the factor used in calculating the emission estimates (USEPA 1998). This would reduce the estimated emissions from on-road disposal trucks.

Off-Road

Reduction of impacts from off-road equipment usage during the sediment removal can be accomplished by requiring the Proposed Project Contractor to use only EPA Tier 4 interim equipment. Tier 4 interim emissions standards are addressed in 40 Code of Federal Regulations (CFR), Part 1039 which addresses new compression-ignition nonroad (i.e., CARB off-road equivalent) engines. Standards were phased in for various power categories with the latest being effective in 2011.

The emission factor used to estimate off-road equipment in this AQR was obtained from tables presented in CalEEMod's User Guidelines and represents the statewide average of equipment for each category. The factors for Fleet Year 2015 most closely compare to an average fleet of Tier 2 equivalent equipment. Applying the percentage reductions from Tier 2 to Tier 4 interim to the unmitigated emissions represented above reduces the NO_X emissions from the off-road component for the sediment removal phase of the Proposed Project (SCAQMD 2013).

Employee Vehicle Emissions

To generate expected exhaust emissions, this AQR used CARB's EMFAC2011 Web Based Data Access as mentioned in the on-road trucks section. In order to more accurately represent the type of vehicles used by the potential employee work pool, a weighted average emission factor was generated using 69 percent of the pool using light-duty automobiles and the rest using light-duty trucks. The percentages were derived from the distributions of VMT from EMFAC2011.

Fugitive Dust Emissions

Emissions of PM_{10} and $PM_{2.5}$ from fugitive sources were calculated using various methods. Fugitive dust from excavation activities, grading, and material loading were calculated using EPA's AP-42 methods (USEPA 1995). Emissions estimates were reduced to reflect the Proposed Project's full compliance with the SCAQMD's Rule 403, including, but not limited to:

- Implementation of one of the measures in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road to reduce impacts from track-out;
- Submission of a Large Operation Notification (SCAQMD Form 403 N) to the SCAQMD Executive Officer within 7 days of qualifying as a large operation;
- Apply water or stabilizing agent during clearing and grubbing, crushing, or earth-moving activities in sufficient quantity to prevent the generation of dust plumes. Soil should be maintained in a damp condition so that visible emissions do not exceed 100 feet in any direction;
- During exporting of materials, use tarps or other suitable enclosures on all haul trucks. Haul loads should have at least six inches of freeboard space;
- Stabilize all off-road traffic on haul routes and in parking areas and stabilize all staging areas and stockpiled materials. Limit speeds of vehicles on haul routes, staging areas, and parking lots;
- Limit vehicular activity to established unpaved roads (haul routes) and unpaved parking lots;

- For all earth-moving activity within 100 feet of property lines, maintain soil moisture content at a minimum of 12 percent, as determined by American Society for Testing and Materials (ASTM) method D-2216 or other equivalent approved method.

As shown in Table 3.5-7, use of sediment removal dump trucks that meet EPA's emission standards for Model Year 2007 and use of off-road equipment that meets, at a minimum, EPA's emission standards for Tier 4 interim equipment would result in a reduction of the Proposed Project's combined NO_X emissions during the sediment removal to less than the SCAQMD Regional Threshold for NO_X. Every effort will be made to strive for the newest vehicles/equipment reasonably available. Implementation of Mitigation Measures MM AQ-1 and MM AQ-2 will result in a reduction of NOx emissions; however, the actual vehicles/equipment used may not reach the levels required to reduce the NO_X emissions to a level of less than significant for the sediment removal phase.

Table 3.5-7: Sediment Removal Emissions with Model 2007 Sediment Removal Trucks and Tier 4 Interim Off-road Equipment

Category	Maximum Daily Emissions (lbs/d)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Off-Road	4.20	33.99	21.88	0.22	0.22
On-Road Trucks	7.15	34.87	18.90	1.07	0.98
Employees	0.07	2.44	0.24	0.00	0.00
Fugitive	0.00	0.00	0.00	5.46	0.89
Project Maximum Daily	**11.47**	**71.32**	**41.05**	**6.80**	**2.10**
SCAQMD Daily Threshold	75.00	550.00	100.00	150.00	55.00
Exceeds Threshold?	No	No	No	No	No

Reservoir Management

Emissions will be related to the off-road equipment used for reservoir management under both options, including four front loaders with 2-cubic-yard buckets, one bulldozer, an excavator, a grader, water truck, and sorters/crushers. Removal of the sediment, vegetation, trees, and organic debris is expected to require an estimated maximum of 200 truck trips per day. It is estimated that during the first week approximately 25 percent of the debris will be green waste trucked to the Scholl Canyon Landfill, and the remaining 75 percent of trucking will be sediment distributed to the other sites. During reservoir management it is estimated that for the total trips, 2 percent will go to Scholl Canyon Landfill, 75 percent will go to the Irwindale sites, and 23 percent will go to the Sun Valley sites.

Reservoir management activities emissions, including dust emissions from soil disturbance and combustion pollutants from onsite construction equipment, from offsite trucks hauling sediment material, and from employees working on the Proposed Project will create a temporary addition of pollutants to the local airshed. The duration of reservoir management under Option 2 will likely be reduced in comparison to Option 1 due to the reduction in management area; however, the daily

activities will be the same and therefore the daily emission levels will be the same. The calculations below represent both reservoir management options.

Employee Vehicle Emissions

To generate expected exhaust emissions, this AQR used CARB's EMFAC2011 Web-Based Data Access as mentioned in the on-road trucks section. In order to more accurately represent the type of vehicles used by the potential employee work pool, a weighted average emission factor was generated using 69 percent of the pool using light-duty automobiles and the rest using light-duty trucks. The percentages were derived from the distributions of VMT from EMFAC2011.

Fugitive Dust Emissions

Emissions of PM_{10} and $PM_{2.5}$ from fugitive sources were calculated using various methods. Fugitive dust from excavation activities, grading, and material loading were calculated using EPA's AP-42 methods (USEPA 1995). Emissions estimates were reduced to reflect the Proposed Project's full compliance with the SCAQMD's Rule 403, including, but not limited to:

- Implementation of one of the measures in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road to reduce impacts from track-out;
- Submission of a Large Operation Notification (SCAQMD Form 403 N) to the SCAQMD Executive Officer within 7 days of qualifying as a large operation;
- Apply water or stabilizing agent during clearing and grubbing, crushing, or earth-moving activities in sufficient quantity to prevent the generation of dust plumes. Soil should be maintained in a damp condition so that visible emissions do not exceed 100 feet in any direction;
- During exporting of materials, use tarps or other suitable enclosures on all haul trucks. Haul loads should have at least 6 inches of freeboard space;
- Stabilize all off-road traffic on haul routes and in parking areas and stabilize all staging areas and stockpiled materials. Limit speeds of vehicles on haul routes, staging areas, and parking lots;
- Limit vehicular activity to established unpaved roads (haul routes) and unpaved parking lots;
- For all earth-moving activity within 100 feet of property lines, maintain soil moisture content at a minimum of 12 percent, as determined by American Society for Testing and Materials (ASTM) method D-2216 or other equivalent approved method.

Table 3.5-8 shows estimated emissions from reservoir management activities. Details of the air quality calculations are included in Appendix B.

Table 3.5-8: Unmitigated Reservoir Management Activity

Category	Maximum Daily Emissions (lbs/d)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Off-Road	3.14	16.57	19.26	0.92	0.92
On-Road Trucks	2.17	12.16	74.62	1.13	1.04
Employees	0.02	0.76	0.07	0.00	0.00
Fugitive	0.00	0.00	0.00	3.30	0.75
Project Maximum Daily	**5.05**	**30.24**	**94.00**	**5.40**	**2.80**
SCAQMD Daily Threshold	75.00	550.00	100.00	150.00	55.00
Exceeds Threshold?	No	No	No	No	No

As shown in the above table, reservoir management under either option will not exceed any standard and will result in less than significant impacts.

Mitigation Measures

See Mitigation Measures MM AQ-1 and MM AQ-2.

Residual Impacts After Mitigation

Implementation of Mitigation Measures MM AQ-1 and MM AQ-2 would reduce the Proposed Project's combined NO_X emissions during the sediment removal phase; however, while every reasonable effort will be made to strive for the newest vehicles/equipment, the actual vehicle/equipment fleet may not reach the levels required to reduce emissions to a level of less than significant. Therefore, this impact remains significant and unavoidable.

Reservoir management under either option will not exceed any standard SCAQMD Regional Threshold; therefore, this impact will be less than significant.

AIR QUALITY-3 *Result in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).*

Sediment Removal/Reservoir Management

In accordance with *CEQA Guidelines* 15130(b), this analysis of cumulative impacts incorporates a summary of projections. The following three-tiered approach is to assess cumulative air quality impacts.

- Consistency with the SCAQMD project-specific thresholds for construction and operation;
- Project consistency with existing air quality plans;

- Assessment of the cumulative health effects of the pollutants.

Project Specific Thresholds

Emissions of VOC, PM_{10}, and $PM_{2.5}$ are not expected to exceed the SCAQMD regional significance thresholds during sediment removal or on-going reservoir management activities; however, NO_X emissions are expected to exceed the SCAQMD regional significance thresholds during sediment removal, though only during the main sediment removal phase and not during reservoir management.

Air Quality Plans

The SCAB, the air quality basin in which the Proposed Project is located, is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$. As such, the SCAQMD is required to prepare and maintain an AQMP and a SIP to document the strategies and measures to be undertaken to reach attainment of air quality standards. While the SCAQMD does not have direct authority over land use decisions, it was recognized that changes in land use and circulation planning were necessary to maintain clean air. As discussed above in AIR QUALITY-1, the Proposed Project will not affect consistency with the AQMP under sediment removal or either reservoir management options.

Cumulative Health Impacts

The SCAB is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the air quality standards. The air quality standards were set to protect the health of sensitive individuals (i.e., elderly, children, and the sick). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some of the sensitive individuals of the population experience adverse health effects.

The analysis in Air Quality-2 demonstrated that during sediment removal, the significance threshold would not be exceeded for emissions of particulate matter and CO; and no significance threshold would be exceeded during reservoir management under either option. Nevertheless, while every effort will be made to strive for the newest vehicles/equipment, the actual vehicle/equipment fleet may not reach the levels required to reduce the NO_X emissions to a level of less than significant. Therefore, this impact remains significant and unavoidable.

Mitigation Measures

See Mitigation Measures MM AQ-1 and MM AQ-2.

Residual Impacts After Mitigation

Implementation of Mitigation Measures MM AQ-1 and MM AQ-2 would reduce the Proposed Project's combined NO_X emissions during the sediment removal phase; however, while every reasonable effort will be made to strive for the newest vehicles/equipment, the actual vehicle/equipment fleet may not reach the levels required to reduce emissions to a level of less than significant. Therefore, this impact remains significant and unavoidable.

Reservoir management under either option will not exceed any localized significance threshold; therefore, this impact will be less than significant.

AIR QUALITY-4 *Expose sensitive receptors to substantial pollutant concentrations.*

Localized Significance Thresholds

Sediment Removal

The onsite emissions for sediment removal activities are presented in Table 3.5-9 and show that no LST thresholds are exceeded.

Table 3.5-9: Onsite Sediment Removal Emissions

Category	Maximum Daily Emissions (lbs/d)			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Off-Road	33.99	55.18	2.87	2.87
Fugitive	0.00	0.00	5.46	0.89
Unmitigated Max Daily	**34.00**	**55.20**	**8.30**	**3.87**
LST Threshold	1,540.00	148.00	12.00	7.00
Exceeds Threshold?	No	No	**No**	**No**

Reservoir Management

The onsite emissions for reservoir management activities under either option are presented in Table 3.5-10: Onsite Reservoir Management Emissions and show that no LST thresholds are exceeded.

Table 3.5-10: Onsite Reservoir Management Emissions

Category	Maximum Daily Emissions (lbs/d)			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Off-Road	3.14	16.57	0.98	0.98
Fugitive	0.00	0.00	3.30	0.75
Unmitigated Max Daily	**3.10**	**16.60**	**4.30**	**1.74**
LST Threshold	1,540.00	148.00	12.00	7.00
Exceeds Threshold?	No	No	**No**	No

Carbon Monoxide Hotspot

Sediment Removal/Reservoir Management

Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to the AAQSs is typically demonstrated through an analysis of localized

CO concentrations. Areas of vehicle congestion have the potential to create "pockets" of CO called "hot spots." Hot spots are usually created in locations where vehicles are subject to congestion, reduced speeds, and queuing. These are most typically at intersections, but can also be along congested major arterials and freeways. Typically, for vehicles to produce a hot spot, the roadway/intersection level of service (LOS) must be degraded to "D" or worse.

The Traffic Impact Analysis prepared for this project shows that five intersections are modeled to be at LOS F or worse in 2014 with the Proposed Project (Hall and Foreman 2013). A CO hot-spot analysis was prepared in accordance with the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol). According to the CO Protocol, intersections with an LOS E or F could require detailed analysis (Garza et al. 1997).

The hot-spot analysis was performed on the five intersections. CALINE4 was used to predict the potential CO concentrations at these intersections. CALINE4 is a dispersion model produced by Caltrans that predicts CO impacts near roadways. CO modeling results are available in Appendix B.

Several inputs are made to the CALINE4 model. One input is the traffic volumes, which was provided in the Traffic Impact Analysis, and another input is roadway widths. Table 3.5-11 shows estimated CO concentrations at the worst-case receptor location for these intersections. The CALINE4 output is added to the 1-hour and 8-hour backgrounds to produce the concentrations. Backgrounds were obtained from 2011 air quality data of 8-hour CO monitoring data and dividing the 8-hour by a persistence factor of 0.7 to generate the 1-hour background. Significance impact shows the comparison of the 1-hour concentration to the State standard of 20 ppm and the 8-hour concentration to the State/national standard of 9 ppm (SCAQMD 2013).

Table 3.5-11: CO Concentrations Summary

Intersection Number and Description		CO Concentration (ppm)	
		1-hour	8-hour
#11	Irwindale Avenue @ Gladstone St	3.54	2.48
#13	Vincent Avenue @ Arrow Highway	3.74	2.62
#21	Figueroa St/Scholl Canyon @ SR-134 WB Ramps	3.34	2.34
#22	Figueroa Street @ Eagle Vista Dr	3.34	2.34
#23	Figueroa Street @ SR-134 EB Ramps	3.44	2.41
	Significance Thresholds	20.00	9.00
	Exceeds Threshold?	No	No

The CO Hotspot analysis shows no exceedance of the State or federal CO standard and no significant impact is expected during sediment removal or either reservoir management option.

Carcinogenic Or Toxic Contaminants Sediment Removal/Reservoir Management

In order to ascertain the potential for the Proposed Project to emit carcinogenic or toxic contaminants that exceed the maximum individual cancer risk of 10 in one million, a Health Risk Assessment (HRA) was performed and attached in Appendix C (Vista Environmental 2013). The Proposed Project would

generate TAC emissions from diesel truck emissions and onsite diesel equipment used during both the sediment removal activities and the annual reservoir management activities. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology.

Since the diesel truck emissions would operate in the closest proximity to sensitive receptors while on surface streets, the diesel truck travel modeling has been limited to the portion of the trips that would occur on surface streets. Results of ISC-AERMOD modeling presented in the HRA show that the maximum offsite diesel concentration was found to be 1.9 in a million; thus significantly below the 10 in a million cancer risk threshold. In addition, all routes modeled resulted in less than significant non-cancer risk from diesel emissions created by the Proposed Project.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

Impacts will be less than significant.

AIR QUALITY-5 *Create objectionable odors affecting a substantial number of people.*

Sediment Removal/Reservoir Management

The CEQA guidelines indicate that a significant impact would occur if the Proposed Project would create objectionable odors affecting a substantial number of people.

Diesel exhaust will be emitted from equipment during sediment removal process, which is objectionable to some; however, concentrations will disperse rapidly from the project site (OB-1 2013); therefore impacts will be less than significant.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

The Proposed Project is not expected to produce objectionable odors beyond the Proposed Project site under sediment removal or either reservoir management option; therefore, this impact will be less than significant.

AIR QUALITY-6 *Cumulative Impacts*

The Proposed Project would generate air pollutant emissions from construction over a five-year period. Cumulative projects that could contribute to cumulative air quality impacts would be the cumulative projects that could be under construction during the same time period (Hahamongna Watershed Park MBMU Project, Metro Gold Line Foothill Extension, Arroyo Seco Canyon Project, and Devil's Gate Water Conservation Project). Each of the cumulative projects would have construction emissions contributing

to existing air quality violations. All projects would be required to comply with the SCAQMD's air pollution control measures and rules. Implementation of these measures would reduce air emissions. As discussed above, the Proposed Project emissions of VOC, PM_{10}, and $PM_{2.5}$ are not expected to result in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment with the exception of NO_X emissions which may remain significant for sediment removal activity. While every effort will be made to strive for the newest vehicles/equipment, the actual Proposed Project vehicle/equipment fleet may not reach the levels required to reduce emissions to a level of less than significant. Therefore, the Proposed Project's contribution to cumulative impacts associated with NO_X emissions remains significant and unavoidable.

Mitigation Measures

See Mitigation Measures MM AQ-1 and MM AQ-2.

Residual Impacts After Mitigation

Implementation of these mitigations would reduce the Proposed Project's combined NO_X emissions during the sediment removal phase; however, while every reasonable effort will be made to strive for the newest vehicles/equipment, the actual vehicle/equipment fleet may not reach the levels required to reduce emissions to a level of less than significant. Therefore, this impact remains significant and unavoidable.

3.6 BIOLOGICAL RESOURCES

3.6.1 Introduction

This section describes the existing biological resources environmental conditions and discusses the consequences to biological resources related to Proposed Project implementation. The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP; however, due to the extremely dynamic drainage and vegetation conditions on the Proposed Project site; biological resources conditions change on a regular basis due to seasonal conditions, water flow/views, water storage, and sediment conditions. As discussed above, in 2011 these resources were severely impacted by sediment deposition. Most of the vegetation and trees on the Proposed Project site were dead, washed out, or buried under sediment, reducing the amount and quality of vegetation communities and wildlife habitat. Since publication of the NOP, some of the vegetation and trees have re-established, improving the amount and quality of vegetation communities and wildlife habitat of the Proposed Project site. In order to achieve a more conservative analysis of the potential impacts to biological resources from the Proposed Project, 2013 conditions were also taken into account. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

Information in this section was gathered through literature review, examination of available databases, and through field reconnaissance. General surveys and field surveys for vegetation communities, trees, sensitive plants and wildlife, and jurisdictional waters were conducted from 2010 through 2013. Additional detail about the biological resources within and surrounding the project site is provided in biological reports prepared for the Proposed Project that are included as Appendix D.

As noted in the Initial Study (Appendix A), impacts associated with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plans were found to have a less than significant impact and are not discussed within the EIR.

3.6.2 Existing Environmental Setting

Vegetation

At the time of the 2010 survey (Chambers Group 2010a), the Proposed Project site was primarily composed of riparian and upland communities (see Figure 3.6-1: Devil's Gate Vegetation Communities (2010)). The Proposed Project site was resurveyed in 2013 (Chambers Group 2013) and is shown to be primarily composed of riparian and ruderal communities plus large scoured areas created as a consequence of the 2009 Station Fire (see Figure 3.6-2: Devil's Gate Vegetation Communities (2013)). Further descriptions of the Proposed Project site are listed below.

In 2009, the Station Fire burned through more than 160,000 acres the Angeles National Forest in Los Angeles County. Approximately 68 percent of the 31.9-square-mile Arroyo Seco Channel watershed tributary to Devil's Gate Dam and Reservoir was burned during this event. Due to the denuding of this large natural tributary area, large sediment loads (in excess of 1 million cubic yards) were deposited within the reservoir area during the subsequent storm seasons. This deposition has raised ground elevations and buried vegetation in excess of 18 feet in some locations. The accumulated sediment is unstable and highly susceptible to scouring during storms.

Vegetation Communities

- 1. Riversidean Alluvial Fan Sage Scrub
- 2. Coastal Sage Scrub
- 3. Scoured
- 4. Ornamental Landscaping
- 5. Riparian Woodland
- 6. Ruderal
- 7. Mule Fat Scrub
- 8. Disturbed (Barren/Trails)
- 9. Riparian Herbaceous
- 10. Coast Live Oak Woodland - Disturbed

SCALE= 1 inch equals 467 feet

0 233.5 467 934 Feet

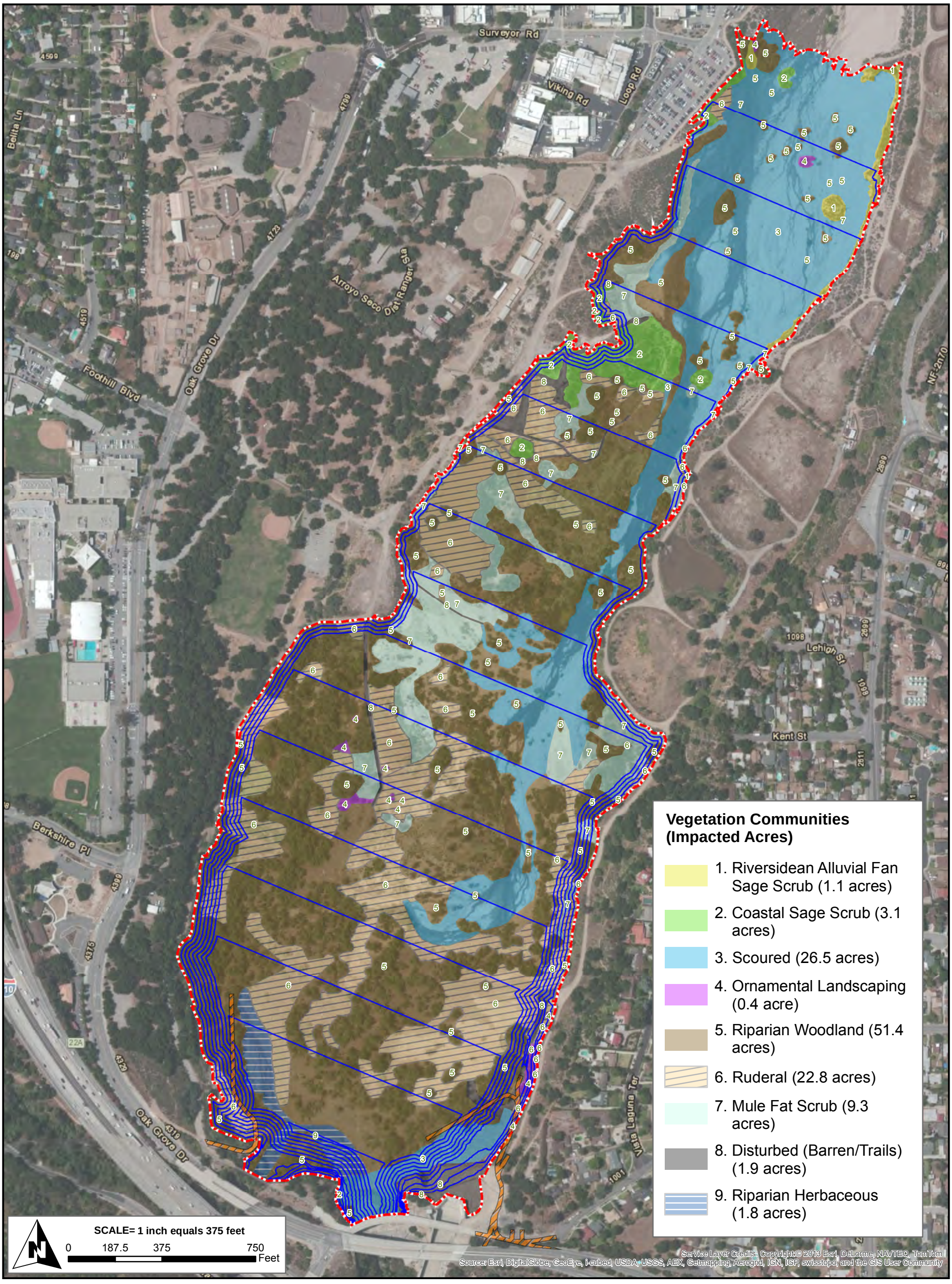
Survey Area

Figure 3.6-1
Devil's Gate
Vegetation Communities Map (2010)

Version Date: 10/5/2013

CHAMBERS GROUP

\\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.6-1 Devil's Gate Vegetation Communities (2010).mxd



Proposed Project Boundary

Access Road

Sediment Removal Excavation Limit

Figure 3.6-2
Devil's Gate
Vegetation Communities Map (2013)
Proposed Project - Configuration A

Version Date: 10/18/2013

CHAMBERS GROUP

\\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.6-2 Devil's Gate Vegetation Communities (2013).mxd

Additionally, sediments deposited during storm events are unstable so when future storm events occur, these sediments along the banks of flow paths fall into the storm flow. Therefore any habitat that establishes on these banks of accumulated sediment cannot mature, since it is also washed away frequently.

Representative site photographs were taken to document site conditions during the surveys (Appendix D). Table 3.6-1 shows the 2013 acreage of the various vegetation communities found on the Proposed Project site.

Table 3.6-1: Devil's Gate Reservoir 2013 Vegetation Communities

Vegetation Community	2013 Survey Acreage
RIPARIAN	
Mule Fat Scrub	9.3
Riparian Herbaceous	1.8
Riparian Woodland (Black Willow Series)	51.4
UPLAND	
Coastal Sage Scrub	3.1
Riversidean Alluvial Fan Sage Scrub	1.1
OTHER	
Ruderal	22.8
Ornamental Landscaping	0.4
Disturbed (Barren/Trails)	1.9
Scoured	26.5

Riparian Communities

Riparian Woodland/Black Willow Series

Black Willow Series, as described by Sawyer and Keeler-Wolf (1995), exists when black willow (*Salix gooddingii*) is the sole dominant shrub or tree in the canopy. This community occurs in habitats seasonally flooded and saturated with freshwater. This community occurs in floodplains along rivers and streams and on the edges of meadows. Species that usually occur with black willow include California sycamore (*Platanus racemosa*), coyote brush (*Baccharis pilularis*), Fremont cottonwood (*Populus fremontii*), blue elderberry (*Sambucus nigra* subsp. *caerulea*), mule fat (*Baccharis salicifolia*), white alder (*Alnus rhombifolia*), and other willows (*Salix* sp.).

In 2010, the southern half of the Proposed Project site was primarily composed of the Black Willow Series. In 2013, this series is present in large and small patches throughout the Proposed Project site. Black willow is dominant in this community. Other native species include mule fat (*Baccharis salicifolia*), Fremont cottonwood, black cottonwood (*Populus trichocarpa*), white alder, red willow (*Salix laevigata*), and California dodder (*Cuscuta californica*). Non-native species in this community include gum tree (*Eucalyptus* sp.) and tree tobacco (*Nicotiana glauca*). Portions of this community are lacking secondary structure due to unstable sediment accumulation and subsequent scouring during storm events. The secondary structure is typically made up of understory shrubs or herbaceous plants which can provide refuge for wildlife. The canopy and understory contribute to the overall function of a habitat; more height and age diversity of vegetation result in an overall increase in habitat value. The lack of secondary

structure reduces the quality of the habitat considerably. Furthermore, any secondary habitat that would start to establish would be lost during storm events when the unstable banks of sediment erode and wash into the flow paths.

In 2010, Coast Live Oak was present in the Riparian Woodland mostly at the southern end of the Proposed Project site (Chambers Group 2010a). In 2013, only four small patches were identified in the Project site, including one located east of the dam face (Chambers Group 2013b).

Mule Fat Scrub

Mule Fat Scrub consists of dense stands of mule fat with lesser amounts of willow species. This community type is classified as a mixed evergreen-deciduous shrubland with a continuous canopy and a sparse understory. This community typically occupies intermittent streambeds and seeps and occurs at elevations ranging from sea level to 4,100 feet above mean sea level (amsl) (Holland 1986; Gray and Bramlet 1992).

The Mule Fat Scrub community was present in the Proposed Project site during both surveys. The native plant species found included mule fat and black willow. Non-native species found within this community in the Proposed Project site include Italian thistle (*Carduus pycnocephalus*), poison hemlock (*Conium maculatum*), and short-pod mustard (*Hirschfeldia incana*).

Riparian Herbaceous

Riparian Herbaceous vegetation is an early successional stage of willow scrub and riparian forest communities. Flooding (or other disturbance factors) often scours woody riparian vegetation away, and the site is rapidly colonized by pioneer wetland herbaceous plants (Gray and Bramlet 1992).

In 2010, sparse Riparian Herbaceous vegetation was present in the northern half of the Proposed Project site. In 2013, Riparian Herbaceous vegetation was found near the face of the dam. Native plant species found in this community include mule fat, black willow, and red willow. Non-native plant species in this community include curly dock (*Rumex crispus*), wild radish (*Raphanus sativus*), and short-pod mustard.

Upland Communities

Riversidean Alluvial Fan Sage Scrub

Riversidean Alluvial Fan Sage Scrub occurs in alluvial fans as well as in washes and is a subtype of Riversidean Coastal Scrub (Holland 1986). Three stages of alluvial fan scrub succession are described by Smith (1980), with density and species diversity varying in direct relationship to the frequency of water scouring each stage receives. Older stages of alluvial scrub are located on high benches and have not been subjected to a recent major flood event. This mature stage can be identified by the presence of larger shrubs, an increase in species diversity, and a groundcover of organic material and annual grasses. Many large shrubs over 10 feet in height are found in the mature community, including laurel (*Malosma laurina*). The intermediate and early stages are located on lower benches closer to the active flood plain and have been subjected to relatively recent flooding events. Intermediate and early stages are progressively more open and less diverse. Medium-sized shrubs up to 4 feet in height can be found in intermediate stage areas, while early stage shrubs are rarely greater than 2 feet in height. Organic

material and annual grasses are much less common in intermediate areas and are almost absent in early stages. Scale-broom (*Lepidospartum squamatum*), considered to be an indicator species of alluvial scrub communities, is present in most alluvial scrub communities.

In 2010, Riversidean Alluvial Fan Sage Scrub was present on the northeast portion of the Proposed Project site. Much smaller patches of this community remain in 2013. The reduction in habitat is due to post-fire sediment accumulation. As discussed previously, the significant sediment loading occurring as a result of the 2009 Station Fire has greatly reduced the size of this community and has permanently inhibited its ability for succession.

Plant species found in the Proposed Project site include scale-broom, California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), deerweed (*Acmispon glaber* [*Lotus scoparius*]), our Lord's candle (*Yucca whipplei*), and coastal prickly pear (*Opuntia littoralis*).

Coastal Sage Scrub

Coastal Sage Scrub communities are open and typically dominated by California sagebrush and California buckwheat, where each attains at least 20 percent cover (Holland 1986). This community usually occurs on steep slopes with severely drained soils or clays that release stored soil moisture slowly. Coastal Sage Scrub may intergrade with other southern California chaparrals at higher elevations. In addition to California sagebrush and California buckwheat, other species present within this community include coyote brush and black sage (*Salvia mellifera*).

In 2010, large patches of Coastal Sage Scrub surrounded the riparian habitat in the northern portion of the Proposed Project site. These patches have been largely replaced with scoured areas. As with the Riversidean Alluvial Fan Sage Scrub, only much smaller patches of Coastal Sage Scrub remain in 2013. As discussed previously, the recent significant sediment loading experienced in the Reservoir has greatly reduced the size of this community and has permanently inhibited its ability for succession.

Other Communities

Ephemeral Stream

An ephemeral stream has flowing water for a short duration after precipitation events in a representative year. The main source of water flow in an ephemeral stream is runoff from rainfall. Ephemeral stream beds are located above the water table year-round.

An ephemeral stream is located within the project site. The ephemeral stream did not change significantly from 2010 to 2013. It still generally runs in a north/south direction, but its overall path has meandered due to the increase in sedimentation and erosion occurring as a consequence of the 2009 Station Fire.

Ephemeral Pond

An ephemeral pond holds water for a short duration after precipitation events in a representative year. The source of water flow in an ephemeral pond is from rainfall.

In 2010, two areas with ephemeral ponds were identified, most likely formed by sediment; but during the 2013 survey, only flowing water (runoff) from two storm drains was observed.

Disturbed (Barren)

Disturbed areas are those areas that are either devoid of vegetation (cleared or graded), such as dirt roads, or those areas that have a high percentage of non-native weedy species (i.e., greater than 25 percent of the species cover). Disturbed areas are present along the boundaries of the project area and within the watershed. Disturbed areas consisting of maintenance roads exist on the east and west sides of the reservoir, and pedestrian/horseback riding trails exist on the west side and within the reservoir. Conditions did not change from 2010 to 2013.

Scoured

Scoured areas are those where high velocity water flow has caused the removal of sediment such as sand or rock and are often devoid of vegetation.

In 2010, approximately 11.41 acres of areas were considered to be scoured (Chambers Group 2010b); but in 2013, that number increased to 26.5 acres (Chambers Group 2013b) due to the increase in unstable sedimentation and subsequent higher erosion rates.

Ornamental Landscaping

Ornamental Landscaping includes areas where the vegetation is dominated by non-native horticultural plants (Gray and Bramlet 1992). Typically, the species composition consists of introduced trees, shrubs, flowers, and turf grass. Several areas within the Proposed Project site have Ornamental Landscaping.

Several small patches of ornamental landscaping persist in 2013 (compared to the 2010 survey), but the overall acreage has decreased from 1.44 acres to 0.4 acre dispersed throughout the project site.

Ruderal

Ruderal vegetation communities are dominated by non-native, weedy species that are adapted to frequent disturbances and compete with native vegetation. Soils in ruderal areas are also typically characterized as heavily compacted. Species observed in this community typically include: brome grasses (*Bromus* spp.), red-stemmed filaree (*Erodium cicutarium*), short-pod mustard, and bristly ox-tongue (*Helminthotheca echioides*). The emergence of non-natives will lower the diversity of plants within a community, lower the diversity of wildlife that could potentially use the area for foraging and refuge, and contribute to an overall decrease in habitat value.

The amount of ruderal community has increased from 7.64 acres in 2010 to approximately 22.8 acres in 2013 due to frequent disturbance from sedimentation and erosion during storm events.

Poison Hemlock Series

Poison Hemlock Series is a vegetation community dominated by the herbaceous, weedy species poison hemlock. This biennial plant typically grows up to 10 feet in height and occurs in moist, especially disturbed places at elevations generally less than 3,280 feet (Hickman 1993).

In 2010, Poison Hemlock Series was present within the watershed near the center of the Proposed Project site. This series was not identified during the 2013 survey and is likely buried by sediment.

Peppergrass Series

Peppergrass Series is a vegetation community dominated by the herbaceous, weedy species peppergrass (*Lepidium latifolium*).

In 2010, Peppergrass Series was present within the watershed near the center of the Proposed Project site. This series was not identified during the 2013 survey and is likely buried by sediment.

Special Status Plant Species

The literature review resulted in a list of 14 sensitive plant species that have been known to occur in the vicinity of the Proposed Project site. Six of these plant species are considered absent from the Proposed Project site due to a lack of suitable habitat present or because the species occurs outside the elevation range found on the Proposed Project site. Suitable habitat was present onsite for eight sensitive species; however, after the focused plant surveys in which none of these species were observed within the Proposed Project site, these species were considered absent from the site. These special status plant species and their status are listed in Table 3.6-2. No special status plant species were found during the field surveys.

Table 3.6-2: Special Status Plant Species Known to Occur in Proposed Project Vicinity

Species	Status	Habitat	Potential for Occurrence
round-leaved filaree (*California macrophylla*)	CNPS Rare Plant Rank: 1B.1	Cismontane woodland, open scrub, and valley and foothill grasslands.	Not observed during survey. Considered absent due to lack of suitable habitat.
southern tarplant (*Centromadia parryi* ssp. *australis*)	CNPS Rare Plant Rank: 1B.1	Moist saline soils of marshes and swamps, vernal pools, and valley and foothill grasslands.	Not observed during survey. Considered absent due to lack of suitable habitat.
Los Angeles sunflower (*Helianthus nuttallii* ssp. *parishii*)	CNPS Rare Plant Rank: 1A	Damp to wet soils of marshes and swamps and coastal salt and freshwater marshes.	Not observed during survey. Considered absent due to lack of suitable habitat.
Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)	CNPS Rare Plant Rank: 1B.1	Coastal salt marshes and swamps, playas, and vernal pools.	Not observed during survey. Considered absent due to lack of suitable habitat.

Table 3.6-2: Special Status Plant Species Known to Occur in Proposed Project Vicinity

Species	Status	Habitat	Potential for Occurrence
San Gabriel linanthus (*Linanthus concinnus*)	CNPS Rare Plant Rank: 1B.2	Dry, rocky slopes of fir and pine forests.	Not observed during survey. Considered absent due to lack of suitable habitat.
Orcutt's linanthus (*Linanthus orcuttii*)	CNPS Rare Plant Rank: 1B.3	Openings within pine forest, chaparral, and desert scrub.	Not observed during survey. Considered absent due to lack of suitable habitat.
Nevin's barberry (*Berberis nevinii*)	Federal: FE State: SE CNPS Rare Plant Rank: 1B.1	Chaparral, coastal scrub, cismontane woodlands, and riparian scrub in sandy/gravelly soils.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.
Plummer's mariposa lily (*Calochortus plummerae*)	CNPS Rare Plant Rank: 1B.2	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grasslands.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.
Parry's spineflower (*Chorizanthe parryi* var. *parryi*)	CNPS Rare Plant Rank: 1B.1	Chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.
slender-horned spineflower (*Dodecahema leptoceras*)	Federal: FE State: SE CNPS Rare Plant Rank: 1B.1	Chaparral, cismontane woodlands, and coastal scrub habitats.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.
mesa horkelia (*Horkelia cuneata* ssp. *puberula*)	CNPS Rare Plant Rank: 1B.1	Chaparral, cismontane woodland, and coastal scrub communities.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.
white rabbit-tobacco (*Pseudognaphalium leucocephalum*)	CNPS Rare Plant Rank: 2.2	Chaparral, cismontane woodland, coastal scrub, and Riparian Woodland habitats.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.

Table 3.6-2: Special Status Plant Species Known to Occur in Proposed Project Vicinity

Species	Status	Habitat	Potential for Occurrence
Parish's gooseberry (*Ribes divaricatum* var. *parishii*)	CNPS Rare Plant Rank: 1A	Riparian Woodland.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.
Greata's aster (*Symphyotrichum greatae*)	CNPS Rare Plant Rank: 1B.3	Broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and Riparian Woodland.	Not observed during survey. Potential habitat exists but not observed during survey. Considered absent from site.

Source: CNDDB 2013

Sensitivity Status Codes used in this table:

Federal:
FE = Federally listed; Endangered

State:
SE = State listed; Endangered
Rare Plant Rank (RPR)/CNPS:
Rare Plant Rank 1B: Rare, Threatened or Endangered in California and elsewhere
Rare Plant Rank 2: Rare, Threatened or Endangered in California, more common elsewhere
Threat extension: 1- Seriously endangered in California
2- Fairly endangered in California
3- Not very endangered in California

Wildlife

Wildlife species observed or detected during the site surveys were characteristic of the existing site conditions. A full list of the wildlife species detected within the Proposed Project site is included in Appendix D.

Amphibians and Reptiles

Fourteen amphibian and reptile species were observed or detected in the Proposed Project area during the surveys. Species included the California toad (*Anaxyrus boreas halophilus*), western toad (*Bufo boreas*), American bullfrog (*Lithobates catesbeianus*), Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*), California treefrog (*Hyla cadaverina*), San Diego alligator lizard (*Elgaria multicarinata webii*), common side-blotch lizard (*Uta stansburiana*), western side-blotched lizard (*Uta stansburiana elegans*), Great Basin fence lizard (*Sceloporus occidentalis longipes*), western whiptail (*Aspidoscelis tigris*), coastal whiptail(*Aspidoscelis tigris stejnegeri*), two-striped garter snake (*Thamnophis hammondii*), California kingsnake (*Lampropeltis getula californiae*), and Great Basin gopher snake (*Pituophis catenifer deserticola*).

Birds

Fifty bird species were observed or detected in the Proposed Project area during the reconnaissance level surveys. Some of the species included California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Allen's hummingbird (*Selasphorus sasin*), acorn woodpecker (*Melanerpes formicivorus*), northern rough-winged swallow (*Stelgidopteryx serripennis*), common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), common yellowthroat (*Geothlypis trichas*), black-headed grosbeak (*Pheucticus melanocephalus*), and housefinch (*Carpodacus mexicanus*), as well as the other bird species included on the comprehensive list in Appendix D.

Mammals

Twelve mammal species were observed or detected in the Proposed Project area during the surveys. Species included the Virginia opossum (*Didelphis virginiana*), desert cottontail (*Sylvilagus audubonii*), western gray squirrel (*Sciurus griseus*), California ground squirrel (*Otospermophilus beecheyi*), domestic dog (*Canis familiaris*), coyote (*Canis latrans*), grey fox, (*Urocyon cinereoargenteus*), raccoon (*Porocyon lotor*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), *and* horse (*Equus caballus*).

Special Status Animal Species

After a literature review and an assessment of the various habitat types in the vicinity of the Proposed Project site, it was determined that 14 sensitive wildlife species have the potential to occur within the Proposed Project site or were present in the Proposed Project site during the survey. Factors used to determine potential for occurrence include quality of habitat, impact of surrounding residential development, and the date and location of prior California Natural Diversity Database (CNDDB) records of occurrence. These special status animal species and their status are listed in Table 3.6-3.

Table 3.6-3: Special Status Animal Species Occurring in Proposed Project Vicinity

Species	Status	Potential for Occurrence
AMPHIBIANS		
Sierra Madre yellow-legged frog (*Rana muscosa*)	SSC	Low potential to occur due to lack of known historical occurrences within five miles of Proposed Project site but not observed during survey.
coast range newt (*Taricha torosa torosa*)	SSC	High potential for occurrence, due to the presence of suitable habitat and occurrences within five miles of the Proposed Project site but not observed during survey.
REPTILES		
coast horned lizard (*Phrynosoma blainvillii*)	SSC	Low potential to occur due to lack of known historical occurrences within five miles of Proposed Project site but not observed during survey.
southwestern pond turtle (*Actinemys marmorata*)	SSC	Moderate potential for occurrence, due to the presence of suitable habitat but not observed during survey.

Table 3.6-3: Special Status Animal Species Occurring in Proposed Project Vicinity

Species	Status	Potential for Occurrence
two-striped garter snake (*Thamnophis hammondii*)	SSC	Present within Proposed Project site.
BIRDS		
burrowing owl (*Athene cunicularia*)	SSC	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during survey.
southwestern willow flycatcher (*Empidonax traillii extimus*)	FE, SE	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during survey.
least Bell's vireo (*Vireo bellii pusillus*)	FE, SE	Present but not nesting within Proposed Project site.
yellow warbler (*Dendroica petechia brewsteri*	SSC (nesting)	Present but not nesting within Proposed Project site.
MAMMALS		
pallid bat (*Antrozous pallidus*)	SSC	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during general surveys.
western mastiff bat (*Eumops perotis californicus*)	SSC	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during general surveys.
western yellow bat (*Lasiurus xanthinus*)	SSC	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during general surveys.
southern grasshopper mouse (*Onchomys torridus ramona*)	SSC	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during general surveys.
American badger (*Taxidea taxus*)	SSC	Low potential to occur due to lack of known historical occurrences within 5 miles of Proposed Project site but not observed during general surveys.

Source: CNDDB 2013
Sensitivity Status Codes used in this table:

Federal:
FE = Federally listed; Endangered

State:
SE = State listed; Endangered
SSC = State Species of Special Concern

Three sensitive wildlife species have a moderate to high potential to occur in the Proposed Project site. One species, least Bell's vireo, is a federally and state listed as endangered species and was present on the site during protocol surveys. Two species, western pond turtle and coast range newt, are California State Species of Special Concern (SSC) and have a moderate or high potential to occur on the site. One species, yellow warbler, is a SSC when nesting and was present on the site during the reconnaissance survey. A two-striped garter snake was observed on the dirt road leading to the spillway.

Least Bell's Vireo - FE, SE

The least Bell's vireo (nesting) is a federally and state listed as endangered subspecies of the Bell's vireo. The breeding range of the species extends from North Dakota to Indiana, south through Arkansas and Texas, and west to southern New Mexico, Arizona, California, and northern Mexico; however, the least Bell's vireo subspecies is restricted to coastal California and Baja California, Mexico, and a few inland populations. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. It is a small, gray songbird with two faint wing bars and a faint eye ring and is whiter below. This species prefers to nest in low, dense, scrubby vegetation in early successional areas and is particularly dependent on corridors of habitat along rivers and streams. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories. It builds a suspended cup nest about 0.5 to 2.0 meters above the ground and, on average, lays four eggs. It may produce two broods per season. On the breeding grounds, the least Bell's vireo feeds primarily on insects and small spiders that it gleans from twigs and leaves. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird (*Molothrus ater*). Habitat loss and degradation, especially along streams and rivers due to development, agriculture, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. Overgrazing has been estimated to have reduced nesting sites by 50 percent in some areas, and it has contributed to an increase in non-native invasive plant species that do not typically support the breeding of this species.

Cowbird parasitism is also an important factor in population declines. The cowbird lays its egg in the nest of an unsuspecting vireo, and the vireo may then raise the cowbird chick as its own. The cowbird egg hatches earlier than the vireo eggs, and the chick then grows much larger in less time, eventually outcompeting the vireo chicks and causing nest failure. Fragmentation of habitat also increases cowbird parasitism by artificially creating favored habitats of cowbirds; and it isolates small, fringe vireo populations. In turn, these populations are more susceptible to localized extirpations which contribute to large-scale range reductions. Domestic and feral cats are also a significant predatory force in some areas. Despite historic population losses, recent trends indicate that populations are on the rise and that the least Bell's vireo is returning to parts of its former range as well as colonizing some new areas.

Approximately 62.5 acres of suitable habitat (Riparian Woodland, Mule Fat Scrub, Riparian Herbaceous habitat) for least Bell's vireo are present within the Project site. Historic records do not exist within the *Pasadena*, California USGS 7.5-minute topographic quadrangle; however, known occurrences do exist for this species in the San Gabriel Mountains in Los Angeles County. Because habitat for this species occurs in the Survey Area and occurrences are known in other areas of the San Gabriel Mountains, focused protocol-level least Bell's vireo surveys were conducted from May through August 2010 and from April through July 2013 following modified USFWS *Least Bell's Vireo Survey Guidelines* (Jan. 19, 2001)**.** No least Bell's vireos were observed during the 2010 surveys. In July 2012, an adult and a juvenile least Bell's vireo were observed in the Proposed Project site (CDFW 2013). Because least Bell's vireo have high site fidelity, and are likely to return to the same site to breed every year, focused surveys for

least Bell's vireo were conducted in 2013 to determine if they are breeding within the Project site. A single male least Bell's vireo was observed during the first four of six 2013 surveys (April 29, May 23, June 5, and June 17, 2013). The least Bell's vireo male was extremely vocal, continuously singing throughout the mornings, and appeared to be very territorial. It did not appear to be paired, however, and no nesting behavior was observed. Shortly before the June 17, 2013, survey, recreational activities within the Proposed Project site increased dramatically due to the initiation of children's summer camps within Hahamongna Watershed Park and the flood control reservoir. Camp activities included clearing vegetation for children's play areas within the Riparian Woodland, cutting new trails through the occupied least Bell's vireo habitat, and increasing sound disturbance within the occupied least Bell's vireo habitat. The least Bell's vireo was no longer observed during the June 27 or July 9, 2013, surveys; however, due to Bell's vireo having high site fidelity, this species is considered present within the Proposed Project site.

Coast Range Newt - SSC

The coast range newt is a California Species of Concern found in terrestrial habitats such as grasslands, woodlands, and forests. Within these habitat types, this species uses pools, ponds, reservoirs, and slow-moving streams as breeding sites. Its range includes most of coastal California, and it may be found up to 7,800 feet in elevation. It has a light brown dorsum, reddish-orange or yellow venter, large eyes, and smooth to rough skin. It may exceed 7 inches in total length. Breeding males have flattened tails, dark skin on the undersides of the feet, and smooth skin. Its diet includes invertebrates such as earthworms, slugs, sowbugs, snails, and larval insects. This species is threatened by habitat loss and alteration of hydrological systems during their breeding season.

Habitat for the coast range newt occurs seasonally within the Proposed Project site. The Arroyo Seco watershed is a slow-moving seasonal stream. During the 2010 surveys, spreading basins, one holding water at the time of the survey (most likely from rain), were present on the east side of the stream; and a seasonal pond, also filled with rain water at the time, was located on the west side of the stream. The amount of ponding within the reservoir is dependent upon where sediment accumulates and the amount of flows, rainfall, and runoff. During the 2013 survey, two storm drains that divert runoff from neighborhoods and businesses into the watershed had flowing water (Chambers Group 2013b). Water was entering the reservoir from Flint Wash on the southwest side of the site, and a culvert on the southeast contained a pond with a little water flow as well. Water from the Arroyo Seco and storm drains continues to flow to the southernmost point in the reservoir and leaves the reservoir from the outlet structures of the dam. The stream, basins, and pond are all potential breeding habitat for this species. A historic occurrence (2003) exists for this species in the Arroyo Seco watershed less than 0.5 mile upstream of the Proposed Project site. Therefore, this species has a high potential to occur within the Proposed Project site; however, this species was not observed during the surveys.

Southwestern Pond Turtle - SSC

This species is a California Species of Concern. This species occurs along the west coast of North America from Baja California up to San Francisco Bay and from sea level to 5,900 feet in elevation (California Reptiles and Amphibians 2009). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (California Reptiles and Amphibians 2009). The southwestern pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. This species occurs in a variety of habitat types including woodland, grassland, and

open forest (California Reptiles and Amphibians 2009). Although this species is considered aquatic, some spend a lot of time on land (Bury and Germano 2008). The top of the shell is dark brown or yellow-olive and may have dark streaks (Bury and Germano 2008). Pond turtles are diurnal, but will quickly slide into water when they feel threatened. Most activity takes place from February to November. They hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (California Reptiles and Amphibians 2009). If water temperatures are right, this species may be active year-long (Bury and Germano 2008). Pond turtles mate in April and May and nest between April and August (California Reptiles and Amphibians 2009). Hatchlings emerge in early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (California Reptiles and Amphibians 2009).

Habitat destruction is the primary threat to this species. Pond turtles are found to occur near dams, although the habitat quality is low. Dams cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury and Germano 2008).

Habitat for the southwestern pond turtle occurs seasonally within the Proposed Project site. The Arroyo Seco watershed is a slow-moving seasonal stream. As discussed previously, ponding was observed during the 2010 survey and flowing water (runoff) from two storm drains during the 2013 surveys. The stream, basins, and ponded areas are all potential breeding habitat for this species. A historic occurrence (1971) exists for this species in the Arroyo Seco watershed less than 5 miles upstream of the Proposed Project site. Therefore, this species has a moderate potential to occur within the Proposed Project site; however, this species was not observed during the surveys.

Yellow Warbler (Dendroica petechia brewsteri) - SSC

The yellow warbler (nesting) is a California Species of Concern. Its breeding range includes most of North America from northern Alaska and northern Canada to the southern U.S. and Mexico. Wintering birds occur from Mexico to Peru. Breeding habitats include wet areas, such as Riparian Woodlands, orchards, gardens, swamp edges, and willow thickets. Most breeding habitats generally contain medium to high-density tree and shrub species with ample early successional understories. In migration, yellow warblers may occur in other habitats, including early seral riparian habitats. Its plumage is more extensively yellow than other North American wood-warblers, and it is also unique in having yellow on the inner webs of its tail feathers (except middle pair). Males show rusty streaking on the breast. Yellow warblers are almost entirely insectivorous, but they also eat a few berries. Populations are in decline in California due to habitat loss, grazing of riparian understories, and brood parasitism by the brown-headed cowbird.

The yellow warbler was observed in the Proposed Project site during the biological reconnaissance survey in riparian habitat within the reservoir. This species is considered present within the Proposed Project site.

Two-Striped Garter Snake

The two-striped garter snake is a California Species of Concern. It is found in Salinas in Monterey County, south along the coast, into the Traverse Ranges in southern California, into Victorville, south to the Peninsular Ranges, and south to Baja California (California Reptiles and Amphibians 2009). The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including

streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day (California Reptiles and Amphibians 2009). Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. Loss of wetland habitats has contributed to a reduction in the range of this snake.

A two-striped garter snake was observed during the biological reconnaissance survey. The deceased snake was observed on the dirt road leading down to the spillway of the reservoir. This species is considered present within the Proposed Project site.

Downstream Survey

A downstream biological resources survey was conducted within the Arroyo Seco Channel to determine habitat and species types present downstream of the Proposed Project site in relation to a specific project alternative. These surveys would be standard operating procedure only for projects that may include sluicing. Appendix D contains the results of this survey. The majority of the Arroyo Seco Channel consists of a concrete-lined channel. The sections of the concrete-lined channel total 9 miles in length. Two sections of the Arroyo Seco Channel, approximately 0.5 mile in total length, were identified to have natural sediment bottoms. The Los Angeles River from where the Arroyo Seco Channel enters the Los Angeles River to the Pacific Ocean also mainly consists of a concrete-lined river. The concrete-lined sections of this portion of the Los Angeles River total 21 miles in length. Sections of the Los Angeles River, approximately 4 miles in total length, were identified as having concreted riprap sides and bottoms. The majority of the concreted riprap sections were located in Long Beach from West Willow Street south to the Pacific Ocean. This section was approximately 90 percent of the total concreted riprap length. An area known as Golden Shore Marine Biological Reserve is located adjacent to the Los Angeles River immediately to the east of the main channel. This area is an intertidal and subtidal wetland area exposed to tidal influences.

Little to no vegetation was present within the channel or riverbed in concrete-lined areas of the Arroyo Seco Channel and Los Angeles River. These areas had little to no potential for sensitive plant species or for wildlife to forage and find shelter. Several bridges crossing over the Arroyo Seco Channel and Los Angeles River were identified during the survey; however, the majority of these bridges were constructed of solid concrete or had exposed steel beams and do not provide suitable bat hibernacula. Despite these river characteristics, six areas that have potential for plant and animal life are described below.

Area 1

Area 1 is located in the Arroyo Seco Channel just downstream of Devil's Gate Dam in the City of Pasadena. This area starts at the downstream area below Devil's Gate Dam south to the drop spillway structure located approximately 560 feet downstream of the I-210 overpass near the northern portion of the Brookside Golf Course. This section of the channel consists of freshwater emergent habitat with cattails and leads to a mature Riparian Woodland habitat with willows, alders, and western sycamore trees in downstream sections of this area. No sensitive wildlife or plant species were observed during surveys in Area 1; however, the riparian habitat present is suitable foraging habitat for avian species.

Suitable roosting habitat for bats was present within the large native trees surrounding the channel. No fish were observed in this section of the Arroyo Seco Channel.

Area 2

Area 2 is located in the Arroyo Seco Channel just downstream of West Holly Street in the City of Pasadena. This soft-bottom channel area starts at the end of the concrete-lined Arroyo Seco Channel approximately 750 feet north of the SR-134 freeway overpass and continues downstream to a drop spillway structure located approximately 300 feet south of the SR-134 freeway overpass. The northern section of Area 2 consists of riparian habitat with red willows and California white alder trees. Sandy and rocky substrates were present within the streambed, and undercuts were present along the banks that could provide cover/shelter for aquatic species. Large ponds approximately 5 to 6 feet deep and 50 feet wide were found in the downstream section of this area. The ponds had a sandy bottom with little vegetation on the banks. No sensitive wildlife or plant species were observed during surveys. Riparian habitat surrounding the channel is suitable foraging and nesting habitat for avian species. Suitable roosting habitat for bats was also present in the trees surrounding the channel. During fish surveys, approximately 60 mosquito fish were identified in this section of the Arroyo Seco Channel. These fish were found near the banks where vegetative cover was present along the bank. Mosquito fish are not native fish species and are known to be used as vector control species.

Area 3

Area 3 consists of two restoration areas that flow north to south parallel to the Arroyo Seco Channel and are located to the west and east of the Arroyo Seco Channel (concrete-lined). This area begins at the drop spillway structure located at the southern end of Area 2 just north of the Colorado Boulevard overpass bridge and continues south for approximately 0.33 mile near the Pasadena Roving Archers archery range. Water enters the sites through a small gate located on both sides of the channel. The water present at these sites flows back into the concrete-lined Arroyo Seco Channel. The restoration area sections of the channel are comprised of slow-moving, pooled habitat, cobble and rock substrates, with heavy silt sedimentation present. Trees line the banks of both restoration sites, with an open canopy along the middle of the channel. The mature canopy includes willow, California white alders, aspens, and sycamore trees. Emergent cattails were present in areas with pooled water. No sensitive wildlife or plant species were observed during surveys. Suitable foraging and nesting habitat for avian species was present in the surrounding riparian habitat in both restoration sites. This habitat also provides roosting habitat for bats. Although suitable fish habitat exists within the restoration areas, either the spillway structure at the north end or the restoration areas may act as barriers that prevent or limit fish populations from occurring here.

Area 4

Area 4 is located in the City of Los Angeles. The desktop analysis identified three small areas under several street bridges traversing over the Los Angeles River as potentially having sediment or rocky substrates within the streambed. These overpass bridges were located at East 7th Street, at East Olympic Boulevard, and under a railway bridge just south of East Washington Boulevard. The Los Angeles River within Area 4 consists of a concrete-lined river with rocky and sandy substrates present under the bridges previously mentioned. The majority of the rocky sediment was observed around the support columns of the bridges. Little to no vegetative cover was present at these locations. The scattered emergent vegetation was located on the rocky sediment around the bridge support columns, and algae

covered the concrete-lined river and rocky sediment. Due to the small amount of vegetation and sediments, these areas could provide low quality foraging opportunities for common species. No sensitive wildlife or plant species were observed during surveys. No surrounding habitat with the potential to support sensitive wildlife species was observed. The bridges have either no potential or a low potential to support bat species. No fish species were observed at any of the three locations within Area 4. These locations do not have appropriate riverbed composition, vegetative cover, or food sources to support native fish populations.

Area 5

Area 5 is located within the Los Angeles River in the Long Beach Area just north of the West Willow Street overpass bridge to the West Anaheim Street overpass bridge. The area downstream of West Willow Street is comprised of a large, deep pool leading into a riffle and run river system. The water within this area was turbid, and visibility was less than 1 foot. This area appeared to have an earthen basin with concreted riprap consisting of large boulders along the banks. Vegetation was present along the lower sections of the banks and included willows, cattails, and sedges; however, the vegetation lining the outer banks of the river appeared to have recently been removed. No sensitive wildlife or plant species were observed during surveys. Vegetation found in this area did not appear suitable for cover; therefore, the potential for sensitive riparian wildlife species to occur in this area is unlikely. The West Willow Street Bridge consisted of solid concrete and does not provide suitable roosting habitat for bats. No fish were observed in the water during the survey; however, non-native fish are considered to be present in this area. This area likely hosts only exotic fish species such as mosquito fish, goldfish, and sunfish species that have been introduced by local anglers. The water downstream of West Anaheim Street appears to have a brackish water influence and may support species adapted to higher saline conditions.

Area 6

Area 6 is located within the Los Angeles River in the City of Long Beach from the West Anaheim Street overpass to the Pacific Ocean. This area was completely turbid, and visibility was less than 1 foot. Sandy sediment may be present on the river bottom, and the banks consisted of concreted riprap. This section of the Los Angeles River appeared to have ocean confluent water with high salinity levels. Plants that are adapted to high saline conditions, such as pickleweed and California cord grass, were observed along the banks closer to the ocean. Several extensive patches of non-native castorbean and arundo also exist along the banks. The vegetation lining the outer banks of the river at this area also appeared to have been recently removed. The bridges crossing over the river did not provide suitable roosting habitat for bats. Many avian shoreline species were observed in this area near the mouth of the river entering the Pacific Ocean, including a white-tailed kite (CDFW fully protected species) flying through the area. Due to turbid conditions, no fish were observed during visual surveys from outer banks; however, fish are considered present in this area. This area may support larger fish or species adapted to confluent freshwater and ocean water environments.

The Golden Shore Marine Biological Reserve is located adjacent to the Los Angeles River on the eastern bank of the channel. This area was originally part of Palm Beach Park, an area created in the 1950s for a launch ramp and parking lot. This area was exposed to continual silt buildup and was eventually closed in the early 1990s. In the late 1990s, 6.4 acres of intertidal and subtidal wetland habitat was mitigation for the impact on the saltwater lagoon that was converted to Rainbow Harbor, a recreational boating area. Many avian species typical of coastal areas were observed including: great blue heron, black-

crowned night heron, great egret, willet, marbled godwit, pied-billed grebe, eared grebe, western grebe, black-necked stilt, killdeer, and western gulls. This area is also known for fish spawning typical of intertidal and subtidal wetland areas. The Golden Shore Marine Biological Reserve is likely to support fish spawning areas and foraging opportunities for fish species typical of coastal wetlands.

The Dominguez Gap Wetlands are also located adjacent to the channel. The Dominguez Gap Wetlands Project is part of the Los Angeles River Master Plan (LACDPW 1996). The purpose of the project is to restore ecological functions, improve water quality, and recharge the aquifer (LACDPW 2008). The gates to the wetlands are operational and allow for flows from the channel to be controlled.

Jurisdictional Waters/Wetland Habitats

The Proposed Project site was surveyed for jurisdictional features and potential wetland habitats in November 2010 and May 2013. Results of these surveys are found in Appendix D. USACE and RWQCB potential wetland areas were evaluated based upon the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology, in accordance with USACE guidelines (USACE 2008). Vegetation communities were identified to be of CDFW interest if at least one of the three wetland parameters were present.

Soils

Soil characteristics were assessed in the field by digging pits, checking for soil indicators, and verifying or determining actual soil types present. Problematic soils were found to occur within Devil's Gate Reservoir. Problematic soils include soil profiles that have angular gravel or fill (Wetland Delineation Manual, Arid West Region), such as the sediment load entering a reservoir after heavy rain events. The Devil's Gate Dam serves as a man-made structure altering natural hydrology in the area. Most man-induced wetlands do not contain hydric soils because of the relatively recent changes in soil and hydrology. Hydric soils may take several years to hundreds of years to mature. Fire and rainfall patterns cause debris and sediment to wash down and get trapped in the reservoir; and as a result, the reservoir is continually loaded with debris and sediment buildup, such as the case with Devil's Gate Reservoir. Since 2009, as a result of the Station Fire, Devil's Gate Reservoir received depths between 3 to 18.5 feet (depending on the area of the reservoir) of recent debris and sediment buildup. Typically, sediment and debris is deposited at a much lower rate. With new soils continuously moving into the reservoir, the upper layers of soil do not have the chance to mature. Although this system is not considered natural, the man-made changes have been left unchanged for a number of years and are considered normal circumstances.

Vegetation

As described above, vegetation in the Proposed Project site has mature riparian trees, pockets of Mule Fat Scrub, freshwater marshes, and emergent Riparian Herbaceous communities growing along scoured areas present due to unstable sediment accumulation and subsequent scouring during storm events occurring since the 2009 Station Fire. Upland vegetation communities and developed areas also exist within the Proposed Project site.

Drainage Features and Connectivity

The Devil's Gate Reservoir is fed by the Arroyo Seco Watershed, which begins in the San Gabriel Mountains north of Pasadena. Water flows from the watershed into the reservoir at the base of the mountains. According to the Hahamongna Watershed Park Master Plan (HWPMP), adopted in 2003, in addition to the Arroyo Seco, 23 storm drains also enter the reservoir. Water from the Arroyo Seco and storm drains continues to flow to the southernmost point in the reservoir and leaves the reservoir from the outlet structures of the dam. Water flows south of the dam for approximately 8.5 river miles to the Los Angeles River in the City of Los Angeles near State Route (SR) 110 and Interstate 5 (I-5) freeway interchange. The Los Angeles River continues to flow south for approximately 23.5 river miles when it reaches the Pacific Ocean at San Pedro Bay near Long Beach.

The total distance to the nearest traditional navigable waters (TNW) from Devil's Gate is the Los Angeles River at a distance of approximately 8.5 river miles. The Arroyo Seco Watershed is seasonal, flowing during the wet season after rain events. The headwaters are located at in the San Gabriel Mountains, and waters terminate at Los Angeles River.

Hydrology

Several indicators of wetland hydrology were present at the time of the field delineation. Characteristics included evidence of inundation, saturation, surface water, watermarks, drift lines, sediment deposits, water-stained leaves, destruction of vegetation and the presence or oxidation/reduction features in the soil, among several others. The braided channels were highly variable within the reservoir area, in many instances flowing subsurface through the highly permeable soils and appear to lose visible connectivity. Much of the soils are sandy to sandy loam soils that do not exhibit a relatively permanent bed and bank. Instead, the flow is highly variable and many tributaries formed from single rain events were observed.

The wet season in southern California typically runs from October 15th to April 15th. Outside of the wet season, Devil's Gate Reservoir does not impound water. However, if enough water is available during the wet season, Devil's Gate Reservoir will impound water up to elevation 1020. When water within the reservoir reaches the 1020 contour, the dam's gates are opened to maintain the water level at elevation 1020. Based on this information, the Ordinary High Water Mark (OHWM) for the reservoir is therefore located at the 1020 contour. Due to the presence of problematic soils that inhibited determination of the three parameter wetland, the OHWM was therefore used to delineate the boundaries of the wetland area on the Proposed Project site.

The quality of habitat within the reservoir is low for most wildlife species. Water is not present all year, and therefore the presence of aquatic species would occur only seasonally rather than year-long. Due to the nearby presence of a park, hiking paths, horseback riding trails and training rings, and domestic dogs, the site is considered disturbed. Because the site is frequently visited by the public and pets of the public, wildlife diversity will decrease. Some wildlife species prefer undisturbed, quiet areas and will find those areas north of the reservoir where the public has less of a presence. Off-leash dogs and outdoor cats in adjacent residential homes likely predate on native wildlife species, also causing a decrease in variability. The site is also highly disturbed due to frequent deposition of sediment as a consequence of

the 2009 Station Fire and subsequent erosion of areas with unstable sediment buildup during storm events. Disturbed communities also allow exotic plant species to establish and spread.

United States Army Corps of Engineers (USACE) Jurisdiction

The waters within the reservoir ultimately connect to the Los Angeles River and terminate in the Pacific Ocean and are therefore considered USACE jurisdictional. A significant nexus analysis was performed to determine potential USACE jurisdiction. A significant nexus was determined to exist for the Proposed Project based on the following facts:

- It is a wetland directly abutting an ephemeral and intermittent non-Relatively Permanent Water (RPW) and is hydrologically connected approximately 8.5 river miles from the nearest Traditional Navigable Water (TNW) as the crow flies (Los Angeles River);
- It has the capacity to carry pollutants, nutrients, and organic carbon to the nearest TNW;
- The nutrients and organic carbon in turn support downstream foodwebs (i.e., aquatic plant and wildlife in the Los Angeles River). The nutrients and organic carbon also have the capacity to contribute to the ecology of all impoundments between the project site and the Pacific Ocean.

For this reservoir, the water level is highly variable within the seasons and throughout the year. However, water is released at the 1020 contour (OHWM); therefore, the USACE identified Wetland boundary is located up to the OHWM at the 1020 contour. The total USACE jurisdiction is defined by the riparian habitat within the HWM that is indicative of the total water capacity within the proposed project. USACE jurisdictional areas are shown in Figure 3.6-3 USACE/RWQCB Jurisdictional Areas Map.

Regional Water Quality Control Board (RWQCB) Jurisdiction

For this reservoir, is the water level is highly variable within the seasons and throughout the year. However, water is released at the 1020 contour (OHWM); therefore, the RWQCB identified Wetland boundary is located up to the OHWM at the 1020 contour. The total RWQCB jurisdiction is defined by the HWM that is indicative of the total water capacity within the proposed project. The reservoir has the capacity to affect surface and subsurface water quality within California and, therefore, the RWQCB has jurisdiction over riparian habitat within the reservoir up to HWM line. USACE jurisdictional areas are shown in Figure 3.6-3.

California Department of Fish and Wildlife (CDFW) Jurisdiction

Though much of the reservoir is of low quality habitat, it does have the potential to support common riparian-dependent birds, mammals, and aquatic species. Mature riparian vegetation (i.e., willows and mule fat) was found present within the Proposed Project site, and characteristics of naturalized stream channels were present. CDFW jurisdiction applies to the top of the banks, or in this case the HWM, or the edge of the riparian vegetation dripline, whichever is larger. Wetland conditions were identified to be of CDFW interest since at least one of the three wetland parameters was present. Additionally, CDFW will have jurisdiction over riparian vegetation from the OHWM up to the HWM elevation line. CDFW jurisdictional areas are shown in Figure 3.6-4: CDFW Jurisdictional Areas Map.

3.6.3 Applicable Regulations

This section provides brief descriptions of federal, State, and local regulations relevant to biological resources.

Federal

Endangered Species Act

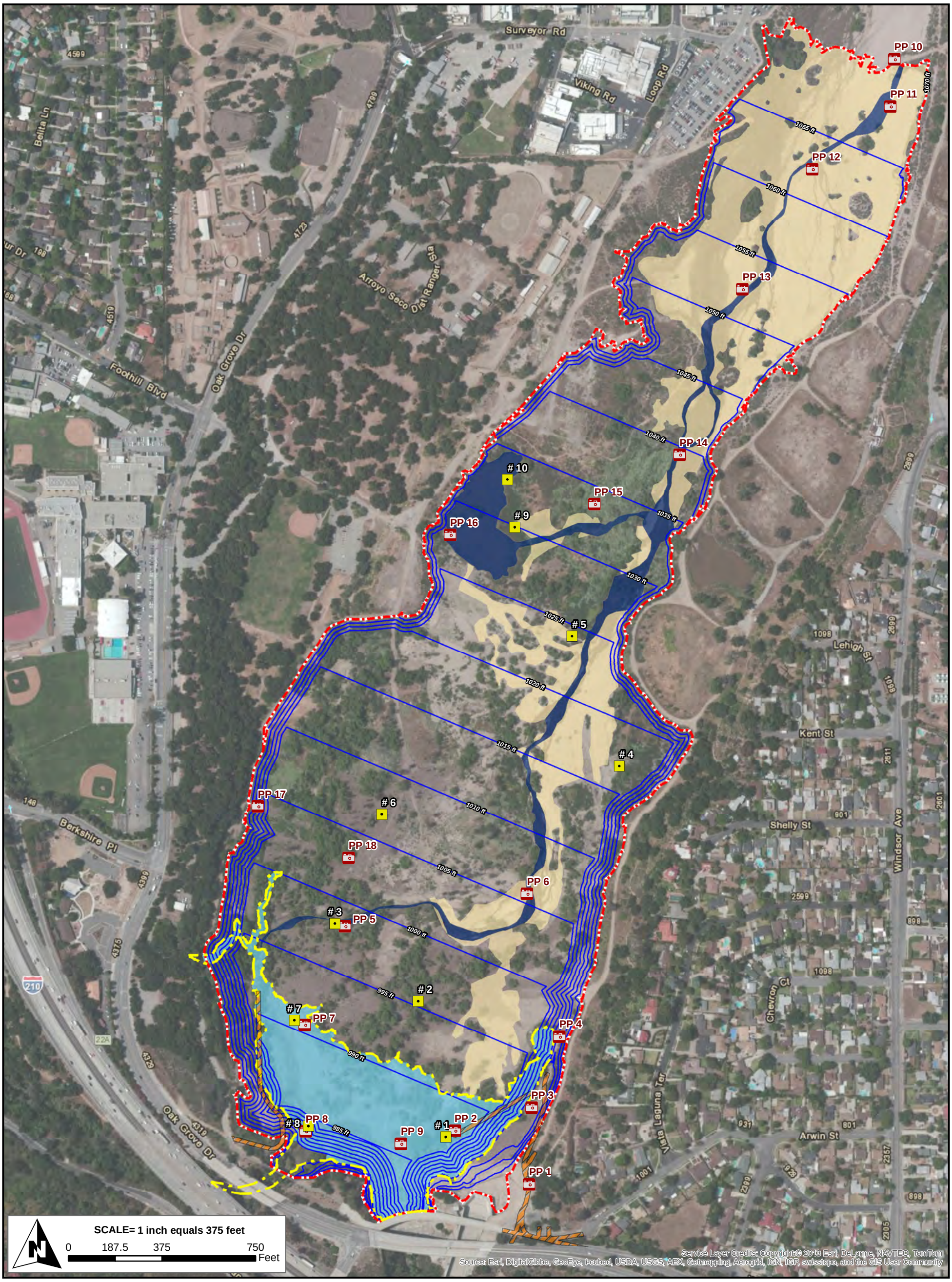
The Endangered Species Act of 1973 (16 United States Code [USC] 1531–1544), as amended (ESA), provides for the protection of federally listed threatened and endangered species and their habitats. It prohibits unlawful "take" of federally listed species. The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" as defined in 50 Code of Federal Regulations (CFR) Part 222.102 "may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding, or sheltering." United States Fish and Wildlife Service (USFWS) administers the ESA for terrestrial and freshwater organisms.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918, as amended (MBTA) (16 USC 703 et. seq.), provides for the protection of migratory birds and prohibits their unlawful take, possession, or transport. It was originally enacted to implement a treaty between the United States and Great Britain (on behalf of Canada) and has since been amended to implement treaties between the United States and several other countries for the protection of migratory birds. A migratory bird is any bird listed in 50 CFR 10.13 and includes any mutations and hybrids of any such species, including any part, nest, or egg of any such bird, or any product consisting of such (50 CFR 10.12). Migratory birds may not be federally listed under the ESA. The MBTA, which is enforced by USFWS, makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird, or attempt such actions, except as permitted by regulation. The applicable regulations prohibit the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c), enacted in 1940 and as amended, prohibits anyone, without a permit issued by USFWS, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." For purposes of these guidelines, "disturb" means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."



Proposed Project Boundary

Access Road

Sediment Removal Excavation Limit

Inundation Line

Soil Test Pit

Photo Points

Waters

Wetland Area (11.2 acres)

Drainage (6.7 acres)

Braided Channel (28.9 acres)

Figure 3.6-3

Devil's Gate Reservoir Sediment Removal and Management Project

USACE/RWQCB Jurisdictional Areas Map

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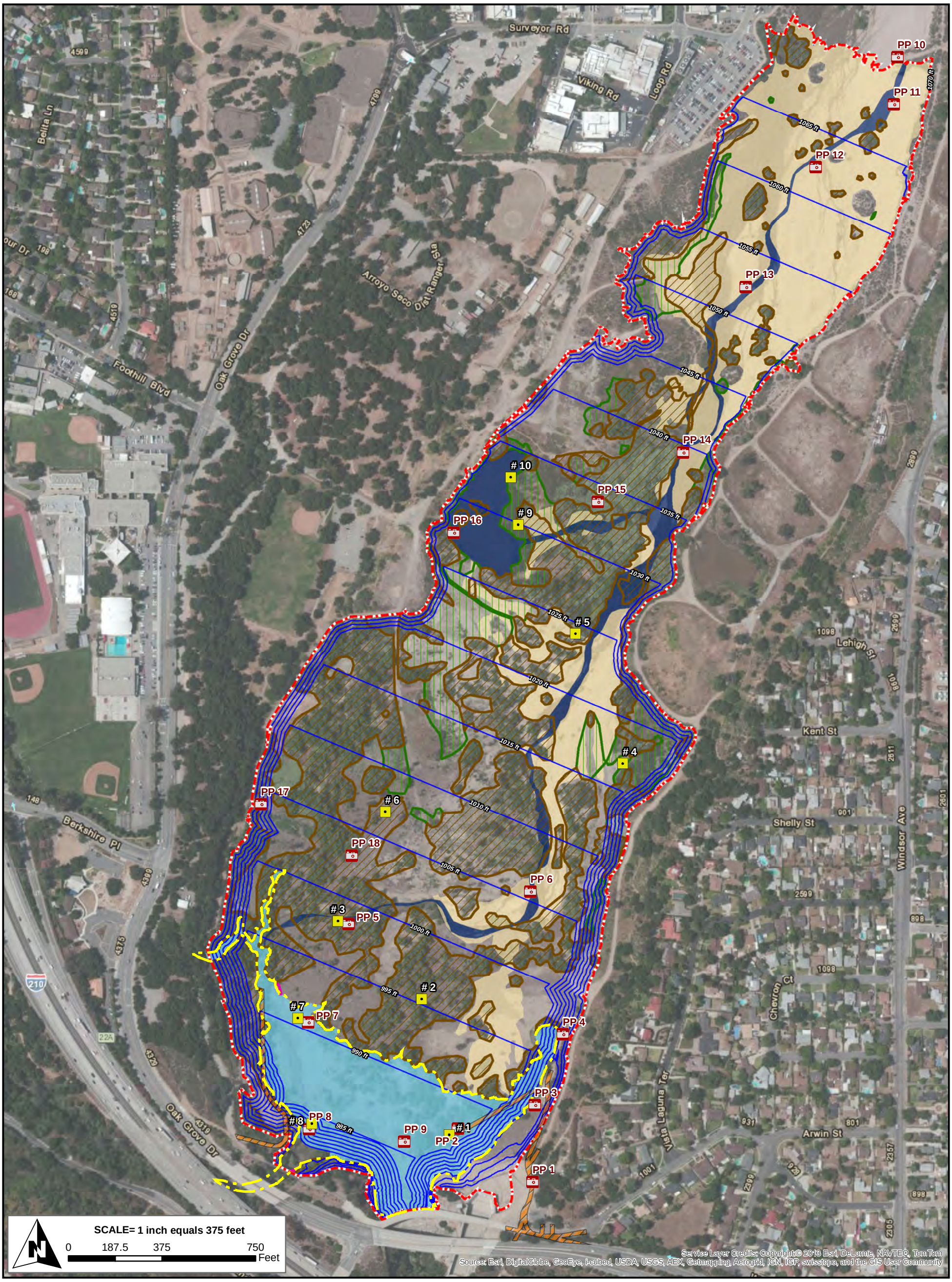

Proposed Project Boundary
Access Road
Sediment Removal Excavation Limit
Inundation Line
Soil Test Pit
Photo Points

Riparian Vegetation
- Riparian Woodland (45 acres)
- Mule Fat Scrub (9.3 acres)
- Riparian Herbaceous (0.03 acre)

Waters
- Wetland Area (11.2 acres)
- Drainage (6.7 acres)
- Braided Channel (28.9 acres)

Figure 3.6-4
Devil's Gate Reservoir Sediment Removal and Management Project
CDFW Jurisdictional Areas Map

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\\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.6-4 CDFW Jurisdictional Areas Map.mxd

Federal Water Pollution Control Act (Clean Water Act)

The Clean Water Act (CWA), as amended, (33 USC 1251 et seq.) establishes the basic structure for water quality standards for surface waters and regulating discharges into the waters of the United States. The CWA gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs such as the National Pollutant Discharge Elimination System (NPDES), which sets limits on the amounts of specific pollutants that are discharged to surface waters in order to restore and maintain the chemical, physical, and biological integrity of the water as established by ambient water quality standards.

These include setting wastewater standards for industry and water quality standards for contaminants in surface waters. The discharge of any pollutant from a point source into navigable waters is illegal unless a permit under its provisions is acquired. In California, the State Water Resources Control Board (SWRCB) and the nine RWQCBs are responsible for implementing the CWA. Section 404 of the CWA regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other waters of the United States. USACE is the federal agency authorized to issue Section 404 Permits for certain activities conducted in wetlands or other waters of the United States. Section 401 of the CWA grants each state the right to ensure that the state's interests are protected on any federally permitted activity occurring in or adjacent to waters of the State. In California, RWQCBs are the agencies mandated to ensure protection of the State's waters. For a Proposed project that requires a USACE CWA Section 404 permit and has the potential to impact waters of the State, RWQCB will regulate the project and associated activities through a Water Quality Certification determination (Section 401). Specifically, the Los Angeles Regional Water Quality Control Board (LARWQCB) will regulate the Proposed Project and associated activities through a Section 401.

State

California Endangered Species

The California Endangered Species Act of 1984 (CESA) provides a framework for the listing and protection of wildlife species determined to be threatened or endangered in California.

California Fish and Game Code 3503.5

Raptors (birds of prey) and active raptor nests are protected by the California Fish and Game Code (CFGC) 3503.5, which states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized.

California Fish and Game Code 3503

Bird nests and eggs are protected by the CFGC 3503, which states "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

California Fish and Game Code 3513

The CFGC protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act (MBTA) or any part of such migratory nongame birds.

State of California Fully Protected Species

The classification of Fully Protected was the state's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds, and mammals. Most Fully Protected species have also been listed as threatened or endangered species under ESA and/or CESA. Fully Protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

California Fish and Game Code, Section 1600, as amended

Under Section 1602 of the CFGC, CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats (e.g., southern willow scrub) associated with watercourses. Jurisdictional waters are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider. CDFW jurisdiction does not include tidal areas or isolated resources. Section 1602 of the CFGC requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake or use materials from a streambed to notify CDFW before beginning the project. If CDFW determines that the project may adversely affect existing fish and wildlife resources within CDFW-jurisdictional water, a Lake or Streambed Alteration Agreement is required.

Jurisdictional authority of the CDFW over wetland areas is established under Section 1600 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake without notifying the CDFW, incorporating necessary mitigation, and obtaining a Streambed Alteration Agreement. The Proposed Project will need to adhere to the CDFW's Section 1600 Streambed Alteration Agreement (SAA) since project activities will alter the flow, bed, channel, or bank of the streams in the project area. Coordination with CDFW will take place during project development regarding protected species or other natural resources and habitat that could be impacted by the sediment removal activities.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) (CFGC Section. 1900-1913) prohibits the taking, possessing, or sale within the State of any plant listed by CDFW as rare, threatened, or endangered. An exception to this prohibition in the Act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFW at least 10 days prior to the initiation of activities that would destroy them. The NPPA exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way."

Porter-Cologne Water Quality Control Act, as amended

The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and the RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the federal CWA. Waters of the State are defined by Porter-Cologne as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code Section 13050(e)). Waters of the State broadly includes all waters within the State's boundaries (public or private), including waters in both natural and artificial channels.

Local

Through easements granted in May of 1919 and March of 1965, the City of Pasadena granted the LACFCD under a perpetual easement, the right to construct, reconstruct, inspect, maintain, repair, and operate Devil's Gate Dam, its spillway, bypasses, tunnels, and other support facilities as may be necessary for the construction and maintenance of a reservoir capable of impounding the waters of the Arroyo Seco for purposes of storage and control, and to control such waters as may be necessary in the prevention of damage by flood (City of Pasadena 1919/1965).

The City of Pasadena adopted the City Trees and Trees Protection Ordinance in May 2002 and amended its standards to include a total of 158 species in June 2003. The ordinance seeks to protect public trees, landmark trees, native trees, and specimen trees in certain parts of the City and requires protection measures for new projects to avoid negative impacts that may occur during construction. A permit is required to remove or injure any tree protected under this ordinance, and one of the following findings must be made:

- There is a public benefit or public health safety or welfare benefit to the injury or removal that outweighs the protection of the tree; or
- The present condition of the tree is such that it is not reasonably likely to survive; or
- There is an objective feature of the tree that makes the tree not suitable for the protection of this chapter; or
- There would be a substantial hardship to a private property owner in the enjoyment and use of real property if the injury or removal is not permitted; or
- To not permit injury to, or removal of a tree, would constitute a taking of the underlying real property; or
- The project includes a landscape design plan which would result in tree canopy coverage of greater significance than the one removed within a reasonable time after completion of the project.

3.6.4 Significance Criteria

- *BIOLOGY-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status*

species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

- *BIOLOGY-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*
- *BIOLOGY-3: Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*
- *BIOLOGY-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*
- *BIOLOGY-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*
- *BIOLOGY-6: Cumulative Impacts*

3.6.5 Methodology

Literature Review

Prior to performing the field surveys, existing documentation relevant to the Proposed Project site was reviewed. The most recent records of the California Natural Diversity Database managed by the California Department of Fish and Wildlife (CDFW 2013) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2013) were reviewed for the quadrangle containing and surrounding the Proposed Project site (i.e., *Pasadena*, California USGS 7.5 minute quadrangle). These databases contain records of reported occurrences of federal or state listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitat that may occur within or in the immediate vicinity of the Proposed Project site.

Biological Reconnaissance-Level Survey

A field survey was conducted in the Proposed Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support sensitive wildlife species. The survey was conducted on foot throughout the Proposed Project site on May 27, 2010. Photographs of the Proposed Project site were recorded to document existing conditions. Field surveys were also conducted in May 2013 to confirm and/or update the vegetation communities.

Vegetation

All plant species and soil types observed onsite were noted. Plant communities in the Proposed Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Sawyer and Keeler-Wolf (1995). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California*

(Hickman 1993). A comprehensive list of the plant species observed during the survey is presented in the Biological Technical Review (BTR) (Appendix D).

Wildlife

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. A list of the wildlife species observed during the site visit is included in the BTR (Appendix D).

USACE, RWQCB, and CDFW Preliminary Jurisdictional Assessment

Prior to beginning the field preliminary delineation, a 50-foot-to-the-inch scaled topographic map, scaled aerial photograph, and the *Pasadena* 7.5-minute USGS topographic quadrangle map were examined to determine the locations of potential areas of U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB) and/or California Department of Fish and Wildlife (CDFW) jurisdiction. Chambers Group biologists examined the Proposed Project site to identify potential USACE jurisdiction pursuant to Section 404 and 401 of the Clean Water Act and CDFW jurisdiction pursuant to Section 1602 of the State of California Fish and Game Code. Suspected jurisdictional areas were field checked for the presence of riparian vegetation, definable channels, and Ordinary High Water Marks (OHWMs). The lateral extent of a jurisdictional drainage can be measured in several ways, depending on the particular situation. The outer edge of riparian vegetation is used as the line of demarcation between riparian and upland habitats and is, therefore, an identifiable boundary of the lateral extent of a jurisdictional drainage. On smaller streams or dry washes with little or no riparian habitat, the uppermost bank extents may be used to mark the jurisdictional drainage.

Sensitive Species Focused Surveys

Focused Plant Surveys

Chambers Group conducted the reconnaissance-level survey in the Proposed Project site on May 27, 2010. Based on the literature search and reconnaissance survey, two of the sensitive plants are federal and state listed as endangered species and were determined to have potential for occurrence onsite. An additional six otherwise sensitive (CNPS listed) species were also determined to have potential for occurrence. A sensitive species is considered to potentially occur in a project area if its known geographic range includes part of the project area or an adjacent USGS 7.5-minute quadrangle and/or if the general habitat or environmental conditions (e.g., soil type, etc.) required for the species are present.

Because potential for sensitive plant species to occur onsite existed, focused surveys were recommended and conducted within the Proposed Project site. Because the sensitive plant species with potential to occur have two different flowering periods, two separate focused plant surveys were conducted.

Focused Least Bell's Vireo Surveys

Surveys for least Bell's vireo were performed according to modified USFWS guidelines (USFWS 2001). All surveys were conducted during favorable weather conditions.

3.6.6 Impacts and Mitigation

BIOLOGY-1 *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.*

Sediment Removal

Sensitive Plants

Of the 14 sensitive plant species identified in the literature review, 8 species – Nevin's barberry, Plummer's mariposa lily, Parry's spineflower, slender-horned spineflower, mesa horkelia, white rabbit-tobacco, Parish's gooseberry, and Greata's aster – have suitable habitat present onsite. Two of the sensitive plants, Nevin's barberry and slender-horned spineflower, are federal and state listed as endangered species. Agencies require focused surveys for any federal and/or state listed species with any kind of potential to occur onsite when the species is in bloom to ensure it is both evident and identifiable at the time of the survey. Seven of the sensitive species have an overlapping blooming period in June. Parish's gooseberry blooms from February to April but is a shrub that can be detected outside its blooming period. One species, white rabbit-tobacco, blooms from August to November, with uncommon flowering months in July and December.

Two focused plant surveys were conducted at the Proposed Project site to capture the blooming periods for all sensitive plant species with a potential to occur. The first focused plant survey was conducted from June 28 through June 30, 2010. The second focused survey was conducted on August 24, 2010. No listed or otherwise sensitive plant species were detected during either of the focused surveys. Therefore, the eight plant species with a potential to occur are considered absent from the Survey Area at this time. Therefore, the Proposed Project is not expected to have a substantial adverse effect on any plant species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by CDFW or USFWS.

Sensitive Wildlife

Figure 3.6-2 and Table 3.6-1 above, show the amount of wildlife habitat that will be reduced with sediment removal activities. Of the 14 sensitive wildlife species identified in the literature review, 5 sensitive wildlife species were either observed on the Proposed Project site or have a moderate or high potential to occur in the Proposed Project area due to habitat onsite and/or nearby historic occurrences.

The least Bell's vireo is a federal and state listed endangered species. This species has been observed on the Proposed Project site and is considered present. Sediment removal activities will result in the removal of least Bell's vireo habitat within the Riparian Woodland and Mule Fat Scrub communities.

The yellow warbler, an SSC, was observed in the Proposed Project site in riparian habitat during the reconnaissance survey and during subsequent least Bell's vireo surveys. Sediment removal activities will result in the removal of yellow warbler habitat within Riparian Woodland and Riparian Herbaceous communities.

The southwestern pond turtle, coast range newt, and two-striped garter snake are all SSC. The two-striped garter snake was observed within the Proposed Project site during the biological reconnaissance survey. The southwestern pond turtle and coast range newt were not observed within the Proposed Project site. Habitat for the southwestern pond turtle, the coast range newt, and the two-striped garter snake occurs within streams and seasonal ponds found on the Proposed Project site. The amount of this habitat that will be available will depend upon where sediment accumulates and the amount of flows, rainfall, and runoff. This habitat will be disturbed during sediment removal activities but will be available during rainy season when sediment removal activities are not under way.

The Proposed Project site contains habitat and/or potential habitat for five special status species. Direct harm or take of these species during sediment removal activities would result in a significant impact. To ensure no harm or take of these special status species, Mitigation Measures MM BIO-1, MM BIO-2, and MM BIO-3 have been provided. With implementation of these mitigation measures, direct impacts to special status species would be less than significant.

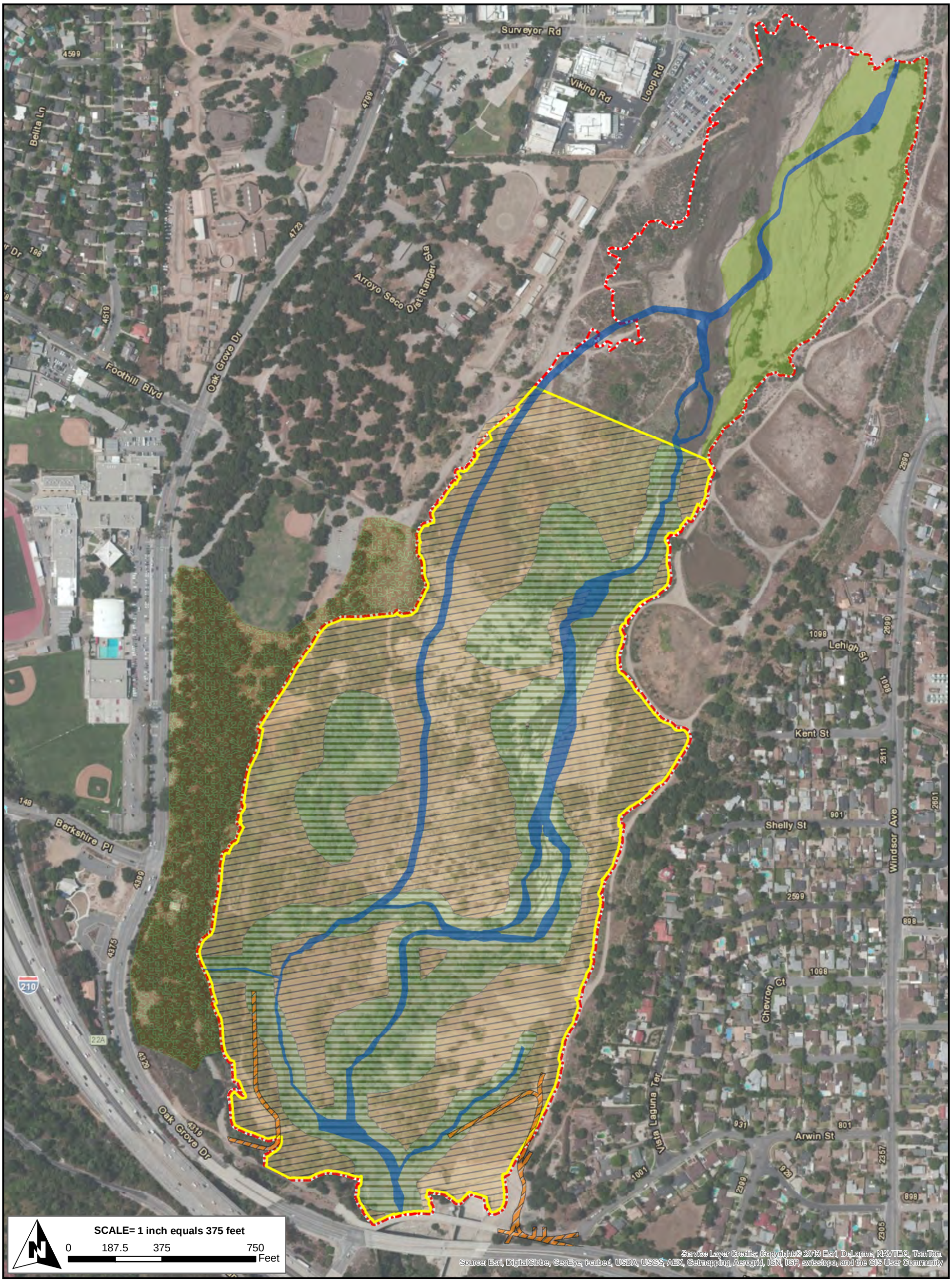
During sediment removal, tree and vegetation removal would significantly affect nesting birds and roosting bats, if present. Disturbance of active nests would violate the Migratory Bird Treaty Act and result in a significant impact. With implementation of Mitigation Measure MM BIO 4 and MM BIO-5, impacts to nesting birds and roosting bats would be less than significant.

Reservoir Management

The reservoir management areas for both management options are expected to be composed of Riparian Herbaceous and Ruderal communities (see Figure 3.6-5 Vegetation Communities Conditions during Reservoir Management Option 2). As described in Section 2.5, Reservoir Management Option 1 will involve the whole Proposed Project site and Reservoir Management Option 2 will involve approximately 91 acres.

Streams and seasonal ponds will be available depending upon where sediment accumulates and the amount of flows, rainfall, and runoff. The reservoir management area has potential to be used by the special status species after sediment removal or the yearly reservoir management disturbances.

Direct harm or take of these species during reservoir management activities will result in a significant impact. To ensure no harm or take of these special status species occurs, MM BIO-1, MM BIO-2, and MM BIO-3 have been provided. With implementation of these mitigation measures, direct impacts to special status species will be less than significant.



Proposed Project Boundary

Reservoir Management Area

Access Roads

Drainage

Vegetation Type

Ruderal

Alluvial Fan Sage Scrub

Coast Live Oak Woodland

Riparian Herbaceous

Figure 3.6-5

Vegetation Communities Conditions During Reservoir Management Option 2

Proposed Project - Configuration A

Version Date: 10/18/2013

CHAMBERS GROUP

\\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.6-5 Vegetation Communities Conditions During Reservoir Management Option 2.mxd

During reservoir management, tree and vegetation removal will significantly affect nesting birds and roosting bats, if present. Disturbance of active nests will violate the Migratory Bird Treaty Act and result in a significant impact. With implementation of Mitigation Measures MM BIO-4 and MM BIO 5, impacts to nesting birds and roosting bats will be less than significant.

Mitigation Measures

MM BIO – 1: A qualified biological monitor shall be present during initial ground- or vegetation-disturbing project-related activities. Following initial project-related activities, a qualified monitoring biologist shall be present as necessary to maintain the implemented protection measures and monitor for additional species in harm's way.

MM BIO – 2: Within 90 days prior to ground-disturbing activities, a sensitive species educational briefing shall be conducted by a qualified biologist for construction personnel. The biologist will identify all sensitive resources that may be encountered onsite, and construction personnel will be instructed to avoid and report any sightings of sensitive species to LACFCD or the monitoring biologist. Educational briefings shall be repeated annually for the duration of the sediment removal.

MM BIO – 3: Within 90 days prior to ground-disturbing activities, a preconstruction survey shall be conducted by a qualified biologist for the presence of any sensitive species in harm's way, including coast range newt, the southwestern pond turtle, and the two-striped garter snake. If sensitive species are observed in harm's way, the qualified biologist will develop and implement appropriate protection measures for that species. These protection measures shall include, as appropriate, redirecting the species, construction of exclusionary devices (e.g., fencing), or capture/relocation outside the work area. Preconstruction Surveys shall be repeated annually for the duration of the sediment removal.

MM BIO – 4: LACFCD, in consultation with a qualified biologist, will employ bird exclusionary measures (e.g., mylar flagging) prior to the start of bird breeding season to prevent birds nesting within established boundaries of the project.

Prior to commencement of sediment removal activities within bird breeding season (March 1 through August 31), a preconstruction bird nesting survey shall be conducted by a qualified biologist for the presence of any nesting bird within 300 feet of the construction work area. The surveys shall be conducted 30 days prior to the disturbance of suitable nesting habitat by a qualified biologist with experience in conducting nesting bird surveys. The surveys shall continue on a weekly basis, with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. Preconstruction surveys shall be repeated annually for the duration of the sediment removal.

If an active nest is found, the qualified biologist will develop and implement appropriate protection measures for that nest. These protection measures shall include, as appropriate, construction of exclusionary devices (e.g., netting) or avoidance buffers. The biologist shall have the discretion to adjust the buffer area as appropriate based on the proposed construction activity, the bird species involved, and the status of the nest and nesting activity; but it shall be no less than 30 feet. Work in the buffer area can resume once the nest is determined to be inactive by the monitoring biologist.

MM BIO – 5: Within 30 days prior to commencement of vegetation or structure removal activities, a preconstruction bat survey shall be conducted by a qualified biologist for the presence of any roosting bats. If either a bat maternity roost or hibernacula (structures used by bats for hibernation) is present, a qualified biologist will develop and implement appropriate protection measures for that maternity roost or hibernacula. These protection measures shall include, as appropriate, safely evicting non-breeding bat hibernacula, establishment of avoidance buffers, or replacement of roosts at a suitable location.

Residual Impacts after Mitigation

With implementation of these mitigation measures, the Proposed Project under sediment removal and both management options would result in a less than significant impact on candidate, sensitive, or special status species.

BIOLOGY-2 *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*

Sediment Removal/Reservoir Management

The Proposed Project would impact approximately 1.1 acres of Riversidean Alluvial Fan Sage Scrub within the Proposed Project site. Riversidean Alluvial Fan Sage Scrub is considered to be of high priority for inventory by CDFW because of its significance and rarity. Impacts to Riversidean Alluvial Fan Sage Scrub would result in a significant impact requiring mitigation. To minimize impacts due to loss of Riversidean Alluvial Fan Sage Scrub, Mitigation Measure MM BIO-6 has been provided. Removing the sediment will also benefit the alluvial fan sage scrub since the habitat is currently buried under sediment and therefore considered poor quality. With implementation of this mitigation measure, impacts to Riversidean Alluvial Fan Sage Scrub would be reduced to a level below significance.

The Proposed Project would impact approximately 51.4 acres of Riparian Woodland and 9.3 acres of Mule Fat Scrub within the Proposed Project site. Riparian Woodland and Mule Fat Scrub are rare plant communities and provide nesting habitat for riparian species; impacts to these habitats would result in a significant impact. To minimize impacts due to the loss of Riparian Woodland and Mule Fat Scrub, Mitigation Measures MM BIO-7 and MM BIO-8 have been provided.

At Devil's Gate Reservoir, the OHWM of the reservoir exists up to the 1020 contour line. Wetland, as defined by USACE, exists within the OHWM area of Devil's Gate Reservoir. All three agencies have jurisdiction over this wetland within the Proposed Project site where there will be permanent impacts. USACE, CDFW and RWQCB have jurisdiction of the riparian habitat within the proposed project boundary, up to the HWM. Jurisdictional acreages were calculated within the Proposed Project site.

Figure 3.6-4: CDFW Jurisdictional Areas Map shows the jurisdictional acreages for the USACE, RWQCB, and the CDFW for waters and for vegetation impacts. Impacts to jurisdictional waters found within these water features would result in a significant impact requiring mitigation. To minimize impacts due to loss of jurisdictional waters, Mitigation Measure MM BIO-8 has been provided.

Table 3.6-4: Jurisdictional Acreage Matrix

Authority	Jurisdictional Area		Total Jurisdiction (acres)
USACE	Riparian Area outside Wetland Area	54.33	101.13
	Wetland Area	11.2	
	Drainage Impacts *Main channel* *Braided channel*	35.6 *6.7* *28.9*	
RWQCB	Riparian Area Outside Wetland Area *Mule Fat Scrub* *Riparian Herbaceous* *Riparian Woodland*	2,366,614.8 (sq. ft.) 405,108 (sq. ft.) 1,306.8 (sq. ft.) 1,960,200 (sq. ft.)	4,405,222.8 (sq. ft.)
	Wetland Area	487,872 (sq. ft.)	
	Drainage Impacts *Main channel* *Braided channel*	1,550,736 (sq. ft.) 291,852 (sq. ft.) 1,258,884 (sq. ft.)	
CDFW	Riparian Area Outside Wetland Area *Mule Fat Scrub* *Riparian Herbaceous* *Riparian Woodland*	54.43 *9.3* *0.03* *45.0*	101.13
	Wetland Area	11.2	
	Drainage Impacts *Main channel* *Braided channel*	35.6 *6.7* *28.9*	

Mitigation Measures

MM BIO – 6: Riversidean Alluvial Fan Sage Scrub habitat shall be restored and/or enhanced at a 1:1 ratio by acreage. Areas shall be mapped using aerial photographs.

MM BIO – 7: Within 90 days prior to ground-disturbing activities, a qualified biologist shall conduct a tree survey within the project footprint to identify trees that will be removed or potentially affected by the Proposed Project and trees that can be avoided. LACFCD will replace trees that cannot be avoided. The replacement is expected to be up to 1:1 by acreage. The biological monitor shall implement measures to protect the root zone of oak trees that may be impacted immediately adjacent to the project site and along access roads.

MM BIO – 8: A combination of onsite and offsite habitat restoration, enhancement, and exotic removal shall be implemented by LACFCD at a 1:1 ratio for impacted sensitive habitat and jurisdictional waters. Habitat restoration/enhancement shall include use of willow cuttings and exotic species removal. Ruderal habitats within the basin shall be utilized whenever possible as mitigation sites. This mitigation measure shall be monitored for success for five years following implementation. A report of the monitoring results shall be submitted annually, during the five

years following implementation, to resource agencies as required by the Section 401 Certification, Section 404 permit, and a Streambed Alteration Agreement.

Residual Impacts After Mitigation

With implementation of Mitigation Measures MM BIO-7 through MM BIO-9, the Proposed Project under sediment removal and both management options will result in a less than significant impact to sensitive habitats.

BIOLOGY-3 *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

Sediment Removal/Reservoir Management

Impacts to jurisdictional waters were calculated within the Proposed Project site. Table 3.6-4, above, includes the jurisdictional acreages for USACE, RWQCB, and CDFW for waters and for vegetation impacts. Impacts to jurisdictional waters found within these water features would result in a significant impact requiring mitigation. To minimize impacts due to loss of jurisdictional waters, Mitigation Measure MM BIO-8 has been provided.

Mitigation Measures

See Mitigation Measure MM BIO-8.

Residual Impacts After Mitigation

As noted in Mitigation Measure MM BIO-8, wetlands and drainages under the jurisdiction of CDFW, USACE, and RWQCB will be restored and/or enhanced on the Proposed Project site. With implementation of these mitigation measures, impacts to riparian habitats will be reduced to a level below significance.

BIOLOGY-4 *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

Sediment Removal/Reservoir Management

The Proposed Project area is predominantly open for wildlife movement and habitat connectivity. Sediment removal and reservoir management activities would interfere temporarily with the movement of native resident or migratory wildlife species, resulting in a significant impact. Reduction in sensitive habitat would interfere with use of the habitat for wildlife nursery sites, resulting in a significant impact.

Mitigation Measures

See Mitigation Measures MM BIO-1 through MM BIO-8.

Residual Impacts After Mitigation

With implementation of Mitigation Measures MM BIO-1 through MM BIO-8, impacts to use of the habitat for wildlife nursery sites will be reduced to a level below significance.

BIOLOGY-5 *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

Sediment Removal/Reservoir Management

The Proposed Project would remove trees from the Proposed Project site. Implementation of Mitigation Measure MM BIO-7 will identify trees that will be removed or potentially affected, the appropriate level of tree replacement, and protection of the root zone of oak trees. Implementation of this mitigation measure will reduce impacts to city-protected trees to a level below significance.

Mitigation Measures

See Mitigation Measure MM BIO-7.

Residual Impacts After Mitigation

With implementation of Mitigation Measure MM BIO-7, the Proposed Project would result in a less than significant impact to city-protected trees.

BIOLOGY-6 *Cumulative Impacts*

No significant impacts to biological resources are expected with construction of the NASA JPL On-Site Parking Structure. Impacts to biological resources associated with the Hahamongna Watershed Park MBMU Project are in the process of being evaluated, and potential impacts are not known at this time. Impacts to biological resources associated with the Arroyo Seco Canyon Project and the Devil's Gate Water Conservation Project are also not known at this time. It is possible that either of these projects could result in impacts to special status species, riparian habitat and other sensitive natural communities, the movement of native resident or migratory wildlife species, and city-protected trees, resulting in significant cumulative impacts.

Mitigation Measure

See Mitigation Measures MM BIO-1 through MM BIO-8.

Residual Impacts After Mitigation

Implementation of Mitigation Measures MM BIO-1 through MM BIO-8 will reduce the Proposed Project's contribution to cumulative impacts to a level below significance.

3.7 CULTURAL RESOURCES

3.7.1 Introduction

This section describes the existing cultural resources environmental conditions and discusses the consequences to cultural resources related to Proposed Project implementation. Where impacts are identified, mitigation measures are proposed to reduce those impacts to less than significant levels.

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. The term "cultural resources" also encompasses the National Historic Preservation Act (NHPA) term "historic property" as well as CEQA terms "historic resource" and "unique archaeological resource." Under the NHPA, historic property refers to a property that is listed on, or determined eligible for listing on, the National Register of Historic Places (NRHP). Under CEQA, historic resource means a property that is listed on or determined eligible for listing on the California Register of Historical Resources (CRHR). Unique archaeological resources are archaeological artifacts, objects, or sites that contain information to answer important scientific questions, possess a particular quality such as the oldest of its type, or are directly associated with a recognized important prehistoric or historic event or person.

Chambers Group conducted an archaeological survey of Devil's Gate Reservoir for the LACFCD. The survey was conducted pursuant to Section 15064.5 of the *CEQA Guidelines*, with respect to the identification and preservation of historic resources, and also in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f and 470h-2), and its implementing regulations (36 CFR 800.4), as well as the 2004 Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer (SHPO), regarding compliance with Section 106 of the PA.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.7.2 Existing Environmental Setting

Prehistory

It is generally believed that human occupation of coastal southern California dates back to at least 10,000 years before present (BP). Four cultural periods of precontact occupation of California during the Holocene Epoch (10,000 years BP to present) are discussed below: the Early Holocene Period, the Early Horizon Period, the Middle Horizon Period, and the Late Horizon Period. During the Early Holocene Period (10,000 to 8,000 years BP), hunters/gatherers utilized lacustrine and marshland settings for the varied and abundant resources found there. Milling-related artifacts are lacking during this period, but the *atlatl* (spear-thrower) and dart are common. Hunting of large and small game occurred, as well as fishing. A few scattered permanent settlements were established near large water sources, but a nomadic lifestyle was more common (Moratto 1984).

Milling-related artifacts first appear in sites dating to the Early Horizon Period (8,000 to 4,000 years BP). Hunting and gathering continue during this period but with greater reliance on vegetal foods. Mussels and oysters were a staple. This gave way to greater consumption of shellfish in the Middle Horizon

Period (4,000 to 2,000 years BP). Use of bone artifacts appears to have increased during this period, and baked-earth steaming ovens were developed. Occupation of permanent or semi-permanent villages occurred in this period, as did reoccupation of seasonal sites. During the Late Horizon Period (2,000 years BP to the time of European Contact [i.e., AD 1769]), population densities were high, and settlement in permanent villages increased (Erlandson 1994; Moratto 1984). Regional subcultures also developed, each with its own geographical territory and language or dialect. These groups, bound by shared cultural traits, maintained a high degree of interaction, including trading extensively with one another.

Ethnography

Tongva (Gabrielino)

The area in proximity to the East Fork San Gabriel Bridge was inhabited prehistorically and well into European contact times by an indigenous group known as the Gabrielino.

The term "Gabrielino" came from the group's association with Mission San Gabriel Archangel, established in 1771; however, today the group prefers to be known by their ancestral name, Tongva. The Tongva were thought to be the "wealthiest, most populous, and powerful ethnic nationality in aboriginal Southern California" (Bean and Smith 1978:538), second only to their northwestern neighbors the Chumash. The Tongva occupied a large territory that included the Pacific coast from Malibu to Aliso Creek; parts of the Santa Monica and Santa Ana mountains; the Los Angeles, San Gabriel, and Santa Ana river drainages; plus the islands of Santa Barbara, Santa Catalina, and San Clemente. It is possible that the area was used by a number of groups during the sixteenth through the nineteenth centuries, although the Tongva may have been the controlling group.

The Tongva were a hunter-gatherer population exploiting local resources. They occupied numerous villages with populations ranging from 50 to 200 inhabitants. Residential structures within the villages were domed, circular, and made from thatched tule or other available wood. Tongva society was organized by kinship groups, with each group composed of several related families, who together owned hunting and gathering territories. Settlement patterns varied according to the availability of floral and faunal resources (Bean and Smith 1978; McCawley 1996, Miller 1991).

Vegetal staples consisted of acorns, chia seeds, piñon nuts, sage, cacti, roots, and bulbs. Animals hunted included deer, antelope, coyote, rabbits, squirrels, rodents, birds, and snakes. The Tongva also fished (Bean and Smith 1978; McCawley 1996; Miller 1991).

By the late eighteenth century, Tongva population had significantly dwindled due to introduced diseases and dietary deficiencies. Tongva communities near the missions disintegrated as individuals succumbed to Spanish control, fled the region, or died. Later, many of the Tongva fell into indentured servitude to Anglo-Americans. By the early 1900s few Tongva people had survived, and much of their culture had been lost (Bean and Smith 1978; McCawley 1996; Miller 1991). In the 1970s, a revival of the Tongva culture began which continues today with growing interest and support.

The prehistoric lands of what is currently Pasadena were inhabited by the Tongva. Tongva means "people of the earth" in the Uto-Aztecan language which they spoke (McCawley 1996). They are more widely referred to as the Gabrielino, which derives from the incorporation of their people into the Mission San Gabriel de Archangel during the eighteenth century (McCawley 1996).

The archaeology of Tongva Gabrielino sites is marked by bedrock mortars used for acorn processing. Manos and metates for seed grinding are also present. Also present are lithic scatters, midden, and possibly cemeteries (McKenna 2007). Temporary campsites, utilized for hunting, gathering, and collecting, are marked by fire-affected rock (Mason and Peterson 1994).

History

The three major periods of history for southern California are defined by key events documented by participants, witnesses, historians, and cartographers:

- Mission Period (A.D. 1769 to 1822, or 232 to 179 years ago);
- Rancho Period (A.D. 1822 to 1848, or 179 to 153 years ago); and
- American Period (A.D. 1848 to Present, or since 153 years ago).

The first significant European settlement of California began during the Mission Period (1769 to 1822), with the founding of the first mission in San Diego, and lasted until 1833/34 when the Mexican secularization laws effectively opened the area to social and economic growth. The establishment of San Gabriel and San Juan Capistrano missions in 1771 and 1776, respectively, had a number of impacts on the region. The Tongva were removed from their villages and resettled around the missions. This resulted in the abandonment of some areas and the agricultural and ranching development of other portions. The mission system was dismantled after Mexican governors introduced new secularization acts between 1822 and 1833, thus freeing the Indians from mission control.

After secularization, the dominance of the large land grant ranchos became established. In 1810, the Spanish government granted the first rancho to Jose Antonio Yorba and his nephew Juan Pablo Peralta. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978). During this period, the entire area was almost constantly involved in political and military revolts. The tense situation ended when in 1847 California gained independence from Mexico during the "Bear Flag" revolt. One year later, the United States gained control of area as a result of the Mexican-American War.

Although under the control of the United States since 1847, the American Period did not really begin in the Proposed Project area until 1851, when the Land Act required rancho dons to confirm the ownership of their lands. Many rancho dons lacked funds and legal documents to confirm land ownership. Along with legal problems related to the Land Act and new taxes imposed by the United States, many second-generation dons experienced a disastrous two-year drought (McWilliams 1973:62). The combination of these hardships resulted in many rancho families losing their lands. Railroads brought a steady influx of Euro-Americans to the area. The Euro-Americans expanded commercial and land development primarily in farming and dairying. In the twentieth century, independent businesses began to dominate the economic strategy, much as they do today.

The founding of California Mission in 1769 marks the beginning of the historic period in California (McKenna 2007). The establishment of Mission San Diego de Alcalá on July 16, 1769, occurred during the Spanish period (1769-1822) of Alta California.

Locally, Mission San Gabriel Archangel was established by the Spanish in 1771 in what is now currently Montebello. Referred to as the Mission Vieja (old mission), it served the Tongva Gabrielino in the San Gabriel Valley. The same year that it was established, it was relocated to its current location in the city of San Gabriel.

In 1822, Alta California entered into the Mexican period (1822 to 1848). Under the Mexican government, the missions were secularized but continued to practice granting land, reminiscent of the Spanish government. It was during this time, the project area became Rancho San Pascual. The signing of the Treaty of Guadalupe Hildago on February 2, 1848, marked the beginning of the American period. The treaty dictating the concession of Alta California was signed after the defeat of Mexico during the Mexican-American War. California became a state in 1850 and was divided into 27 counties, including Los Angeles County. Rancho life continued to be the primary economy of southern California until a year of catastrophic floods in 1861-1862, followed by severe drought the following year in 1863-1864 (Cleland 1941). The land was thus further subdivided. During the 1880s, the Arroyo Seco and surrounding area became a place of leisure and recreation. By 1855, Pasadena was considered a recreational mecca. The resulting overuse of the area took its toll, and by the turn of the century the arroyo was in decline. During 1905, Charles Lummis founded the Arroyo Seco Foundation in an effort to protect and preserve the area from further deterioration. The foundation is still in existence today.

3.7.3 Applicable Regulations

A number of laws and regulations require Federal, state, and local agencies to protect cultural resources from potential adverse effects of project actions. For the purposes of CEQA, cultural resources are defined to include historic resources, prehistoric resources, archaeological resources, and paleontological resources. At the federal level, the Office of Historic Preservation (OHP) carries out reviews of historic resources under Section 106 of the NHPA of 1966, as amended. The laws and regulations presented below are pertinent to the Proposed Project.

National Historic Preservation Act – Section 106

Section 106 of the NHPA, as amended, provides the framework through which cultural resources are identified and assessed for listing on the NRHP and through which appropriate management through mitigation, alternative, or avoidance measures is applied. A cultural resource (herein historic property) is defined as "any prehistoric or historic district, site, building, structure or object included in or eligible for inclusion in the NRHP maintained by the Secretary of Interior. This term includes artifacts, records, and remains that are related to and located within such properties (and includes) properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the NRHP criteria" [36 CFR Section 800.16(1)].

National Register of Historic Places

Identified historic properties eligible for NRHP listing are assessed for significance by meeting at least one of four certain criteria, and/or be 50 years old (unless of exceptional significance) and retain integrity that provides the historic property with its ability to convey its significance and includes integrity of location, design, setting, materials, workmanship, feeling, and association.

Established criteria to be met are:

A. Associated with events that have made a significant contribution to the broad patterns of our history;

B. Associated with the lives of persons significant in our past;

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

D. Have yielded or likely to yield, important information in prehistory or history.

National Environmental Policy Act

The National Environmental Policy Act of 1969, as amended, requires analysis of potential environmental impacts to important historic, cultural, and natural aspects of our national heritage (United State Code, section 4321, *et seq*.; 40 Code of Federal Regulations, section 1502.25).

California Environmental Quality Act

The California Environmental Quality Act (CEQA) provides protections and guidelines for effects on the environment under which historical resources are considered part of the environment. A project that may cause a substantial adverse effect on the significance of a historical resource is a project that may have a significant effect on the environment. The definition of "historical resources" is contained in Section 15064.5 of the CEQA Guidelines and includes, but is not limited to, "any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California". More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historic Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR§15064.5(a)(1)-(3)). Determinations of CEQA significance are made in the IS Checklist (Appendix A).

California Public Resources Code - Section 5020-5029.5: Article 2. Historical Resources provides a vehicle for and establishes the California Register of Historic Resources and the procedures and requirements for historical resources to be eligible for or on the list. A historical resource is a resource (historic or prehistoric) that meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852).

The listing criteria for the California Register of Historic Resources requires that the resource:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4) Has yielded, or may be likely to yield, information important in prehistory or history.

In addition Public Code Section 21083.2 provides that a unique archaeological resource is an archaeological artifact, object, or site which can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

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

Under CEQA, the historical or archaeological resource must meet requirements for significance or uniqueness to determine whether a project has a significant effect on the environment.

City of Pasadena Comprehensive General Plan

The City of Pasadena's Comprehensive General Plan includes two relevant policies to preserve Pasadena's historic character and environment:

- To preserve Pasadena's character and scale, including its traditional urban design form and historic character, shall be given highest priority in the consideration of future development; and

- To promote preservation of historically and architecturally significant buildings and revitalization of traditional neighborhoods and commercial areas.

The "Historic and Cultural Resources Element" of the City of Pasadena Comprehensive General Plan seeks to identify and protect areas, sites, and structures having architectural, historical, or cultural significance and to reaffirm their continuing value as a resource contributing to the vitality and diversity of the present.

Preservation of cultural resources and the City's historic character is a consistent theme throughout the Land Use and Mobility Element of the City of Pasadena Comprehensive General Plan. The values of the community are laid out in the General Plan's Seven Guiding Principles. Principle No. 2 emphasizes the community's fundamental commitment to preservation of its historic character:

> *Change will be harmonized to preserve Pasadena's historic character and environment. City-wide design principles will be established so that new development blends with old; historically and architecturally significant buildings will be preserved; new public spaces will be acquired; and we will act as stewards of our natural environment.*

The following policies of the Land Use and Mobility Element are related to the preservation of cultural resources:

Policy 6.1 - Historic Inventory: Identify, document, and evaluate the significance of individual historic and cultural resources and districts by conducting a citywide historic resource survey and continuing the City's long-range program of conducting intensive surveys of the City's historic neighborhoods.

Policy 6.2 - Protection of Historic and Cultural Resources: Adopt new legislation to protect historic and cultural resources according to levels of significance and include provisions to deter the demolition of historically, architecturally, and culturally significant structures.

Policy 6.3 - Adaptive Reuse: Encourage and promote the adaptive reuse of Pasadena's historic resources.

3.7.4 Significance Criteria

- *CULTURAL-1: Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?*
- *CULTURAL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*
- *CULTURAL-3: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*
- *CULTURAL-4: Would the project disturb any human remains, including those interred outside of formal cemeteries?*
- *CULTURAL-5: Cumulative Impacts*

3.7.5 Methodology

Records Search

A cultural resources literature review and records search was conducted by Marina Adame at the South Central Coastal Information Center (SCCIC) located at California State University in Fullerton in June 2011. The SCCIC is a branch of the California Historic Resources Information System (CHRIS) established by the Office of Historic Preservation (OHP) to manage information concerning cultural resources and associated studies in California. The records search provides information on archaeological sites, historic resources, and cultural resources investigations recorded within a 1-mile radius surrounding the Area of Potential Effect (APE) of the Proposed Project. The APE is defined as the area that is surveyed to determine presence of historic properties within the Proposed Project site. During the records search, the OHP's Historic Property Data File (HPDF), as well as a variety of publications and manuscripts, was consulted. The HPDF includes the following types of properties:

- National Register of Historic Places (NRHP)
- California Historical Landmarks (CHL)
- California Points of Historical Interest (PHI)

- California Register of Historical Resources (CRHR)
- California Historic Bridge Inventory (CHBI)

The first step of the records search was to review the USGS *Pasadena* quadrangle topographic map to find the locations of previously recorded archaeological and historical sites (Table 3.7-1).

Table 3.7-1: Technical Studies Conducted Within a 1-Mile Radius

Author	Report (#LA-)	Description	Date
Crabtree	2513	Highway Construction Survey, Foothill Freeway. UCAS-082-D	1965
Blodgett	1903	Preliminary Assessment of the Prehistoric Cultural Resources of the Devil's Gate Reservoir	1987
Smith	5449	Negative Archaeological Survey Report: Route 210	2000
Sylvia	5640	Negative Archaeological Survey Report	2003
Feldman	7430	Caltrans' Historic Bridges Inventory Update: Concrete Box Girder Bridges	2003
Strauss	7455	Historic Property Survey Report for the Oak Grove Drive Bridges 53C-1829 and 53C-1851 Seismic Retrofit Project	2005
McKenna	8927	A Phase I (CEQA) and Class III (NEPA) Cultural Resources Investigation for the Sunset Overlook Trailhead Area of the Hahamongna Watershed Park in the City of Pasadena	2007

Results show that Devil's Gate Reservoir was previously surveyed as part of the 1987 Cotton/ Beland Associates study for the City of Pasadena's Department of Water and Power (Blodgett 1987). The survey yielded no prehistoric archaeological sites within the reservoir boundaries; however, the report notes the potential for buried resources (Blodgett 1987:2). As a result of those cultural resources studies, three historic structures, not including the dam, have been recorded within a 1-mile radius of the reservoir (Table 3.7-2).

Table 3.7-2: Historic Sites Recorded Within A 1-Mile Radius

Author(s)	Primary #	Description	Date
National Park Service	85002814 NHLS/85002812 NHLS	JPL Space Flight Operations facility and 25-foot Space Simulator	1985
Feldman/ Greenwood	19-187571	Oak Grove Drive Bridge	2003
Strauss/ Dolan/ Gregory	19-186859	Arroyo Seco Flood Control Channel	2003
Delu/ Ewers	19-188404	Devil's Gate Dam	2009

Devil's Gate Dam was recorded by LSA Associates in April of 2009. In addition to the dam, a gauging station, concrete retaining walls flanking the dam to the north, and an associated flood control/ spillway feature east of the gauging station were recorded.

Native American Coordination

The Native American Heritage Commission (NAHC) maintains the Sacred Lands Inventory identifying lands sacred to Native Americans in California and other states. Chambers Group contacted the NAHC in June 2011 and requested a search of the Sacred Lands Inventory for any information regarding Sacred Lands or other cultural resources in the vicinity of Devil's Gate Reservoir (Appendix E). The results of the search were negative. The NAHC provided Chambers Group with a list of tribes affiliated with the Devil's Gate Reservoir area and recommended they be consulted regarding the Proposed Project. Chambers Group notified those tribes in August 2011 and invited comments regarding cultural resources in the area (Appendix E – Cultural Resources Report). A response has been received from the Gabrieleño Band of Mission Indians, stating that the site is considered culturally sensitive by their Elder Committee and Tribal historians. This response is included in Appendix E - Cultural Resources Report.

Survey

An archaeological survey was performed to identify archaeological or cultural resources. Chambers Group archaeologist Tim Murphy conducted a pedestrian survey of the interior of Devil's Gate Reservoir in June 2011. The survey was conducted at 15-meter intervals where possible until a particular area had been covered. It is estimated that 30 to 40 percent of the reservoir was covered by thick undergrowth or water and could not be surveyed at the 15-meter interval (see Appendix E). Those areas were inspected by following equestrian, bike, or foot paths as appropriate. No unrecorded historic or prehistoric sites were observed during the pedestrian survey of Devil's Gate Reservoir.

3.7.6 Impacts and Mitigation

The inventory of the Devil's Gate Reservoir interior basin did not result in the discovery of any new cultural resources. The survey surface area consisted of accumulated sediments and debris originating farther upstream in Arroyo Seco. Geotechnical borings related to this project have indicated that most of the Proposed Project area is filled with recently deposited sediment washed from the upstream watershed.

CULTURAL-1 *Cause a substantial adverse change in the significance of a historical resource.*

Sediment Removal/Reservoir Management

Three historic-era sites within a 1-mile radius were identified during the review of pervious historic architectural surveys. No alterations or modifications to any of the buildings or structures will be made. Because the buildings and structures identified will not be modified as part of the either sediment removal or reservoir management, no impacts to historical resources are anticipated.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

No historic resources are within the proposed Project site; therefore, the Proposed Project will not result in impacts to historic resources.

CULTURAL-2 *Cause a substantial adverse change in the significance of an archaeological resource.*

Sediment Removal/Reservoir Management

No archaeological resources were encountered during the course of the archaeological survey. The Proposed Project involves ground-disturbing activities under sediment removal and reservoir management; however, as noted previously, most of the soil in the Proposed Project area consists of recently accumulated sediment. In areas filled with recently accumulated sediment, archeological sites are not anticipated to exist however; it is always possible that unidentified archaeological sites exist in native soils below the accumulated sediment. If sediment removal or reservoir management activities exceed the depth of the historic flood deposits and encounter native soils, unidentified archaeological sites have potential to be significantly impacted. Implementation of Mitigation Measure MM CUL-1 will reduce potential impacts to less than significant.

Mitigation Measures

> **MM CUL-1**: If sediment removal or reservoir management activities exceed the depth of the historic flood deposits and encounter native sediments, these activities will be monitored by a qualified archaeologist. In the event that this occurs and archaeological materials are observed, the excavation in the proximity of the discovery should be diverted until a qualified archaeologist evaluates the discovery.

Residual Impacts After Mitigation

While it is always possible that unidentified archaeological sites exist in native soils below the accumulated sediment, with implementation of Mitigation Measure MM CUL-1, no significant adverse impacts are expected.

CULTURAL-3 *Cause a substantial adverse change in the significance of a paleontological resource.*

Sediment Removal/Reservoir Management

No paleontological resources were encountered during the course of the survey and are not expected in the accumulated sediment. It is always possible that unidentified paleontological materials exist in native soils below the accumulated sediment. If sediment removal or reservoir management activities exceed the depth of the historic flood deposits and encounter native soils, unidentified paleontological materials have potential to be significantly impacted. Implementation of Mitigation Measure MM CUL-2 will reduce impacts to less than significant.

Mitigation Measures

> **MM CUL-2:** If sediment removal or reservoir management activities exceed the depth of the historic flood deposits and encounter native sediments, these activities will be monitored by a qualified paleontologist. In the event that this occurs and paleontological materials are observed, the

excavation in the proximity of the discovery should be diverted until a qualified paleontologist evaluates the discovery.

Residual Impacts After Mitigation

While it is always possible that unidentified paleontological materials exist in native soils below the accumulated sediment, with implementation of Mitigation Measure MM CUL-1, no significant adverse impacts are expected.

CULTURAL-4 *Potentially impact unknown human remains within the proposed project site.*

Sediment Removal/Reservoir Management

The Proposed Project area does not contain any formal cemeteries. Archival research and the archaeological survey in connection with the Proposed Project did not indicate the presence of any known human remains in the project area. In the event human remains are discovered, implementation of Mitigation Measure MM CUL-2 will reduce impacts to less than significant.

Mitigation Measures

MM CUL-3: In the event human remains are discovered, all work in the area must be halted until the County Coroner identifies the remains and makes recommendations regarding their appropriate treatment pursuant to PRC Section 5097.98.

Residual Impacts After Mitigation

While it is possible that human remains could be discovered in native soils below the accumulated sediment, with implementation of Mitigation Measure MM CUL-2, no significant adverse impacts are expected.

CULTURAL-5 *Cumulative Impacts*

The geographic scope for cumulative impacts to cultural resources includes a 1-mile radius from the Proposed Project site. This geographic scope of analysis is appropriate because the archaeological, historical, and paleontological resources within this radius are expected to be similar to those in the Proposed Project site because of their proximity. No significant impacts to cultural resources are expected with construction of the NASA JPL On-Site Parking Structure. Impacts to cultural resources associated with the Hahamongna Watershed Park MBMU Project are expected to be reduced to less than significant through implementation of Hahamongna Watershed Park Master Plan EIR mitigation measures. Impacts to cultural resources associated with the Arroyo Seco Canyon Project and the Devil's Gate Water Conservation Project are not known at this time. As discussed above, with implementation of mitigation measures, no significant impact to cultural resources are expected with implementation of the Proposed Project. Therefore, the potential for cumulative impacts when combined with existing and foreseeable projects within a 1-mile radius are not significant.

Mitigation Measure

See Mitigation Measures MM CUL-1, MM CUL-2, and MM CUL-3.

Residual Impacts After Mitigation Measure

While it is possible that cultural resources could be discovered in native soils, with implementation of Mitigation Measures MM CUL-1, MM CUL-2, and MM CUL-3, the Proposed Project's contribution to any cumulative impact will be less than significant.

3.8 GEOLOGY AND SOILS

3.8.1 Introduction

This section describes the regional and local geologic and soil characteristics of the Proposed Project area. A *Feasibility Level Geotechnical and Geochemical Exploration Report* (Leighton Consulting, Inc. 2013) was used for purposes of the analysis contained in this section (see Appendix F). The geologic information contained in the evaluation reflects the existing conditions of the Proposed Project area.

As noted in the Initial Study (Appendix A), impacts associated with Alquist-Priolo Earthquake Fault Zoning, seismic ground shaking, liquefaction, landslides, unstable soil, expansive soil, and alternative wastewater disposal systems were found to have no impact and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.8.2 Existing Environmental Setting

The Proposed Project site lies near the southern margin of the Transverse Ranges Geomorphic Province. The Transverse Ranges Geomorphic Province is approximately 50 miles wide, extending from Point Arguello east-southeastward for approximately 275 miles towards and south of the Mojave Desert and characterized by east-west trending mountain ranges and valleys. The backbone of this geomorphic province in its central and eastern parts is formed by the San Gabriel and San Bernardino mountains, with major peaks extending to elevations of greater than 10,000 feet above sea level.

The Proposed Project site lies within an alluvial wash bounded to the north by foothills adjoining the San Gabriel Mountains, to the south by the San Rafael Hills, and to the west and east sides by the La Cañada Valley. The site is topographically lower than the surrounding alluvial valley on the west and east sides, and is underlain by Quaternary age alluvium derived from the San Gabriel Mountains. The alluvium consists of silts, sands, and gravel deposited by the Arroyo Seco. In addition to the existing soils, a majority of the sediment was deposited into the reservoir as a result of heavy rains occurring since the 2009 Station Fire. These recent sediment loads were deposited into the reservoir due to the denuding of a large amount of the upstream natural watershed tributary area.

3.8.3 Applicable Regulations

City of Pasadena General Plan

The City of Pasadena General Plan Seismic and Safety Element contains goals, objectives, implementation strategies, and policies that are intended to ensure, among other things, the safety of residents and visitors to Pasadena in the event of a geologic or seismic event.

> Policy G-1: Whenever possible, mitigation of geologic hazards will be conducted without violating the property owners' rights to modify or improve their investment, along with preserving the aesthetic or natural conditions of the area through minimal grading. When these goals are in conflict, protection of life and property will take precedence.

3.8.4 Significance Criteria

- *GEOLOGY-1: Would the project result in substantial erosion or the loss of topsoil?*
- *GEOLOGY-2: Cumulative Impacts*

3.8.5 Methodology

Potential impacts related to soils were evaluated on the basis of site-specific information prepared for the Proposed Project and developed through review of existing published reports and mapping.

3.8.6 Impacts and Mitigation

GEOLOGY-1 *Potentially result in soil erosion or loss of topsoil during sediment removal activities.*

Sediment Removal/Reservoir Management

The Proposed Project will involve the excavation sediment and deposition of the sediment at facilities already prepared and designated to accept such sediment during sediment removal and reservoir management. Sediment stockpiled at Johnson Field as part of the IMP will also be removed. Depending on the moisture content of the sediment removed, the sediment may need to be stockpiled to allow the sediment to dry. If drying is required, stockpiling of the sediment will occur onsite within Devil's Gate Reservoir. Disturbed sediments are more susceptible to erosion; however, as discussed above in Air Quality, these impacts will be reduced to less than significant through implementation of SCAQMD Rule 403 and BMPs. In addition, excavation, grading, and sediment placement activities will be in accordance with established guidelines, permits, and regulations established for the disposal. As such, sediment removal and management impacts to erosion will be less than significant.

Mitigation Measures

No mitigation will be required.

Residual Impacts After Mitigation

With implementation of SCAQMD Rule 403 and BMPs and the resulting reduction in potential for erosion, no significant impacts to geology and soils would occur as a result of the Proposed Project.

GEOLOGY-2 *Cumulative Impacts*

The geographic scope for cumulative impacts associated with soil erosion includes a 1-mile radius from the Proposed Project site. It is expected that the NASA JPL On-Site Parking Structure, the Hahamongna Watershed Park MBMU Project, and the Arroyo Seco Canyon Project will comply with SCAQMD Rule 403 and BMPs and will not result in any significant impacts associated with soil erosion. As discussed above, with implementation of SCAQMD Rule 403 and BMPs, no significant impacts associated with soil erosion are expected with implementation of the Proposed Project. Therefore, the potential for cumulative impacts when combined with existing and foreseeable projects within a 1-mile radius are not significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

With implementation of SCAQMD Rule 403 and BMPs and the resulting reduction in potential for erosion, no significant cumulative impacts to geology and soils would occur as a result of the Proposed Project under sediment removal and both management options.

3.9 GREENHOUSE GAS EMISSIONS

3.9.1 Introduction

This section describes the regional and local characteristics of the Proposed Project area related to climate change and greenhouse gas emissions. A *Greenhouse Gas Report* was conducted for the Proposed Project (see Appendix G). The purpose of the Greenhouse Gas Report is an analysis of potential climate change/greenhouse gas (GHG) impacts that could occur with the sediment removal and management at the Proposed Project.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. Typically baseline conditions are designed to provide a representative snapshot of current conditions in the project area. Related to GHG emissions, this usually is presented by documenting the general level of emissions in the area. Since there is no project-specific baseline data, the nearest and latest GHG inventory (City of Pasadena's 2009 Greenhouse Gas Emissions Inventory and Reduction Plan) is supplied for informational purposes. It is relevant only to provide the insight as to just how much GHG is generated in a defined area nearby, for comparison purposes. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.9.2 Existing Environmental Setting

Constituent gases that trap heat in the Earth's atmosphere are called "greenhouse gases" (GHGs), analogous to the way a greenhouse retains heat. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface which would otherwise have escaped into space. Prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Without the natural heat-trapping effect of GHGs, the earth's surface would be about 34 °F cooler. This natural phenomenon, known as the "Greenhouse Effect," is responsible for maintaining a habitable climate. Anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the "Greenhouse Effect" and have led to a trend of unnatural warming of the Earth's natural climate known as global warming or climate change, or, more accurately, Global Climate Disruption. Emissions of these gases that induce global climate disruption are attributable to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors (CalEPA 2006).

Global warming potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere. Individual GHG compounds have varying GWP and atmospheric lifetimes. The reference gas for the GWP is CO_2, and it has a GWP of one. The calculation of the CO_2 equivalent (CO_2e) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. Methane's warming potential of 21 indicates that methane has a 21 times greater warming affect than CO_2 on a molecule per molecule basis. A CO_2e is the mass emissions of an individual GHG multiplied by its GWP. GHGs are often presented in units called tonnes (t) (i.e., metric tons) of CO_2e (tCO_2e).

In 2004, total worldwide GHG emissions were estimated to be 20,135 million (M) t of CO_2e ($MtCO_2e$), excluding emissions/removals from land use, land use change, and forestry. In 2004, GHG emissions in the U.S. were 7,074 $MtCO_2e$.

In 2009, total California greenhouse gas emissions were 457 $MtCO_2e$; and the net emissions were 453 $MtCO_2e$, reflecting the influence of sinks (net CO_2 flux from forestry). The transportation sector accounted for approximately 38 percent of the total emissions, while the industrial sector accounted for approximately 20 percent. Emissions from electricity generation were about 23 percent.

Local GHG Inventory

In October 2009, the City of Pasadena conducted a Greenhouse Gas Emissions Inventory and Reduction Plan that determined that in 2007 the total GHG emissions being produced by City residents, businesses, and municipal operations, according to the best available data, was approximately 7.8 $MtCO_2e$ (City of Pasadena 2009).

Table 3.9-1: City of Pasadena 2007 Net Total Emissions shows the breakdown of those emissions separated into United Nations Urban Environmental Accords (UEA) categories.

Table 3.9-1: City of Pasadena 2007 Net Total Emissions

UEA Category	GHG Emissions (tCO_2e)
Energy	1,075,811
Solid Waste	1,105,498
Urban Nature	2,175
Transportation	5,610,910
TOTAL	**7,794,394**

Reference: Greenhouse Gas Emissions Inventory and Reduction Plan. City of Pasadena. October 2009.

Transportation sources account for approximately 72 percent of the total. These emissions do not include pass-through traffic on the freeways within the City of Pasadena and account only for vehicle trips related to Pasadena land uses as starting points and destinations.

3.9.3 Applicable Regulations

GHGs, similar to criteria air pollutants, are regulated at the national, State, and air basin level by various agencies, and each agency has a different degree of control. The U.S. Environmental Protection Agency (EPA) regulates at the national level, the California Air Resources Board (CARB) regulates at the State level, and the South Coast Air Quality Management District (SCAQMD) regulates at the air basin level in the Proposed Project area.

Federal Climate Change Legislation

The federal government is taking a number of common-sense steps to address the challenge of climate change. EPA collects various types of GHG emissions data. This data helps policy makers, businesses, and EPA track GHG emissions trends and identify opportunities for reducing emissions and increasing efficiency. EPA has been collecting a national inventory of GHG emissions since 1990 and in 2009 established mandatory reporting of GHG emissions from large GHG emissions sources.

EPA is also getting GHG reductions through partnerships and initiatives by evaluating policy options, costs, and benefits; advancing the science; partnering with states, localities, tribes, and internationally; and helping communities adapt to climate change impacts.

State Climate Change Legislation

Executive Order S 3-05

On June 1, 2005, the Governor issued Executive Order S 3-05 which set the following GHG emission reduction targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels;
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

To meet these targets, the Climate Action Team prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.

Assembly Bill 32 (AB 32)

In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 focuses on reducing GHG emissions in California. GHGs, as defined under AB 32, include CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. The CARB is the State agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. AB 32 also required that by January 1, 2008, the CARB had to determine what the statewide GHG emissions level was in 1990, and it had to approve a statewide GHG emissions limit to be applied to the 2020 benchmark. The CARB approved a 1990 GHG emissions level of 427 $MtCO_2e$ on December 6, 2007, in its Staff Report. Therefore, in 2020, emissions in California are required to be at or below 427 $MtCO_2e$.

Under the current business-as-usual (BAU) scenario, statewide emissions are increasing at a rate of approximately 1 percent per year as noted below. Also shown are the average reductions needed from all statewide sources (including all existing sources) to reduce GHG emissions back to 1990 levels.

- 1990: 427 $MtCO_2e$
- 2004: 480 $MtCO_2e$ (an average 11-percent reduction needed)
- 2020: 596 $MtCO_2e$ BAU (an average 28-percent reduction needed)

To achieve these goals, AB 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. The following schedule outlines CARB actions mandated by AB 32:

- By January 1, 2008, CARB adopts regulations for mandatory GHG emissions reporting, defines 1990 emissions baseline for California (including emissions from imported power), and adopts it as the 2020 statewide cap.
- By January 1, 2009, CARB adopts plan to effect GHG reductions from significant sources of GHGs via regulations, market mechanisms, and other actions.
- During 2009, CARB drafts rule language to implement its plan and holds a series of public workshops on each measure (including market mechanisms).
- By January 1, 2010, early action measures take effect.
- During 2010, CARB, after workshops and public hearings, conducts series of rulemakings to adopt GHG regulations, including rules governing market mechanisms.
- By January 1, 2011, CARB completes major rulemakings for reducing GHGs, including market mechanisms. CARB may revise and adopt new rules after January 1, 2011, to achieve the 2020 goal.
- By January 1, 2012, GHG rules and market mechanisms adopted by CARB take effect and become legally enforceable.
- December 31, 2020, is the deadline for achieving the 2020 GHG emissions cap.

Cap-and-Trade

The AB 32 Scoping Plan identified a cap-and-trade program as one of the strategies California will employ to reduce the GHG emissions that cause climate change. CARB designed a California cap-and-trade program that is enforceable and meets the requirements of AB 32. The development of this program included a multi-year stakeholder process and consideration of potential impacts on disproportionately impacted communities. The program started on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions. The Program includes market monitoring activities such as a Compliance Instrument Tracking System Service, quarterly allowance auctions, a Compliance Offset Program designed to give offset credits to GHG reductions or sequestered carbon that meet regulatory criteria, an Adaptive Management Plan focusing on localized air quality impacts from the regulation and forest impacts from the U.S. Forest Protocol, and a Voluntary Renewable Electricity Program.

Local Climate Change Policy

The City of Pasadena (City) created a Green City Action Plan (Action Plan) in 2006 that launched a comprehensive environmental action plan that guides the City towards sustainability and accelerates the City's environmental commitment (City of Pasadena 2006). The framework for the Action Plan is based on the 21 specific UEA goals to be accomplished by World Environment Day 2012. As of 2010, the Green City Indicator Report documents that 8 goals have been achieved, 10 goals are likely, and 3 of the 21 goals are listed as undetermined. The Proposed Project does not fit into any of the existing long-term GHG Reduction strategies presented in the City's Plan (City of Pasadena 2010).

3.9.4 Significance Criteria

- *GHG Emissions-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*
- *GHG Emissions-2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*
- *GHG EMISSIONS-3: Cumulative Impacts*

Greenhouse Gas Emissions Thresholds

The California Air Quality Act (CEQA) requires lead agencies to evaluate potential environmental effects based to the fullest extent possible on scientific and factual data. Significance conclusions must be based on substantial evidence, which includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD Board adopted an Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans (SCAQMD Interim Guidance) (SCAQMD 2008). The Interim Guidance uses a tiered approach to determining significance. This Interim Guidance was developed primarily to apply to stationary source/industrial projects where the SCAQMD is the lead agency under CEQA, in absence of more directly applicable policy, the SCAQMD's Interim Guidance is often used as general guidance by local agencies to address the long-term adverse impacts associated with global climate change.

Even though this Proposed Project does not fit the typical "land-use" project, the Greenhouse Gas Report (see Appendix G) proposes the use of the "Tier 3" quantitative thresholds for residential and commercial projects as a reasonable metric. The SCAQMD proposes that if a project generates GHG emissions below 3,000 tCO_2e annually, it could be concluded that the Proposed Project's GHG contribution is not "cumulatively considerable" and is therefore less than significant under CEQA. If the Proposed Project generates GHG emissions above the threshold, the analysis must identify mitigation measures to reduce GHG emissions.

In addition, Appendix G of the CEQA Guidelines states that a project would have potentially significant GHG emission impacts if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

3.9.5 Methodology

Consistent with CEQA, indirect and direct impacts of the Proposed Project are required to be analyzed for a Proposed Project. The analysis of direct GHG impacts is relatively straightforward as onsite GHG sources or directly related offsite GHG sources, such as worker commute trips, are generally readily identifiable. Indirect GHG emission sources are less obvious, but the California Climate Action Registry

(CCAR) includes indirect emissions from grid-delivered electricity use and indirect emissions from imported steam, district heating or cooling, and electricity from a co-generation plant. This Proposed Project does not include any indirect source.

Short-term sediment removal and long-term reservoir management GHG emissions were assessed in accordance with methodologies and formulas recommended by CCAR, EPA, CARB, and SCAQMD. Modeled emissions were compared with SCAQMD's Interim Guidance thresholds to determine potential significance (SCAQMD 2008). Calculations were based, in part, on information about vehicle trip generation from the Traffic Impact Analysis (TIA) prepared for this project (Hall and Foreman 2013). Information on off-road equipment and project scheduling and logistics were supplied by the LACFCD.

For the purposes of determining whether or not GHG emissions from affected projects are significant, project emissions will include direct, indirect, and, to the extent information is available, life cycle emissions during construction (sediment removal) and operation (reservoir management). The SCAQMD Interim Guidance suggests that construction emissions should be amortized over the life of the project, defined as 30 years, added to the operational emissions, and compared to the applicable interim GHG significance threshold tier.

3.9.6 Impacts and Mitigation

GHG EMISSIONS-1 *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.*

Sediment Removal/Reservoir Management

GHG emissions are generated from the exhaust of off-road equipment used to remove the sediment, including four front loaders with 4-cubic-yard buckets, two bulldozers, an excavator, a grader, water truck, and sorters/crushers. In addition, GHG is emitted from the exhaust of the dump trucks proposed to haul approximately 7,650 cubic yards per day, which is expected to require an average of 50 truck trips in and out per hour, with an estimated maximum of 425 truck trips in and out per day during sediment removal activities. The disposal trucks will dispose of material either to the east and placed at the primary disposal site locations (the Waste Management Facility in Azusa, the Vulcan Materials Reliance Facility in Irwindale, or the Manning Pit SPS in Irwindale) or to the west and placed in one of the facilities in Sun Valley. Removed vegetation and organic debris will be hauled to Scholl Canyon Landfill, located in the City of Glendale. It is estimated that for approximately three weeks during the first year of the Proposed Project, approximately 50 percent of trucking will be green waste that will be trucked to Scholl Canyon Landfill; and the remaining 50 percent of the trucking will be sediment distributed to the other sites. After the first year, and for reservoir management activities, during the first week each year approximately 25 percent of the debris will be green waste trucked to the Scholl Canyon site; and the remaining trucking will be sediment distributed to the other sites.

For reservoir management, removal of the sediment, vegetation, trees, and organic debris is expected to require an estimated maximum of 200 truck trips per day and off-road equipment including four front loaders with 2-cubic-yard buckets, one bulldozer, an excavator, a grader, water truck, and sorters/crushers. During reservoir management it is estimated that for the total trips, 2 percent will go to Scholl Canyon Landfill, 75 percent will go to the Irwindale sites, and 23 percent will go to the Sun Valley sites. Proposed Project emissions were estimated using the following assumptions and methods:

- On-Road Truck Emissions: To estimate emissions from on-road sediment dump trucks, mileages between the Proposed Project site and each of the disposal sites using haul routes assumed in the TIA were measured. For the five-year life of the Proposed Project it is estimated that approximately 3 percent of the trips will travel to the Scholl Canyon site, 78 percent will travel to the Irwindale sites, and 19 percent will go to the Sun Valley sites. During reservoir management activities, only 2 percent of the trips are assigned to Scholl Canyon, 75 percent will be delivered to the Irwindale sites, and 23 percent will go to the Sun Valley sites.

To calculate expected CO_2 emissions from exhaust, the Greenhouse Gas Report (Appendix G) used CARB's EMFAC2011 Web Based Data Access with emission rate data for Los Angeles County for the years 2015, 2017, and 2020. "T7 single construction" was used as the most representative EMFAC2011 vehicle category for the sediment dump trucks. To generate expected CH_4 and N_2O emissions, factors from the Local Governments Operations Protocol were applied (CARB 2010).

- Off-Road Equipment Emissions: Off-road equipment CO_2 and CH_4 emission factors were obtained from the CalEEMod Users Guide.

- Employee Vehicle Emissions: CARB's EMFAC2011 Web Based Data Access was used to generate expected CO_2 emissions from employee vehicle exhaust, as mentioned above in the section on on-road trucks. In order to more accurately represent the types of vehicles used by the potential employee work pool, a weighted average emission factor was generated using 69 percent of the pool using light-duty automobiles and the rest using light-duty trucks. The appropriate percentages were derived from the distribution of VMT from EMFAC2011.

Table 3.9-2 provides a summary of the GHG emission estimates for sediment removal. Reservoir management emissions, beginning in 2020, were calculated using the same methodology as before.

Table 3.9-2: Sediment Removal GHG Emissions

Emission Source	GHG Emissions (tonnes/year)			
	CO_2	CH_4	N_2O	CO_2e
Off-Road	745.8	0.071	N/A	747.3
On-Road Trucks	4,422.6	1.681	1.546	4,937.3
Employees	46.4	0.005	0.005	48.2
Totals	**5,215.0**	**1.76.0**	**1.55.0**	**5,773.0**

Table 3.9-3 shows estimated emissions from reservoir management. Details of the air quality calculations are included in Appendix A.

Table 3.9-3: Reservoir Management Activity GHG Emissions

Emission Source	GHG Emissions (tonnes/year)			
	CO_2	CH_4	N_2O	CO_2e
Off-Road	96.8	0.007	N/A	96.9
On-Road Trucks	546.1	0.208	0.191	609.7
Employees	6.5	0.001	0.001	6.7
Totals	**649.0**	**0.220**	**0.190**	**713.0**

Typical development projects have short-term construction and long-term operational GHG emissions, where the operational activities generate the majority of the GHG emissions. In order to assess the overall lifetime project GHG emissions, the SCAQMD developed an Interim Guidance that recommends that construction emissions should be amortized over the life of the project, defined in the Guidance as 30 years, which is then added to the reservoir management emissions, and compared to the applicable interim GHG significance threshold tier. Using the above annual emission rates, the sediment removal phase is expected to produce 5,733 tCO_2e per year for 5 years, for a 5-year total of 28,664 tCO_2e. Amortized over 30 years the sediment removal would produce 951 tCO_2e per year. Adding that amount to the 713 tCO_2e per year expected during reservoir management would yield a Proposed Project total annual emissions of 1,669 tCO_2e, which is less than the Tier 3 threshold of 3,000 tCO_2e; therefore the Proposed Project is not "cumulatively considerable" and is therefore less than significant under CEQA.

In addition, the Proposed Project may prove a positive effect on climate change. High ambient temperatures coupled with important demand for oxygen due to the degradation of substantial organic matter amounts favor the production of CO_2, the establishment of anoxic conditions, and thus the production of CH_4. If the reservoir is left as it is, the large quantity of biomass currently existing may exacerbate the condition. With the removal and disposal of most of the organic mass in the Scholl Canyon Landfill, which uses the green waste primarily as "alternative daily cover" (ADC), the overall benefit to the carbon ecosystem will be positive since prior to using green waste for ADC, larger amounts of cover soil had to be imported into the landfill from offsite sources (Kong, et al. 2008). Therefore, use of the green waste ADC reduced fossil fuel use for cover soil importation and also reduces GHG emissions.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

No significant impacts associated with the generation of greenhouse gas emissions will occur as a result of the Proposed Project.

GHG EMISSIONS-2 *Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

Sediment Removal/Reservoir Management

AB 32 identified a 2020 target level for GHG emissions in California of 427 MMT of CO_2e, which is approximately 28.5 percent less than the year 2020 BAU emissions estimate of 596 MMT CO_2e. To achieve these GHG reductions, widespread reductions of GHG emissions will have to occur throughout California. Some of those reductions will need to come in the form of changes in vehicle emissions and mileage standards, changes in the sources of electricity, and increases in energy efficiency by existing facilities. The remainder will need to come from requiring new facility development to have lower carbon intensity than BAU conditions. Therefore, this analysis uses a threshold of significance that is in conformance with the State's goals.

On December 12, 2008, CARB adopted the AB 32 Scoping Plan, which details specific GHG emission reduction measures that target specific GHG emissions sources. Project-related GHG emissions would be reduced as a result of several AB 32 Scoping Plan measures. The Scoping Plan considers a range of actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms (e.g., cap-and-trade system).

Some examples include the following:

- Mobile-source GHG emissions reduction measures
    a. Pavley emissions standards (19.8 percent reduction)
    b. Low carbon fuel standard (7.2 percent reduction)
    c. Vehicle efficiency measures (2.8 percent reduction)

- Energy production related GHG emissions reduction measures
    d. Natural gas transmission and distribution efficiency measures (7.4 percent reduction)
    e. Natural gas extraction efficiency measures (1.6 percent reduction)
    f. Renewables (electricity) portfolio standard (33.0 percent reduction)

These reductions in mobile-source and energy production GHG emissions would occur with or without development of the Proposed Project. Overall, the Proposed Project would be consistent with the AB 32 goal of reducing statewide GHG emissions to 1990 levels by year 2020. Currently, no other GHG reduction plan (i.e., SCAG, SCAQMD, or County) applies to the Proposed Project. The Proposed Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs; therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

No significant impacts associated with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases will occur as a result of the Proposed Project.

GHG EMISSIONS-3 Cumulative Impacts

As discussed above, the Proposed Project would have amortized total annual emissions of 1,781 tCO_2e, which is less than the Tier 3 threshold of 3,000 tCO_2e; therefore, the Proposed Project is not "cumulatively considerable" and is therefore less than significant under CEQA. In addition, the Proposed Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs; therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

No significant cumulative adverse impacts were identified, and no mitigation measures are necessary.

3.10 HAZARDS AND HAZARDOUS MATERIALS

3.10.1 Introduction

The hazards and hazardous materials portion of the EIR discusses the potential sediment removal activities and how they may cause an exposure or release of hazards and hazardous materials to people and/or the environment. The environmental setting and regulatory agencies that have jurisdiction over the project are further detailed below, followed by an analysis of potentially significant impacts and identified mitigation measures.

As noted in the Initial Study (Appendix A), impacts associated with airport land use plans, private airstrips, and wildland fires were found to have less than significant impacts and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.10.2 Existing Environmental Setting

The Proposed Project site is located in the northwestern section of the City of Pasadena within the Arroyo Seco watershed and has an area of approximately 120 acres (Figure 2.1-1: Proposed Project Location and Vicinity Map). The site is bordered by the NASA - Jet Propulsion Laboratory (JPL) to the north and northwest, La Cañada High School to the west, a single-family residential development to the east, and I-210 to the south.

The Arroyo Seco watershed acts as a seasonal flood basin that is a part of the Arroyo Seco River system. The watershed is primarily used for informal recreational use and contains several spreading basins along the eastern border. By 2011, the flood basin had filled with approximately 2.6 million cubic yards of sediment, mainly as a result of the 2009 Station Fire and the storm events that followed. Those events deposited excess sediment within the reservoir. The excess sediment has threatened the flood protection capabilities of Devil's Gate Dam and its associated reservoir and is the primary reason for the proposed sediment removal activities. Due to the Proposed Project site's long time use as a reservoir for Devil's Gate Dam, few sources of hazards and hazardous materials have been identified within the Proposed Project site that could lead to potential human health or ecological health risks or other environmental concerns during the sediment removal activities.

Hazardous Database Search

Section 65962.5 of the California Government Code requires the California Environmental Protection Agency (Cal/EPA) to maintain an updated list of known hazardous materials sites, also known as the "Cortese List." The Cortese List identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, reported leaking underground storage tanks (LUSTs), and solid waste disposal facilities from which hazardous substance migration is known. The Cortese List, along with additional databases maintained by various State and federal regulatory agencies, was reviewed for the project site and properties within the immediate vicinity of the site. The primary purpose of this review was to identify any sources of chemicals of concern (COCs) that may have

potentially impacted the site. In accordance with the CEQA statute (Section 21092.6 of the Public Resources Code), this review of agency database information was compiled by Environmental Data Resources, Inc., (EDR) of Southport, Connecticut, an information search firm that utilizes computer search techniques to query governmental agency database information for a specified geocoded area. The results of the database search are included in Table 3.10-1. Search radii comply with or exceed those specified in American Society of Testing and Materials (ASTM) Standard E 1527-05. The database search is included in Appendix H.

Table 3.10-1: Results of EDR Database Search

Name and Address	Distance to Site	Databases Listed	Reason for Listing
Flintridge Riding Club 4625 Oak Grove Drive	1/8 – 1/4 mi WNW	HIST CORTESE, HIST Underground Storage Tank (UST), EDR HISTORICAL CLEANERS, LUST	Previous dry cleaning operations and reported LUST. Case closed.
Jet Propulsion Laboratory (JPL) 4800 Oak Grove Drive	<1/8 – 1/4 mi NNW	HIST CORTESE, Formerly Used Defense Sites (FUDS), Spills, Leaks, Investigation and Cleanup (SLIC), Leaking Underground Storage Tank (LUST), Waste Discharge System (WDS), Los Angeles County HMS Street Number List, CA FID Facility Inventory Database (FID) UST, ENVIROSTOR, Emissions Inventory Data (EMI), Facility and Manifest Data (HAZNET), Well Investigation Program (WIP)	Designated as a Superfund Site related to spills and releases related to military defense operations.
Oak Grove Ranger Station 4600 Oak Grove Drive	1/8 – 1/4 mi WNW	HIST CORTESE, LUST	Reported leaking UST impacting soil.
USDA Forest Service Oak Grove Drive	1/4 – 1/2 WNW	HIST CORTESE, LUST	Reported leaking UST impacting soil. Case closed.
Exxon Mobil Corporation 2172 Yucca Lane	1/8 – 1/4 mi ESE	Resource Conservation and Recovery Act (RCRA) - Large Quantity Generator (LQG)	Large quantity generator of hazardous waste. No violations recorded.
California Highway Patrol 2130 Windsor Avenue	1/4-1/2 mi ESE	LUST	Reported leaking UST impacting soil. Case closed.
Caltrans Maintenance Station 2122 North Windsor Avenue	1/4-1/2 mi ESE	LUST	Reported leaking UST impacting soil. Case closed.

Flintridge Riding Club, located west-northwest of the Proposed Project, is listed on the EDR HISTORICAL CLEANERS, SWEEPS underground storage tanks (UST), CA FID UST, HIST UST, HIST CORTESE, and LUST databases. According to the databases, a 500-gallon UST containing regular gasoline leaked its contents and impacted the surrounding soil. The property received a "case closed" status as of December, 1990. Due to the limited impacts and the leaking incident receiving a case closure status approximately 20 years ago, this property does not appear to be a significant environmental concern to the project.

JPL is located adjacent to and north-northwest of the Proposed Project. JPL was included on the National Priorities List (NPL) in 1992, which is a list of properties that have been designated as a Superfund Site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). JPL operated as a Defense site throughout its history; and during the 1940s through the 1950s, liquids and solid wastes, including solvents, solid and liquid rocket propellants, and laboratory wastes were disposed of via seepage pits. The pits collected wastes from drains and sinks within many of the buildings, which then allowed the wastes to seep into the surrounding soils. Over time these wastes containing hazardous substances migrated into the underlying aquifer, known to occur at approximately 200 feet below ground surface (bgs). Site assessments that included soil and groundwater sampling in the 1990s, identified the presence of volatile organic compounds (VOCs), including carbon tetrachloride, trichloroethene (TCE), tetrachloroethene (PCE), total chromium, hexavalent chromium, and rocket fuel, detected above regulatory limits. Since the discovery of soil and groundwater impacts, JPL has worked with the EPA to remediate the soil and groundwater impacts and to prevent further spills and releases. Due to the extent of VOC and perchlorate groundwater impacts originating from the JPL property impacting the groundwater beneath the Proposed Project site, the aquifer underlying the Arroyo Seco Watershed was included within the JPL Superfund site. As a result of the known environmental impacts at the JPL property, the impacted groundwater beneath the project, and the nature of chemicals and processes currently used in JPL's operations, the adjacent JPL property presents an elevated environmental concern.

Oak Grove Ranger Station, located west-northwest of the Proposed Project site, was listed on the CORTESE and LUST databases. According to the databases, the ranger station was the location of a gasoline UST that leaked its contents into the surrounding soil. The property received a case closure and no further action letter in December 1990. Due to the limited impacts and the leaking incident receiving a case closure status approximately 20 years ago, this property is considered to present little environmental concern to the Proposed Project.

The USDA Forest service, located west-northwest of the Proposed Project site, is listed on the HIST CORTESE and LUST databases. According to the LUST database, a leaking gasoline tank was recorded on December 4, 1990. The leaking tank was closed after a remediation plan was submitted on May 20, 1991, to mitigate the release. The database was last updated on June 3, 1992, with its current case status listed as closed.

At the time of the report, the remaining listed properties in the EDR report do not appear to pose an environmental concern to the Proposed Project based on their respective hydraulically downgradient locations, nature of the releases, and/or distal proximity to the Proposed Project.

3.10.3 Applicable Regulations

Federal

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, otherwise known as the Superfund law, was enacted in 1980 by Congress, creating a federal authority responsible for responding to releases or threatened releases of hazardous materials that can become a threat to public health or the environment. CERCLA also provides the legal framework for dealing directly with abandoned properties containing hazardous waste and liability of potential

responsible parties for the release of hazardous waste. It established a fund for cleanup costs when no responsible party is identified.

Resource Conservation and Recovery Act (RCRA)

RCRA is a federal law that provides authority over the disposal of solid and hazardous waste including "cradle to grave" requirements. RCRA's cradle to grave authority includes managing every step of a particular waste stream including the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also provides the legal framework for the management of nonhazardous waste.

State

Within the California Environmental Protection Agency (Cal/EPA), the Department of Toxic Substance Control (DTSC) is the responsible governing agency that regulates the permitting for the generation, handling, treatment, and disposal of hazardous waste in the State of California. The DTSC and the State Water Resources Control Board (SWRCB; per the Porter-Cologne Water Quality Control Act of 1969) regulates the cleanup activities of hazardous waste sites in California that have caused contamination in soil and groundwater.

Title 22 of the California Code of Regulations (CCR)

Title 22, Division 4.5 contains the State of California hazardous waste regulations that are enforced by the DTSC.

California Occupational Safety and Health Administration (CAL/OSHA)

Federal and State occupational safety and health laws contain requirements regarding the handling of hazardous waste concerning worker safety, training, and right-to-know. Authority to enforce federal Occupational Safety and Health Administration (OSHA) requirements has been delegated to California OSHA (CAL/OSHA), which has developed provisions that are at least as stringent as those enforced at the federal level. CAL/OSHA regulates and enforces occupational and public safety laws protecting the public and workers from any safety hazards.

Local

The local authority for the Hahamongna Watershed Park is the City of Pasadena. Local officials, including the Pasadena Fire Department, may be involved in the implementation of federal and State regulations concerning hazards and hazardous materials. Another local agency that may claim jurisdiction is the Los Angeles County Health Department.

3.10.4 Significance Criteria

The criteria used to perform the analysis in determining the project's potential for significant impacts was provided in the Initial Study (IS), dated September 2011 and included in Appendix A. The IS evaluated the Proposed Project activities against the hazards and hazardous materials checklist.

- *HAZARDS-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

- *HAZARDS-2: Would the project create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

- *HAZARDS-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

- *HAZARDS-4: Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

- *HAZARDS-5: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

- *HAZARDS-6: Cumulative Impacts*

3.10.5 Methodology

For proper disposal procedures, the conditions of the sediment were characterized through the performance of a sediment and surface water sampling program. The sampling program included a limited subsurface investigation and surface water sampling to assess the sediment and water quality and identify any potential hazards associated to the public or the environment during the excavation, transportation, and disposal of the sediment. This study was also performed to assess whether the removal of the sediment would impact the water and/or water quality. The analytical approach for the collected sediment and water samples was developed by researching the known historical environmental impacts from the surrounding properties summarized in the hazardous database search above. The identified primary chemicals of concern from the database search included VOCs, metals, petroleum hydrocarbons, perchlorate, polychlorinated biphenyls (PCBs) and semi-volatile organic compounds (SVOCs).

A subsurface investigation was conducted to assess the geotechnical and environmental conditions of soil encountered at Devils Gate Reservoir (Appendix F). The soil samples were analyzed to evaluate whether the identified potential contaminants of concern are present in the post-fire sediments contained in Devil's Gate Reservoir. The soil boring locations are depicted in Figure 3.10-1: Soil Boring Locations.

The results of laboratory analyses performed on soil samples collected from the borings at Devil's Gate Reservoir were compared the results of applicable health screening levels issued by State and federal agencies that include the Bureau of Land Management (BLM) Human Risk Management Criteria (HRMCs), California Environmental Protection Agency (Cal/EPA) California Human Health Screening Levels (CHHSLs), and U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs). The concentrations of analytes were also compared to State and federal hazardous waste screening thresholds that include the Title 22 Chapter 11 of California Code of Regulations (CCR) and Part 1910 of the Code of Federal Regulations (CFR).

Service Layer Credits: Copyright© 2013 Esri, DeLorme, NAVTEQ, TomTom
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Proposed Project Boundary

Soil Boring Location*

*Soil boring locations obtained from Gannett Fleming

SCALE= 1 inch equals 833 feet

0 416.5 833

Feet

Figure 3.10-1
Devil's Gate Reservoir Sediment Removal and Management Project
Soil Boring Locations

Version Date: 10/18/2013

CHAMBERS GROUP

20346 - \\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.10-1 Soil Boring Locations.mxd

3.10.6 Impacts and Mitigation

HAZARDS-1 *Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.*

Sediment Removal/Reservoir Management

Results of the soil sample analyses indicate detectable concentrations of VOCs, petroleum hydrocarbons, organochlorine pesticides, SVOCs, and heavy metals. The concentrations of VOCs, organochlorine pesticides, petroleum hydrocarbons (diesel and hydraulic/motor oil range and aromatics), and SVOCs detected in samples that were collected from Devil's Gate Reservoir are below regulatory thresholds. No perchlorates, the substance of concern from JPL, were found in the soil sample analysis.

Arsenic concentrations detected in soil samples collected from the project area are below the California DTSC accepted southern California background range of 6 mg/kg to 12.0 mg/kg (DTSC 2005). The arsenic concentrations detected in the soil samples collected from the site are also consistent with mean background arsenic concentration of 3.5 mg/kg in California soils (Kearney Foundation 1996).

Since the arsenic concentrations detected are expected to be naturally occurring and consistent with background concentrations in California, and the site will not be occupied, the appropriate screening level is considered to be the BLM HRMC for workers of 12 mg/kg. In addition, implementation of SCAQMD Rule 403 and BMPs will ensure adequate dust control during grading operations or other work requiring disturbance of soil. No significant impacts associated with hazardous soils are expected.

Results from the surface water sampling program did not identify potential sources of contaminants from surface water; therefore, the surface water appears not to be a hazards or hazardous materials source. The water sampling program, along with the water quality analysis, is discussed further in Section 3.11, Hydrology and Water Quality, of this report.

Proposed Project activities that include the use of hazardous materials are associated with the construction equipment needed to perform the removal activities. Examples of the hazardous materials include gasoline and diesel fuels, lubricating fluids, and solvents. Proposed Project activities involving construction equipment will involve the limited transport, use, disposal, and storage of hazardous materials, which are regulated by various agencies. Adequate BMPs will be utilized; and adherence to the regulations set forth by the County, State, and federal agencies will reduce the potential for hazardous materials impacts to a less than significant level and would not pose a safety hazard to sensitive receptors.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

Implementation of BMPs and adherence to the applicable regulations will reduce the potential for impacts associated with hazardous materials to a less than significant level.

HAZARDS-2 *Create a significant hazard to the public or environment through accident conditions involving the release of hazardous materials into the environment.*

As noted in Hazards-1, above, the concentrations of organochlorine pesticides, petroleum hydrocarbons (diesel and hydraulic/motor oil range and aromatics), and SVOCs detected in samples that were collected from Devil's Gate Reservoir are below regulatory thresholds. In addition, project activities that include the use of hazardous materials are associated with the construction equipment needed to perform the removal activities. Adequate BMPs will be utilized; and adherence to the regulations set forth by County, State, and federal agencies will reduce the potential for hazardous materials impacts to a less than significant level and would not create a significant hazard to the public or environment.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

Implementation of BMPs and adherence to the applicable regulations will reduce the potential for impacts associated with hazardous materials to a less than significant level.

HAZARDS-3 *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.*

Sediment Removal/Reservoir Management

The Proposed Project will include the use of hazardous materials associated with the construction equipment needed to perform the removal activities. The proposed construction routes pass La Cañada High School and Hillside School and Learning Center. Adherence to the County, State, and federal agency regulations governing the use of these materials reduces the potential for impacts to a less than significant level and would not pose a safety hazard to sensitive receptors. No mitigation measures are required.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

Implementation of BMPs and adherence to the applicable regulations will reduce the potential for impacts associated with hazardous materials within one-quarter mile of an existing school to a less than significant level.

HAZARDS-4 *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 create a significant hazard to the public or the environment.*

Sediment Removal/Reservoir Management

The EPA included Hahamongna Watershed Park area on the NPL Superfund List due to the presence of detected VOCs and perchlorate in groundwater originating from the JPL property. The impacted groundwater is at 200 feet bgs and, as with the Proposed Project, the concentrations of VOCs, organochlorine pesticides, petroleum hydrocarbons (diesel and hydraulic/motor oil range and aromatics), and SVOCs detected in samples that were collected from Devil's Gate Reservoir are below regulatory thresholds; and no perchlorates, the substance of concern from JPL, were found in the soil sample analysis. Therefore, the listing of the watershed on the Superfund List does not present a significant hazard to the public or the environment; and no significant impacts associated with the Proposed Project are expected.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

No significant adverse impacts were identified.

HAZARDS-5 *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.*

Sediment Removal/Reservoir Management

The City of Pasadena maintains a citywide emergency response plan, which takes effect at the onset of a major disaster, such as a major earthquake or fire. The Pasadena Fire Department maintains and implements the disaster plan, and the Pasadena Police Department devises evacuation routes based on the specific circumstance of the emergency. The City has preplanned evacuation routes for dam inundation areas associated with Devil's Gate Dam, Eaton Wash, and Jones Reservoir.

The proposed sediment removal activities will occur onsite and will not interfere with the current emergency response plan or emergency evacuation plan for local, State, or federal agencies. Additionally, access to the surrounding roads will be maintained during sediment removal activities and will not interfere with the response facilities located adjacent to the Proposed Project site, including the County of Los Angeles Fire Department Camp 2 and the City of Pasadena Police Department facility located at 2175 Yucca Lane. The Proposed Project will also increase flood control protection downstream of the Devil's Gate Dam. No mitigation measures are required.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

No significant adverse impacts were identified.

HAZARDS-6 Cumulative Impacts

Existing onsite conditions related to hazardous materials are localized and site-specific. Potential impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects. As described above, no significant impacts associated with hazardous materials are expected with the Proposed Project. Only four of the cumulative projects within the immediate vicinity of the Proposed Project site (NASA Jet Propulsion Laboratory (JPL) On-Site Parking Structure project, Hahamongna Watershed Park MBMU Project, Arroyo Seco Canyon Project, Devil's Gate Water Conservation Project) would have the potential to combine with the Proposed Project to create a cumulative hazardous materials impact. In addition, no significant impacts associated with hazardous materials are expected with construction of the NASA JPL On-Site Parking Structure, the Hahamongna Watershed Park MBMU Project, the Arroyo Seco Canyon Project, or the Devil's Gate Water Conservation Project, with implementation of appropriate project BMPs and/or mitigation measures. Therefore, no significant cumulative hazardous materials impacts are expected.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

No significant cumulative adverse impacts were identified.

3.11 HYDROLOGY AND WATER QUALITY

3.11.1 Introduction

This section describes the surface water and groundwater hydrology along with the water quality characteristics within the project area, located within the Hahamongna Watershed Park area of the City of Pasadena. The United States Army Corps of Engineers (USACE) report titled *Los Angeles County's Arroyo Seco Watershed Ecosystem Restoration Study* (USACE 2010), *Los Angeles Region Water Quality Control Plan* (LARWQCB 1994), and *California's Groundwater Bulletin 118* (DWR 2003) for the Raymond Groundwater Basin, and observations from the project-specific water quality study were reviewed in order to prepare the hydrology analysis contained in this section. The information obtained from these documents adequately reflects the current conditions that were present at the time the notice of preparation was published for this project (September 2011).

As noted in the Initial Study (Appendix A), impacts associated with the existing drainage pattern, creating runoff water, flood hazard areas, flooding, or inundation by seiche, tsunami, or mudflow were found to have less than significant impacts and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.11.2 Existing Environmental Setting

Regional Setting

The Proposed Project site is located within Hahamongna Watershed Park, which is a part of the larger 22-mile-long Arroyo Seco Watershed; and the Arroyo Seco Watershed is a subwatershed of the Los Angeles River Watershed. An area of approximately 47 square miles drains into the Arroyo Seco Watershed, extending from the Angeles National Forest (ANF) until its confluence with the Los Angeles River near Elysian Park. In the past, the waters of the Arroyo Seco traveled in a deep, incised canyon through the San Gabriel Mountains and emptied into open areas of alluvium and incised channels until its confluence with the Los Angeles River. The Arroyo Seco Watershed has undergone major development, becoming increasingly urbanized over time. Two dams have been constructed along the Arroyo Seco: Brown Mountain Debris Dam, located 7 miles downstream of Arroyo Seco's headwaters, and Devil's Gate Dam, at the southern boundary of the Proposed Project site (5 miles downstream below Brown Mountain Debris Dam). The other significant alteration is the channelization of the lower Arroyo Seco, with the stream bottom and sides made of impervious material. The Cities of Pasadena, South Pasadena, Los Angeles, and La Cañada Flintridge are located within the Arroyo Seco Watershed, along with the community of Altadena, NASA JPL, SR-110, SR-134, and I-210 (USACE 2010). It is important to note that in August 2009, the Station Fire, the largest fire in the ANF history, burned almost the entire undeveloped watershed of Devil's Gate Dam.

The Arroyo Seco Watershed is a subwatershed of the Los Angeles River Watershed and is considered a major tributary to the Los Angeles River Watershed. The Los Angeles River Watershed covers about 834 square miles of land and is one of the largest in the South Coast Region. It extends from the eastern portions of the Santa Monica Mountains to the San Gabriel Mountains in the west, surrounding the path of the Los Angeles River. The Los Angeles River's headwaters originate at the confluence of Bell Creek and Calabasas Creek in the San Fernando Valley, and the river culminates where it finally discharges into San Pedro Bay near Long

Beach. In the past, under natural conditions, the Los Angeles River flowed freely over the coastal plain. For flood control measures, from the 1930s to the 1960s, the USACE channelized the river by lining a large portion of it with concrete.

Surface Drainage Characteristics of the Project Site

Due to urbanization surrounding the Arroyo Seco Watershed, large areas of impervious surfaces now occur within the watershed. The impervious surfaces and the steep, mountainous stream channels cause rainwater to flow quickly to the storm drains and the Arroyo Seco. Approximately 31.9 square miles of stormwater runoff, originating from the La Cañada Flintridge, Altadena, and Pasadena communities, drain along the Arroyo Seco Watershed toward Devil's Gate Reservoir through Flint Wash, Altadena West Drain, and other drains. Stormwater also flows into the watershed from the northern portion of the Arroyo Seco. The stormwater in Devil's Gate Reservoir feeds through Devil's Gate Dam, then through the channelized lower section of the Arroyo Seco and further downstream to the Los Angeles River.

With the exception of Devil's Gate Dam, the majority of the project site is pervious, undeveloped land. The Proposed Project will add minimal impermeable surface area to the project site through the paving (asphalt and/or concrete) of dirt roads along the access to the reservoir; and, at the completion of the Proposed Project, surface runoff will continue to drain Devil's Gate Reservoir toward Devil's Gate Dam.

Water Quality

This section discusses the existing water quality of the section of the Arroyo Seco that flows through the project site. The source of water collected in Devil's Gate Reservoir is a combination of upgradient tributaries from the San Gabriel Mountains and water runoff coming into the watershed from adjacent neighboring communities. The term *runoff* is used to describe any source of water that drains or flows onto the project site that can result from a rain event or nuisance flows from various other sources. Nuisance flows can originate from activities such as irrigation, use of residential hoses, pipe leaks, and waste water from cleaning.

As part of the project site's water quality analysis, prior to sediment removal operations, a baseline water quality assessment characterizing the current water surface conditions was performed in September 2011. The four sampling locations selected to assess the current water quality conditions of the project site were Upper Devil's Gate (UDG), Altadena West Drain (AWD), Below Flint Wash (BFW), and Below Devil's Gate (BDG). The sampling locations, UDG, AWD, BFW, and BDG, are depicted in Figure 3.11-1: Water Quality Sampling Locations. UDG was sampled to assess the source of water originating from upgradient tributaries flowing into the project area. Sampling stations AWD and BFW represent nuisance flows coming into the watershed that originate from neighboring communities to the east and west of the project site, respectively. It is important to note that the BFW sampling station is south of the confluence of the runoff originating from the Flint Canyon Residential Community and the main stream flowing through Devil's Gate Reservoir. The final sampling station, BDG, is located just south of Devil's Gate Dam and represents the overall condition of the water flowing from Devil's Gate Reservoir, continuing south along the Arroyo Seco.

At each surface water station, water samples were collected in containers provided by TestAmerica Analytical Laboratories, Inc. per United States Environmental Protection Agency (USEPA) sample methods. The samples were analyzed by TestAmerica for the parameters listed in Table 3.11-1 and Table 3.11-2.

Proposed Project Boundary

Water Quality Station Location

*Water quality station locations obtained from Gannett Fleming

SCALE= 1 inch equals 833 feet

0 416.5 833

Feet

Figure 3.11-1
Devil's Gate Reservoir Sediment Removal and Management Project
Water Quality Sampling Locations

Version Date: 10/18/2013

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Table 3.11-1: Analytical Results for Surface Water Survey, Devil's Gate Reservoir

Station ID	Station Code	Date Sampled	Detected Title 22 Metals using USEPA Method 6020/7470A Filt.(µg/L)							Detected VOCs using USEPA Method 8260B (µg/L)	Detected TPH using USEPA Method 8015B(M) / 3510C (mg/L)			Detected SVOCs using USEPA Method by 8270C / 3520C (µg/L)	Detected Perchlorate using USEPA Method by 314.0 (µg/L)
			Arsenic	Barium	Cobalt	Copper	Lead	Molybdenum	Vanadium	All Analytes	TPH-GRO (C4C12)	TPH-DRO (C10C22)	TPH-ORO (C23C40)	All Analytes	Perchlorate
Upper Devil's Gate	UDG	9/19/2011	*2.5*	*35*	<1.0	<2.0	<1.0	12.0	<2.0	ND	<50	<0.50	<0.50	ND	<4.0
Altadena West Drain	AWD	9/19/2011	*4.3*	*91*	*1.0*	*4.6*	*1.8*	*5.4*	*5.2*	ND	<50	<0.49	<0.49	ND	<4.0
Below Flint Wash	BFW	9/19/2011	*1.4*	*140*	*1.5*	<2.0	<1.0	<2.0	<2.0	ND	<50	<0.53	<0.53	ND	<4.0
Below Devil's Gate	BDG	9/20/2011	<1.0	*130*	<1.0	<2.0	<1.0	<2.0	<2.0	ND	<50	<0.50	<0.50	ND	<4.0
			USEPA MCL												
			10	2,000	NG	1,300	15	NG	NG	varies	NG	NG	NG	varies	NG
			CAL MCL												
			10	1,000	NG	1,300	15	NG	NG	varies	NG	NG	NG	varies	6

Notes:
USEPA United States Environmental Protection Agency.
CAL California MCL provided by the Department of Public Health,
VOC Volatile Organic Compound.
TPH Total Petroleum Hydrocarbon.
SVOCs Semi-Volatile Organic Compounds
Filt. Sample was field filtered for metals
GRO Gasoline range organics
DRO Diesel range organics
ORO Oil range organics
mg/L Milligrams per liter.
µg/L Micrograms per liter.
MCL Maximum Contaminant Level (US Environmental Protection Agency, 2009).
* MCL provided by California Department of Public Health, 2010
NG No MCL Guideline Available.
ND No values detected above associated laboratory reporting limit
<0.00100 & ND Denotes value is less than the laboratory reporting limit(s)
Italics Denotes detected concentrations above the laboratory reporting limits indicated
Bold Indicates concentration exceeds the MCL

Source: Gannet Fleming, 2012.

Table 3.11-2: General Water Quality Parameters for Surface Water Survey Devil's Gate Reservoir Pasadena, California

Station ID	Station Code	Date Sampled	Temperature °F	Dissolved Oxygen mg/L	pH std units	Residual Chlorine mg/L	Ammonia-Nitrogen mg/L	Total Kjeldahl Nitrogen mg/L	Nitrite-Nitrogen mg/L	Nitrate-Nitrogen mg/L	Orthophosphate-P mg/L	Phosphorus mg/L	Turbidity NTU	Turbidity visual	Color visual	Conductivity mS/cm	Total Dissolved Solids mg/L	Total Suspended Solids mg/L
Upper Devil's Gate	UDG	9/19/2011	66.5	12.35	7.92	<0.10	<0.50	<0.50	<0.15	**0.11**	<0.16	<0.050	0	Clear	Clear	0.45	**280**	<10
Altadena West Drain	AWD	9/19/2011	67.2	3.24	7.34	<0.10	**3.80**	**5.6**	<1.5	**0.58**	**0.64**	**0.90**	2.6	Clear	Clear	1.24	**760**	<10
Below Flint Wash	BFW	9/19/2011	72.5	6.03	7.14	<0.10	**0.72**	**1.5**	<0.15	**1.10**	<0.16	**0.33**	39.8	Clear	Clear	1.56	**1,000**	**21**
Below Devil's Gate	BDG	9/20/2011	64.4	7.81	7.10	<0.10	**0.64**	**1.2**	<0.15	**0.32**	<0.16	**0.43**	41.7	Clear	Faint Yellow	1.14	**720**	**15**
LARWQCB Water Quality Objectives																		
32-86			>5.0	6.5-8.5	<0.10	6.8-23[1]	NG	1	10	NG	NG	0-50[2]	NG	NG	NG	300[3]	NG	

Notes:
NTU= Nephelometric Turbidity Units
LARWQCB= Los Angeles Regional Water Quality Control Board
NG= Not Given
°F= degrees Fahrenheit
Mg/L= Milligrams per Liter
mS/cm= Milliseimens per centimeter
std= standard

Bold= denotes detected concentrations above the laboratory reporting limits indicated
Indicates concentration exceeds the LARWQCB Water Quality Objective
[1] One-hour average concentration for total Ammonia for waters designated as Warm at 68 °F with a pH range 7-8
[2] Increases shall not exceed 20% where natural turbidity is between 0 and 50 NTU
[3] Arroyo Seco above spreading ground Los Angeles River Watershed water quality objective

Source: Gannet Fleming, 2012.

In addition, water temperature, dissolved oxygen, pH, turbidity, conductivity, and sampling time were recorded in the field using a portable meter. The collected samples were placed in ice-filled chests (<4 degrees Celsius) and delivered to the laboratory under proper chain-of-custody protocols. Position coordinates (i.e., latitude and longitude) of the sampling stations were obtained using a hand-held global positioning system (GPS).

It is important to note that due to installation of IMP measures to reduce flood risk downstream and interim sediment removal activities, stream flow was not naturally flowing through Devil's Gate Dam. The water was being stored north of the dam and then pumped approximately every 10 minutes through the dam and into the lower Arroyo Seco. These activities may have affected the water quality and water sampling results for the BDG station. Volatile organic compounds (VOCs), total petroleum hydrocarbon (TPH), perchlorate, and semi-volatile organic compounds (SVOCs) were not detected in any of the samples collected during this event (Table 3.11-1). Metals that were detected above the laboratory reporting limits did not exceed their respective EPA maximum contaminant level (MCLs) and California Department of Public Health MCLs. The analytical results from the surface water survey did not identify any chemicals of potential concern (COPCs) at concentrations that exceeded regulatory thresholds in the surface water.

The water quality measurements that did not meet the Los Angeles Regional Water Quality Control Board (LARWQCB) water quality objectives include dissolved oxygen (DO) level at AWD and total dissolved solids (TDS) measured at AWD, BFW, and BDG (Table 3.11-2). The lower DO concentrations at AWD are likely the result of high biochemical oxygen demand (BOD) waste, including sediments, nutrients, and organic matter, contained in the stormwater runoff and nuisance flow from surrounding neighborhood streets. Additionally, a higher amount of atmospheric oxygen becomes mixed in areas with turbulent and/or shallow flow, resulting in increased DO levels. Therefore, since the water at AWD is deeper and slower moving compared with the other stations, DO levels may also be lower due to the decreased surface interaction between water and air at the station. Furthermore, although the DO measured in the flow coming into the watershed at AWD was below the LARWQCB objective of 5.0 milligrams per liter (mg/L), the DO levels measured at station BDG are considered a better representation of the water quality for the project area, since it represents the combined flow of all source water flowing out of the watershed and meets the LARWQCB DO objectives for the watershed. The elevated TDS levels measured at the nuisance flows of BFW (760 mg/L) and AWD (1,000 mg/L) likely contributed to the elevated TDS measurement at BDG (720 mg/L). The preexisting elevated TDS levels detected in the surface water likely result from anthropogenic activities from the surrounding neighborhoods, such as car washing and hosing down driveways and sidewalks, denuded vegetation areas, erosion, etc. The elevated TDS will be taken into consideration in determining the impact of the sediment removal operations to water quality.

A summary of the potential sources of pollutants that could be discharged into the surface water of Devil's Gate Reservoir during sediment removal operations is provided in Table 3.11-3.

Table 3.11-3: Potential Sources of Pollution

Activity/Source	Pollutants of Concern
Chemical spills	Engine fuel, diesel, vehicle fluids, hydrocarbons, oil, and grease
Erosion	Sediment, organic matter
Stormwater/nuisance runoff	Particulate matter, associated pollutants, sediment, green waste, organic matter, fuel, oil
Litter and debris	Litter and debris
Loading/unloading areas	Oil and grease, hydrocarbons, litter, heavy metals
Construction activities and storage	Fuel, lubricants, and solvents
Adjacent properties with known hazardous releases	PCBs, VOCs, petroleum hydrocarbons, rocket fuel (perchlorate), SVOCs, heavy metals, organochlorine pesticide
Parking lot runoff	Oil and grease, hydrocarbons, litter, heavy metals
Pet feces	Coliform bacteria
Utility line maintenance and repairs	Chloramines, chlorine, sediment, adhesive cements, primers

Groundwater

The project area overlies the Raymond Groundwater Basin (Raymond Basin), which is located within the Los Angeles-San Gabriel Hydrologic Unit, which covers most of Los Angeles County (LARWQCB 1994; DWR 2003). Raymond Basin is a 40.9-square mile basin located in the northwest part of the San Gabriel Valley extending from La Cañada Flintridge and the San Rafael Hills on the southwest to Santa Anita Canyon on the east. The basin underlies the majority of the Arroyo Seco Watershed and is bound to the north by the San Gabriel Mountains and to the south by the Raymond Fault (DWR 2003). The lithology of the Raymond Basin is comprised primarily of the water-bearing, unconsolidated, Quaternary alluvial gravel, sand, and silt material that was carried by the streams coming from the San Gabriel Mountains (DWR 2003).

Raymond Basin's average annual precipitation is approximately 21 inches (DWR 2003); and groundwater recharge is possible through the penetration of rain falling on alluvial surfaces, returns from irrigation water, and infiltration of stream flow, primarily from the San Gabriel Mountains, that is collected in Hahamongna, and also diverted to spreading grounds within the basin. The spreading grounds within the Raymond Basin, including the Hahamongna Watershed Park above Devil's Gate Dam, have an estimated maximum annual capacity of approximately 41,000 acre-feet (ac-ft), capturing an average of about 6,000 ac-ft per year over the past 45 years. The spreading grounds permit water to infiltrate and recharge Raymond Basin. Groundwater quality in Raymond Basin is generally good to fair, with average total dissolved solids content ranging from 138 to 780 mg/L. Beneficial uses of the water in Raymond Basin include industrial, domestic drinking water, and other municipal uses.

Groundwater in the vicinity of the project site is impacted with VOCs and perchlorate associated with the JPL superfund site. The VOC and perchlorate impacts to groundwater are discussed further in the Hazards Section of this report. According to available investigation and monitoring data from the adjacent JPL site, including boring logs and groundwater monitoring reports, the depth to groundwater

encountered at the time monitoring wells MW-3 through MW-5 were installed (January-March 1990) (located inside or adjacent to the northern portion of the project area), ranged from 100 feet to 130 feet bgs. This is equivalent to a depth of approximately 970 amsl at well MW-3, which is located just north of the project area. Recent piezometric water level elevations measured at MW-3 (a multi-nested well with five discrete intervals), ranged from 1,023.46 feet to 1,002.08 feet amsl.

These groundwater elevations are comparable to the water level elevations observed in three of the four soil borings advanced during this investigation (approximately 1,016.75 feet [B-3], 1,013 feet [B-4], and 1,012 feet amsl [B-9]; Figure 3.11-1: Water Quality Sampling Locations) and reported in the Geology and Soils section (Section 3.8). The difference between the first encountered water elevation in the MW-3 borehole (970 feet amsl) and the elevations measured recently from MW-3 suggest the aquifer where MW-3 is screened is likely under confined or semi-confined conditions. That is, the water elevations measured in MW-3 represent the elevation to which water will rise under its full static head. In contrast, the water encountered during the recent investigation in borings B-3, B-4, and B-9, likely represents the water table of a perched aquifer in a braided-stream deposit scenario and may not be connected with the deeper aquifer where MW-3 is installed. Although it is uncertain whether the perched water exists in all areas of the project area (without confirming with additional borings), it would be a fair assumption that the groundwater may be encountered at an interval consistent with the recent investigation (i.e., 22 feet to 25.25 feet bgs) across the project area.

Flooding

Since 1860, the Arroyo Seco has experienced damaging flood events due to unpredictable storm flows from the San Gabriel Mountains. Overflow channel flooding caused fatalities and severe structure and infrastructure damage. This led to the creation of the LACFCD. The LACDPW, on behalf of the LACFCD, implements flood control activities. Previous activities included the channelization of the Los Angeles River, the development of the Arroyo Seco stormwater drainage systems, and the construction of the Devil's Gate Dam to provide flood risk management and water recharge to the Raymond Basin aquifer.

According to the Federal Emergency Management Agency Flood Insurance Rate Map, the project site is primarily located in Flood Zone X, which is an area designated to be outside the 0.2 percent annual chance floodplain and both the 100- and 500-year flood zones (EDR 2011). A small area, located along the northern section of the site, is in Flood Zone D, an area in which flood hazards are undetermined but possible (FEMA Map Item # 06037C1375F).

3.11.3 Applicable Regulations

Federal

In 1972, the Clean Water Act (CWA) was established, providing regulations for discharging pollutants into the waters of the United States. EPA, through the CWA, has implemented pollution control programs for industry and set water quality standards for surface waters.

The National Pollutant Discharge Elimination System (NPDES) stormwater permit program, authorized by the CWA in Section 402(p), controls water pollution by regulating point sources that discharge pollutants into surface waters. NPDES permits must be obtained by industrial, municipal, and other facilities that discharge directly to surface waters. This permitting program is administered by the

Regional Water Quality Control Board (RWQCB), on behalf of EPA under Order No. 01-182, NPDES No. CAS004001.

It is assumed for this project that a NPDES General Construction Permit will not be required because the Proposed Project is limited to sediment removal as it pertains to the confines of the reservoir's original design. Therefore, the Proposed Project is considered to be a construction activity, which is not covered under the General Construction Permit. The Proposed Project is considered to be "routine maintenance to maintain the original hydraulic capacity and purpose" (SWRCB 2012).

United States Army Corps of Engineers (USACE)

USACE is a federal agency responsible for planning civil engineering projects associated with dams, canals, and flood protection in the United States and is responsible for overseeing issues affecting waters of the United States. Under Section 404 of the CWA, an Individual Permit is required for the proposed sediment removal and placement activities. Additionally, as the proposed sediment removal project is considered to be part of the routine maintenance reservoir, a Nationwide Permit (NWP) 31 for Maintenance of Existing Flood Control Facilities may also be required. The need for this permit and other NWPs (e.g., NWP 3 – Maintenance) can be determined during a pre-application meeting between LACFCD and the USACE Los Angeles District office regulatory branch. The federal mandate associated with the 401 certification of the CWA is addressed and enforced by RWQCB.

State

The Porter-Cologne Water Quality Control Act (Porter-Cologne) of 1969 entitles the SWRCB and the nine associated RWQCBs ultimate authority for water quality policies and rights and enforcing water quality regulations in the state of California.

Under Section 401 of the CWA and EPA 404(b)(1) guidelines a 401 certification from RWQCB is required because the proposed scope of work can cause discharge into navigable waters. The RWQCB 401 certification will show that the possible discharge due to the project will comply with State water quality standards. In order to be in compliance with the 401 certification, the project must address watershed hydrograph modification and proposed creek- or river-related modifications.

The local regulating RWQCB that oversees the issuing of permits and enforcement for the project site is the LARWQCB. Under Section 303(d) of the CWA, the LARWQCB developed a Water Quality Control Plan (Basin Plan) to protect the quality of surface and ground waters of the region from both point and nonpoint sources of pollution. The plan establishes water quality standards and objectives that protect the beneficial uses of various waters. In order to protect these uses, the State developed Total Maximum Daily Loads (TMDLs), a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet Water Quality Objectives (WQOs) established in the Basin Plan.

The CWA requires states, territories, and authorized tribes to:

- Develop water quality standards for all surface waters
- Monitor these waters

- Identify and list those waters not meeting water quality standards, called the 303(d) List of Water Quality Limited Segments

This list contains no waters of concern for this project site and portion of the Arroyo Seco; however, south of Devil's Gate Dam, two segments of the Arroyo Seco above convergence with the Los Angeles River are on the list. The Proposed Project is not expected to affect the TMDL impairments listed (Table 3.11-4: TMDL Impairments).

Table 3.11-4: TMDL Impairments

303(d) Listed Segments	TMDL Impairments
Arroyo Seco Reach 1 (LA River to West Holly Avenue)	Benthic-Macro Invertebrate Bioassessments, Coliform Bacteria, Trash
Arroyo Seco Reach 2 (West Holly Avenue to Devil's Gate Dam)	Coliform Bacteria, Trash

Source: SWRCB 2010

CDFW

This department maintains and protects native fish, wildlife and plant species, and natural communities for their intrinsic ecological value and their benefits to people. The Proposed Project will need to adhere to the CDFW's Section 1600 Streambed Alteration Agreement (SAA) since Proposed Project activities will alter the flow, bed, channel, or bank of the streams in the project area. Coordination with CDFW will take place during Proposed Project development regarding protected species or other natural resources and habitat that could be impacted by the sediment removal activities.

Local

LACFCD

Any restoration project that may be proposed in the future would need to be consistent with the goals and objectives of the LACFCD. In general, the LACFCD holds a 25-foot easement on both sides of the channel downstream of the dam. The LACFCD maintains the right to construct and maintain Devil's Gate Dam and its spillway, bypasses, tunnels, and other support facilities as may be necessary for the construction and maintenance of a reservoir capable of impounding the waters of the Arroyo Seco for purposes of storage and control and to control such waters as may be necessary for flood protection.

Los Angeles County

As the project site is located within Los Angeles County, it must adhere to the Los Angeles County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permit requirement for permittees to develop and incorporate programs for stormwater management. The NPDES permit is administered under the LARWQCB and is enforced by the Los Angeles County Stormwater Program, which is a part of the LACDPW Watershed Management Division. Model programs are available and can be used to provide guidance for permittees.

City Of Pasadena

The City of Pasadena's Stormwater Management and Discharge Control Code (Section 8.70 of the municipal code) provides regulations on non-stormwater discharges to the stormwater system including spillage control, disposal of materials, and pollutant reduction in urban runoff and stormwater systems.

3.11.4 Significance Criteria

- *HYDROLOGY-1: Would the project violate any water quality standards or waste discharge requirements?*
- *HYDROLOGY-2: Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table 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)?*
- *HYDROLOGY-3: Would the project substantially alter 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 offsite?*
- *HYDROLOGY-4: Would the project otherwise substantially degrade water quality?*
- *HYDROLOGY-5: Cumulative Impacts*

3.11.5 Methodology

The following hydrology and water quality analysis is based on review of the available technical reports, including Los Angeles County's Arroyo Seco Watershed Ecosystem Restoration Study prepared by USACE (2010), and knowledge of the proposed type, intensity, and duration of project sediment removal activities on the Proposed Project site. In addition, surface water samples were collected to investigate the current water conditions from the storm drains and the northern tributary flowing into Devil's Gate Reservoir.

3.11.6 Impacts and Mitigation

HYDROLOGY-1 *Violate any water quality standards or waste discharge requirements.*

Sediment Removal/Reservoir Management

FAST operations have routinely occurred at Devil's Gate Reservoir and result in relatively small amounts of finer grained sediment passing through the reservoir. During both sediment removal and reservoir management phases, FAST operations will occur during winter rain events, using natural flows to allow the finer grained sediment to pass through the reservoir and downstream of the dam. It is anticipated that these FAST operations will be similar to historic FAST operations and that fine sediment discharged during FAST operations will be transported to the Pacific Ocean via Arroyo Seco and the Los Angeles River, either via the discharge flow or subsequent storm flows. No significant impacts to water quality standards are expected due to FAST operations.

Sediment removal and reservoir management activities will include the use of heavy construction equipment necessary to perform the grading, excavation, transport, and disposal of the sediment. These activities could potentially have a negative impact on the water quality or waste discharge requirements, as contaminants could be released into the watershed and adversely affect water quality.

A NPDES General Construction Permit will not be required as this project will be limited to sediment removal as it pertains to the confines of the reservoir's original design; however, to avoid sediment removal activities violating water quality standards, all removal activities will be conducted in general accordance with the LARWQCB regulations and LACDPW regulations. Specific requirements that could be instituted include BMPs for sediment and erosion control and site management, including the following:

- Erosion prevention measures will be implemented to protect erosion susceptible slopes along the borders of excavation or reservoir management areas. These areas shall be covered, planted, or protected in any way that prevents erosion of susceptible soils and/or slopes.

- Production of non-stormwater runoff from project activities will be minimized during sediment removal operations.

- Production of project-related materials including waste, spills, or debris will not be released into receiving waters or drainage structures or to the streets via wind or runoff.

Project activities will occur during the dry season to the extent feasible to avoid erosion of susceptible slopes along the borders of excavation and/or reservoir management areas. The baseline water quality test performed in September of 2011 provided data on the existing water quality conditions. The baseline test results indicate that water quality within the project area is generally within accepted thresholds. Adhering to the regulatory requirements listed above would assist to prevent sediment-laden runoff from entering into the active stream channel and maintain water quality standards. Accordingly, impacts related to violations of water quality standards are less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

Adequate BMPs will be utilized; and adherence to the regulations set forth by the county, State, and federal agencies will reduce the potential for impacts to water quality to a less than significant level.

HYDROLOGY-2 *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.*

Sediment Removal/Reservoir Management

The Proposed Project will remove accumulated sediment deposits within the reservoir. This means the percolation characteristics of the reservoir will stay the same if not improve, and the reservoir will still permit penetration of rainfall and percolation of local runoff to replenish the groundwater basin.

Additionally, sediment removal will restore Devil's Gate Reservoir to its current design standard of the ability to contain two DDEs. As such, the reservoir will have the ability to contain more of the local runoff, which in turn could result in more runoff penetrating into the ground in the project area and subsequently recharging the groundwater basin. In addition, by keeping the reservoir clear of future sediment deposits, the Proposed Project will reduce the potential for accumulated sediments to impact the percolation rate. No significant impacts to groundwater supplies are expected from the actions of the Proposed Project.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

Proposed Project will result in less than significant impacts on groundwater recharge.

HYDROLOGY-3 *Substantially alter the existing drainage pattern of the site, which would potentially result in substantial erosion or siltation.*

Sediment Removal/Reservoir Management

Drainage patterns within the reservoir change on a regular basis depending on seasonal conditions, water flow, and sediment depositions. Sediment removal and reservoir management would result in alterations of surface drainage characteristics at the project site due to clearing, grading, and excavation activities. Although the drainage characteristics for the site will be altered, the project overall will result in a positive impact to drainage of the Devil's Gate Reservoir because it will enhance the flood control abilities of Devil's Gate Dam by increasing available flood control storage in the reservoir. Excavation, grading, and sediment placement activities will occur under LACDPW regulations, which establish protocols for proper design of slopes and temporary sediment-collecting structures. Additionally, while the Proposed Project will result in a small increase of impervious surface area, this small amount is not expected to significantly change drainage patterns; and no significant increase in the amount of surface runoff would occur. As such, impacts related to offsite erosion would be less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

Proposed Project will result in a less than significant impact on drainage patterns.

HYDROLOGY-4 *Otherwise substantially degrade water quality.*

Sediment Removal/Reservoir Management

The proposed sediment removal project will cause physical disturbance to the site. The physical disturbance to the site may cause temporary water quality impacts during the excavation process due to the likely generation of loose sediments, increased turbidity, and suspended sediments at and downstream of the work areas. It is possible that the excavated sediments could reduce dissolved oxygen concentrations and

cause a temporary increase in concentrations of constituents, such as heavy metals, petroleum, and/or VOCs. These water quality impacts are expected to be minimized by implementing the NPDES permit requirements and BMPs, LARWQCB regulations, and LACDPW regulations.

Heavy equipment needed for sediment removal has the potential to cause accidental spills of fuel, and lubricating oil and contaminants could be released into the watershed and adversely affect water quality. The Proposed Project activities involving construction equipment, however, will be temporary and involve the limited transport, use, disposal, and storage of fuel and lubricating oil, which are regulated by various agencies. Adequate BMPs will be utilized; and adherence to the regulations set forth by the County, State, and federal agencies will reduce the potential for impacts to water quality to a less than significant level.

With adherence to regulations and permit requirements and implementation of project-specific BMPs, impacts related to otherwise substantially degrading water quality would be less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

Adequate BMPs will be utilized; and adherence to the regulations set forth by the county, State, and federal agencies will reduce the potential for impacts to water quality to a less than significant level.

HYDROLOGY-5 Cumulative Impacts

Only four of the cumulative projects within the immediate vicinity of the Proposed Project site (NASA Jet Propulsion Laboratory [JPL] On-Site Parking Structure project, Hahamongna Watershed Park MBMU Project, Arroyo Seco Canyon Project, and Devil's Gate Water Conservation Project) would have the potential to combine with the Proposed Project to create a cumulative hydrology impact.

With the NASA Jet Propulsion Laboratory (JPL) On-Site Parking Structure Project, short-term minor impacts to surface water would be minimized through implementation of SWPPP measures and BMPs to less than significant. No significant long-term impacts to drainage or groundwater are expected as no increase would occur in impervious surface (AEGISS, Inc. 2012).

The Hahamongna Watershed Park MBMU Project would reduce impacts to water quality due to construction to less than significant through implementation of SWPPP measures and BMPs and would increase park usage. No long-term impacts to groundwater are expected. The project will also involve improvements to the spreading grounds (City of Pasadena 2002).

The Arroyo Seco Canyon Project and the Devil's Gate Water Conservation Project are both in the conceptual design phase. It is likely that both these projects would reduce any short-term impacts to water quality due to construction to less than significant through implementation of SWPPP measures and BMPs. These projects would likely involve less than significant long-term impacts to drainage or groundwater as a result of minimal increases in impervious surface. These projects will also involve improvements to the spreading grounds and/or groundwater recharge.

No substantial changes in absorption rates, surface and groundwater quality, groundwater flow, and the quantity of groundwater are anticipated to occur as a result of implementation of the Proposed Project and other cumulative projects. The Proposed Project would improve flood control conditions in the project area, thereby improving the existing hydrologic conditions. In addition, by keeping the reservoir clear of future sediment deposits, the Proposed Project will reduce the potential for accumulated sediments to impact the percolation rate. Related projects would be required to comply with water quality and waste discharge requirements to ensure that no impacts to groundwater or surface water quality would occur. No cumulative hydrology impacts would occur.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

No significant adverse cumulative impacts would occur.

3.12 LAND USE AND PLANNING

3.12.1 Introduction

This section addresses the land use and management activities on the land within and immediately surrounding the Proposed Project site and describes the planning laws and regulations that govern land use and development in the study area. While the City of Pasadena is the landowner of the project site, LACFCD holds an inundation easement granting the LACFCD the right to construct, reconstruct, inspect, maintain, repair, and operate the dam, spillway, reservoir, and other support structures for the purposes of flood protection. Land use within the Proposed Project site includes LACFCD operations and maintenance activities and recreation. This chapter discusses General Plan and other land use plans in effect for the project site and discusses potential conflicts with those conditions. Recreation is discussed separately in Section 3.15.

As noted in the Initial Study (Appendix A), no impacts are associated with either physically dividing an established community or conflicting with any applicable habitat conservation plan or natural community conservation plan; and therefore, they are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.12.2 Existing Environmental Setting

Devil's Gate Dam and Reservoir is located in the City of Pasadena in Los Angeles County, approximately 14 miles north of downtown Los Angeles. The City of La Cañada Flintridge and the community of Altadena are located near the Proposed Project site, to the west and east, respectively.

The Proposed Project site is located within the Hahamongna Watershed Park. Hahamongna Watershed Park is approximately 300 acres of parkland and open space located at the base of Arroyo Seco Canyon, in the floodplain behind Devil's Gate Dam. Hahamongna Watershed Park also includes the Oak Grove area of

Hahamongna Watershed Park, which contains picnic facilities, restrooms, an equestrian staging area, trails, a disc golf course, and a field used for various recreation activities. The current leaseholders within Hahamongna Watershed Park include the Los Angeles County Fire Department (Fire Camp 2) and the Rose Bowl Riders, who also sublet to the Tom Sawyer Camp. In addition, LACFCD, Southern California Edison, Southern California Gas Company, and Pasadena Water and Power hold easements within the Hahamongna Watershed Park. Other land uses adjacent to the project area include the NASA – Jet Propulsion Laboratory (JPL) to the north, La Cañada High School and Hillside School and Learning Center to the west, single-family residential uses to the south and east, and I-210 to the south.

3.12.3 Applicable Regulations

LACFCD

Through easements granted in May of 1919 and March of 1965, the City of Pasadena granted the LACFCD under a perpetual easement, the right to construct, reconstruct, inspect, maintain, repair, and operate Devil's Gate Dam, its spillway, bypasses, tunnels, and other support facilities as may be necessary for the construction and maintenance of a reservoir capable of impounding the waters of the Arroyo Seco for purposes of storage and control, and to control such waters as may be necessary in the prevention of damage by flood (City of Pasadena 1919/1965).

City of Pasadena General Plan

The City of Pasadena is the landowner of the project site. The Proposed Project site has a General Plan Land Use designation of Open Space and is zoned as Open Space (OS). "Open Space" is defined as follows, "This category is for a variety of active and passive public recreational facilities and for City-owned open space facilities. This includes natural open spaces and areas which have been designated as environmentally and ecologically significant. This category also applies to land which is publicly owned, though in some instances public access may be restricted. Most importantly, this designation only applies to lands owned by the City."

The City of Pasadena General Plan Objectives and Policies pertaining to the Proposed Project are outlined below.

- OBJECTIVE 9 – Open Space Preservation and Acquisition: Preserve and acquire open space in Pasadena in order to enhance the quality of Pasadena life.

- Policy 9.1 – Open Space Corridors: Development of open space corridors, easement and acquisition programs, and trails shall be established where feasible.

- Policy 9.2 – Arroyo Seco: Continue and complete comprehensive planning for, and implementation of, plans for the Arroyo, including restoration of the natural area of the Lower Arroyo and the development of the Hahamongna Watershed Park Plan.

- Policy 9.4 – Adequate Open Space: Provide an adequate total quantity and equitable distribution of public or publicly accessible open spaces throughout the City.

- Policy 9.5 – Stewardship of the Natural Environment: Encourage and promote the stewardship of Pasadena's natural environment, including water conservation, clean air, natural open space

protection, and recycling. Encourage the use of native, water conserving, and regionally appropriate landscaping.

The General Plan Update Open Space and Conservation Element (City of Pasadena 2012c), provides a blueprint for natural open space and conservation. Implementation Measures found in this Element pertaining to the Proposed Project are outlined below.

- Protect Existing Open Space: Continue to preserve and restore the Arroyo Seco and Eaton Canyon.

- Zoning Changes: Protect the existing natural open space within the Hahamongna Watershed Park Master Plan area.

City of Pasadena Zoning Code

The Proposed Project site is zoned as Open Space (OS). As described in Section 17.26.020(A) of the City's Zoning Code, "The OS district is applied to sites with open space, parks, and recreational facilities of a landscaped, open character having a minimum contiguous site area of two acres. The OS zoning district is consistent with and implements the Open Space land use designation of the General Plan." Section 17.26.030 of the Code specifies that public safety facilities uses meet the intent of the OS zone and are conditionally allowed uses in the OS zone.

Hahamongna Watershed Park Master Plan

The Proposed Project site is also within the Hahamongna Watershed Park Master Plan area (HWPMP 2003). The Hahamongna Watershed Park Master Plan (HWPMP) was adopted by the City of Pasadena in 2003 and establishes a visionary framework for recreation, water resources, flood management, habitat restoration, and cultural resources in this area. Applicable Goals and Objectives of the Hahamongna Watershed Park Master Plan include the following:

Goal 2: The Devil's Gate flood control basin will be managed to provide protection to the developed and natural downstream areas.

Objectives:

- Facilitate the dam and reservoir maintenance operations in a manner that is compatible with the proposed features of the Master Plan and will result in minimal impacts to the surrounding area.

- Maintain or improve the flood capacity behind Devil's Gate Dam.

- Develop a sediment removal plan that minimizes the impact to the basin and to the surrounding neighborhoods.

- Develop a grading plan that allows habitat restoration and recreational activities to coexist with flood management and water conservation.

- Develop a multi-agency task force to review maintenance, sediment removal, dam operation, permit, and liability issues on a continual basis after this plan is adopted.

Goal 6: Provide a safe and secure park.

Objectives:

- Develop guidelines and delegate agency responsibilities for recreation, flood management, and water conservation liabilities.

3.12.4 Significance Criteria

- *LAND USE-1: Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

- *LAND USE-2: Cumulative Impacts*

3.12.5 Methodology

The LACFCD easement, the City of Pasadena General Plan and Zoning Ordinance, and the Hahamongna Watershed Park Master Plan were utilized to aid in the development of this analysis. Additionally, site visits were conducted; and aerial and topographic maps were examined to determine existing land uses.

3.12.6 Impacts and Mitigation

LAND USE-1 *Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.*

Sediment Removal/Reservoir Management

As discussed earlier, the Proposed Project site is designated "Open Space" by the City of Pasadena's General Plan and zoned as open space (OS). Section 17.26.030 of the Code specifies that public safety facilities uses meet the intent of the OS zone and are conditionally allowed uses in the OS zone. The Proposed Project would not change the land use designation and zoning of Open Space and would be consistent with the LACFCD easement. Therefore, the Proposed Project would not conflict with the City's General Plan designation or zoning for the Proposed Project site.

The Open Space Element of the City of Pasadena General Plan emphasizes the enhancement of open spaces, maximization of existing open space resources, and use of privately owned open spaces to reduce demand on public resources. The Proposed Project will not change the land use designation or zoning of Open Space and would be consistent with the LACFCD easement.

As discussed in Subsection 3.12.3, Applicable Regulations, the HWPMP emphasizes protection of recreational and natural resources as well as the management of flood control for the downstream watershed. Key to determining the consistency of the project with the HWPMP is the conformance with the plans Goals and Objectives. As identified in the Applicable Regulations portion of the Existing Conditions, Goal 2 and Goal 6 are the most crucial in determining conformance. These Goals focus on the basin being "managed to provide protection to the developed and natural downstream areas and

providing a safe and secure park." The Proposed Project will manage the flood control basin for protection of the downstream areas by improving and maintaining the flood capacity behind Devil's Gate Dam.

Implementation of sediment removal and reservoir management under both management options will result in only temporarily restricted access to portions of designated trails and indirect impacts to existing recreation uses associated with construction activities (see further discussion in Section 3.15 Recreation). With implementation of Mitigation Measure MM LAN-1, impacts associated with recreational activities coexisting with flood management and water conservation would be reduced to less than significant. Overall the Proposed project will not have any significant impacts or conflict with the applicable land use plans, policies, or regulations of adopted plans.

Mitigation Measure

MM LAN-1: Temporary impacts to designated recreational facilities and trails shall be minimized through advance communication and redirection to the nearest facility in the vicinity of the Proposed Project. Prior to completion of final plans and specifications, the LACFCD shall review the plans and specifications to ensure that they contain proper language requiring that signs be posted at the nearby parking lots and trailheads at least one month in advance of sediment removal activities.

Residual Impacts After Mitigation

With the implementation of MM LAN-1, impacts associated with applicable land use plans and policies would be reduced to less than significant for sediment removal and management options.

LAND USE-2 Cumulative Impacts

For other applicable land use plans and policies, the Proposed Project, in combination with approved, proposed, and reasonably foreseeable projects, would not cumulatively contribute to cumulative impacts with the LACFCD easement, the City of Pasadena General Plan and Zoning Ordinance, and the Hahamongna Watershed Park Master Plan. No significant cumulative impacts are expected.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

No significant adverse cumulative impacts would occur.

3.13 MINERAL RESOURCES

3.13.1 Introduction

This section describes the Proposed Project's potential to affect mineral resources within the Proposed Project area. Mineral resources are commercially viable mineral or aggregate deposits, such as sand, gravel, and other construction aggregate. The California Department of Conservation, California Geological Survey (1994, 2010), the City of Pasadena General Plan, and the Arroyo Seco Master Plan EIR (2002) were reviewed for purposes of the analysis contained in this section.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.13.2 Existing Environmental Setting

Currently no mining operations are active within the City of Pasadena (City of Pasadena 2012b). Two areas previously mined in the City of Pasadena were: Eaton Wash, mined for sand and gravel; and Devil's Gate Reservoir, mined for cement concrete aggregate. Aggregate material for Portland Cement Concrete has been historically mined from Devil's Gate Reservoir. Arroyo stone has potential to be found in Devil's Gate Reservoir (Arroyo Seco Master Plan EIR 2002); however, this EIR was prepared prior to the 2009 Station Fire. Due to the sediment accumulation occurring since the Station Fire, the likelihood of excavating arroyo stone is significantly reduced.

Currently, the majority of the material in the southern half of the reservoir consists of sediment with unfavorable characteristics such as fine gradation soil and high organic content levels. Usable aggregate material and arroyo stone suitable for sale or reuse may be found in areas of the northern half of the reservoir.

3.13.3 Applicable Regulations

Surface Mining and Reclamation Act

The California Surface Mining and Reclamation Act of 1975 (SMARA) was developed to encourage production and conservation of mineral resources, prevent or minimize adverse effects to the environment, and protect public health and safety (California Geological Survey Mineral Resources 2007). The California Division of Mines and Geology (CDMG) provides objective geologic expertise and information about California's diverse nonfuel mineral resources. Maps, reports, and other data products developed by CDMG assist government agencies, mining companies, consultants, and the public in recognizing, developing, and protecting important mineral resources. SMARA has resulted in preparation of mineral land classification maps delineating Mineral Resource Zones (MRZs). The Proposed Project site contains areas delineated within zone designated MRZ-2, which means that the area contains adequate information to indicate that significant mineral deposits are present or are judged to have a high likelihood for their presence (CDMG 1994).

The California Department of Conservation protects mineral resources to ensure adequate supplies for future production. According to the California Geological Survey, the State had approximately 700 active mines in 2010. Construction sand and gravel was California's leading industry mineral; however, this

industry has been hit hard by the downturn in the economy and construction industry (CDMG 2010). CDMG listed the Devil's Gate Reservoir Pit D & S Earth Movers as Mines and Mineral Producers Active in California between 1988 and 1989 for sand and gravel (City of Pasadena 2002). Currently, no mining operations are active within the City of Pasadena (City of Pasadena 2012b).

City of Pasadena General Plan

According to the City of Pasadena General Plan Open Space and Conservation Element (2012), one of the goals of the Conservation Element is to protect and conserve natural resources.

Arroyo Seco Master Plan EIR (2002)

The Arroyo Seco Master Plan EIR (2002) states that Portland Cement Concrete historically mined aggregate material from Devil's Gate Reservoir. In addition, it states that grading below reservoir template is likely to turn up large quantities of arroyo stone in the reservoir, and this resource would be in demand by landscaping companies. The EIR included designation of a stockpiling area in Hahamongna Watershed Park to stock and store arroyo stone and boulders to be used for future City projects. This storage area is located on the west side of the basin next to Tom Sawyer Camp and the Disc Golf Course.

3.13.4 Significance Criteria

- *MINERALS-1: Would the project 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?*
- *MINERALS-2: Would the project 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?*
- *MINERALS-3: Cumulative Impacts*

3.13.5 Methodology

The approach to the analysis of potential impacts on mineral resources was to determine the presence of known valuable mineral resources. For the purposes of the evaluation, mineral resources are considered valuable if they are identified as MRZ-2 or MRZ-3 or are otherwise protected by local regulations. New construction built directly on a valuable resource was considered a "loss of availability." Localized resources not meeting guidelines as being suitable for aggregate, but being suitable for use as road base or other fill, are not considered a loss of available mineral resources.

3.13.6 Impacts and Mitigation

MINERALS-1 *Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state.*

Sediment Removal

The Proposed Project involves the excavation and removal of large amounts of sediment throughout the Devil's Gate Reservoir. Sediment removal in the southern half of the Proposed Project site is not expected to involve usable aggregate material or arroyo stone due to unfavorable characteristics such as fine gradation soil and high organic content levels. Sediment removal in the northern half of the

Proposed Project site has the potential to expose mineral resources such as sand or gravel, as well as some arroyo stone. The majority of the sediment removal will occur in the southern half of the Proposed Project site, closest to the dam, and would excavate sediment from the dam face north to an elevation of 1,070 feet, about 4,977 feet upstream of the dam. The vast majority of this material will be removed to a sediment disposal site. The limited remainder of the sediment will be transported through the FASTing operations to the Pacific Ocean via the Arroyo Seco Channel and the Los Angeles River.

The Proposed Project site would not be available for mining operations during sediment removal activities; however, as stated above, sediment removal is not expected to involve usable aggregate material or arroyo stone due to unfavorable characteristics such as fine gradation soil and high organic content levels. Impacts involving the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or a locally important mineral resource recovery site, will be less than significant.

Reservoir Management

Sediment deposited after the sediment removal phase will be removed on an annual basis. The amount of sediment is expected to be small, averaging 13,000 cy per year. The sediment excavated during reservoir management activities is not expected to involve usable aggregate material or arroyo stone due to unfavorable characteristics such as fine gradation soil and high organic content levels. Impacts involving the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or a locally important mineral resource recovery site, will be less than significant.

Mitigation Measure

No mitigation measures are necessary.

Residual Impacts After Mitigation

The Proposed Project will not result in any significant impacts to mineral resources that will be of value to the region and residents of the state.

MINERALS-2 *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.*

Sediment Removal/Reservoir Management

While the Arroyo Seco Master Plan EIR (2002) states that the reservoir may contain large quantities of arroyo stone, the Proposed Project site is not delineated as a locally important mineral resource recovery site on a local general plan, specific plan, or other local land use plan. The Proposed Project site will not be available for mining operations during sediment removal and reservoir management activities; however, sediment excavation is not expected to involve usable aggregate material or arroyo stone due to unfavorable characteristics such as fine gradation soil and high organic content levels. Impacts will be less than significant.

Mitigation Measure

No mitigation measures are necessary.

Residual Impacts After Mitigation

The Proposed Project will not result in any significant impacts to availability of a locally important mineral resource recovery site.

MINERALS-3 Cumulative Impacts

Impact Analysis

Most of the cumulative projects are located in areas that do not contain MRZs or Active Mines and Mineral Producers and, therefore, are not expected to impact mineral and mining resources. Other projects involve areas that have been urbanized and, therefore, would not be available for mining activities. As with the Proposed Project, the Hahamongna Watershed Park is within a designated MRZ-2 zone. Hahamongna Watershed Park Multi-Benefit/Multi-Use (MBMU) Project is not expected to involve substantial excavation activities or the export of earth materials. In addition, this project would not preclude the future extraction of mineral resources from Devil's Gate Reservoir. Therefore, cumulative impacts to mineral resources are expected to be less than significant.

Mitigation Measure

No mitigation measures are necessary.

Residual Impacts After Mitigation

Cumulative impacts related to mineral and mining resources are less than significant.

3.14 NOISE AND VIBRATION

3.14.1 Introduction

This section describes the Proposed Project's potential to have noise and vibration impacts on the area around the Proposed Project site. A Noise Impact Analysis was prepared to determine the offsite and onsite noise impacts associated with the Proposed Project (Appendix I).

As noted in the Initial Study (Appendix A), impacts associated with a permanent increase in ambient noise levels, airport land use plans, and private airstrips were found to have less than significant impacts and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.14.2 Existing Environmental Setting

Terminology

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

Noise Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in dBA. The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time-varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 10 decibels to sound levels at night between 10 p.m. and 7 a.m. The Community Noise Equivalent Level (CNEL) is similar to the Ldn except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, ambient noise levels are decreased, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Pasadena and County of Los Angeles rely on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at

extreme vibration levels damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and exists only indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Existing Noise Conditions

To determine the existing noise level environment, noise measurements have been taken in the vicinity of the Proposed Project site. The field survey noted that noise within the Proposed Project area is generally characterized by vehicular traffic on the nearby roadways.

The results of the short-term peak hour noise level measurements are presented in Table 3.14-1. The existing noise level measurements ranged from 50.4 to 66.7 dBA Leq, with the highest noise measurement occurring at the La Cañada Flintridge United Methodist Church.

Table 3.14-1: Existing (Ambient) Noise Level Measurements

Site No.	Description	Time of Measurement	Primary Noise Source	Noise Level (dBA Leq/Lmax)
1	Located at La Cañada United Methodist Church at 104 Berkshire Place, in church parking lot and 25 feet from edge of Oak Grove Drive.	2:22 p.m. to 2:37 p.m.	Traffic on Oak Grove Drive and cars in parking lot.	66.7/81.0
2	Located near a park bench across the street from La Cañada High School at 4463 Oak Grove Drive and approximately 100 feet north of the pool.	2:48 p.m. to 3:03 p.m.	Traffic on Oak Grove Drive, kids talking, and cars in parking lot.	57.9/68.8
3	Located at the front yard of the home at 2301 Vista Laguna Terrace, Pasadena, and approximately 150 feet north of La Cañada Verdugo Road.	3:54 p.m. to 4:09 p.m.	Dogs barking, traffic on residential streets.	57.6/68.5
4	Located on the edge of the road in front of the home at 1021 W. Shelly Street, Altadena.	4:22 p.m. to 4:37 p.m.	Kids playing, dogs barking, delivery truck and cars.	58.4/79.7
5	Located at the Rose Bowl Riders at 4750 Oak Grove Drive, Pasadena, at the back of youth camp and adjacent to equestrian property on a dirt road.	4:53 p.m. to 5:08 p.m.	Equestrians talking and horses.	50.4/57.2
6	Located at the western end of the southern parking lot for John Muir High School at 1905 Lincoln Avenue, Pasadena.	5:21 p.m. to 5:36 p.m.	Traffic on I-210 and Lincoln Avenue.	59.9/65.3
7	Located at the middle of the western parking lot for Irwindale Public Library at 5050 Irwindale Avenue, Irwindale.	12:08 p.m. to 12:23 p.m.	Cars and people in parking lot.	52.2/63.7

Source: Chambers Group, Inc., noise measurements taken on June 3, 2011.

The noise contours of the nearby existing roadway have been calculated in order to provide the existing traffic noise levels. The distances to the 55, 60, 65, and 70 dBA CNEL noise contours were calculated,

plus the noise level at the nearest sensitive receptor to the roadway. Table 3.14-2 shows the existing traffic noise contours. As shown below, several roadway segments currently exceed the County's 60 dBA CNEL residential exterior noise standard.

Table 3.14-2: Existing Roadway Noise Contours

Roadway	Segment	CNEL at Nearest Receptor (dBA)[1]	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Devil's Gate Dam and Reservoir						
Berkshire Place	East of I-210 northbound ramps	60	RW	RW	60	130
Oak Grove Drive	South of Berkshire Place	58	RW	RW	59	128
Oak Grove Drive	East of Foothill Freeway Overpass	60	RW	RW	79	170
Windsor Avenue	North of I-210 northbound ramps	65	RW	70	150	323
Manning Pit						
Vincent Avenue	South of Gladstone Street	65	RW	55	119	257
Vincent Avenue	South of Arrow Highway	67	RW	65	140	301
Arrow Highway	East of Vincent Avenue	69	54	115	249	535
Arrow Highway	East of Lark Ellen Avenue	69	54	117	251	542
Arrow Highway	East of Enid Avenue	69	55	119	256	552
Azusa Avenue	North of Arrow Highway	69	RW	107	230	497
Azusa Avenue	North of Gladstone Street	66	RW	73	157	338
Scholl Canyon Landfill						
Scholl Canyon Road	North of SR-134 Westbound Ramps	54	RW	RW	RW	38
Figueroa Street	South of Eagle Vista Drive	63	RW	RW	92	198
Sheldon Pit, Sun Valley Fill Site, Bradley Pit, and Boulevard Pit						
Foothill Boulevard	South of I-210 Westbound Ramps	62	RW	71	154	332
Osborne Street	West of Foothill Boulevard	65	RW	64	137	295
Glenoaks Boulevard	South of Osborne Street	69	51	111	239	515
Glenoaks Boulevard	South of Penrose Street	68	RW	83	178	385
Glenoaks Boulevard	South of Sunland Boulevard	68	42	91	196	421
Foothill Boulevard	East of Wheatland Avenue	64	RW	55	118	254
Wentworth Street	South of Foothill Boulevard	65	RW	61	131	283
Osborne Street	East of I-5 northbound ramps	65	RW	81	174	375
Laurel Canyon Boulevard	South of Osborne Street	65	RW	60	129	277
Branford Street	East of Laurel Canyon Boulevard	64	RW	RW	94	202

Table 3.14-2: Existing Roadway Noise Contours

Roadway	Segment	CNEL at Nearest Receptor (dBA)[1]	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Branford Street	West of Laurel Canyon Boulevard	63	RW	RW	97	208
San Fernando Road	South of Branford Street	56	RW	51	109	235

Notes:
[1] Distances to nearest sensitive receptor shown in Appendix I Table E. The noise contours do not take into account existing noise barriers.
The haul routes to Waste Management Facility and Vulcan Materials Reliance Facility will not travel by any sensitive receptors.
RW = Noise contour is located within right-of-way of roadway.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

3.14.3 Applicable Regulations

Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act; however, ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately, that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of FTA, FTA is the only agency that has defined what constitutes a significant noise impact from implementing a project. FTA standards are based on extensive studies by FTA and other governmental agencies on the human effects and reaction to noise. A summary of the FTA findings is provided below in Table 3.14-3.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, local jurisdictions are restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

Table 3.14-3– FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2006.

State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

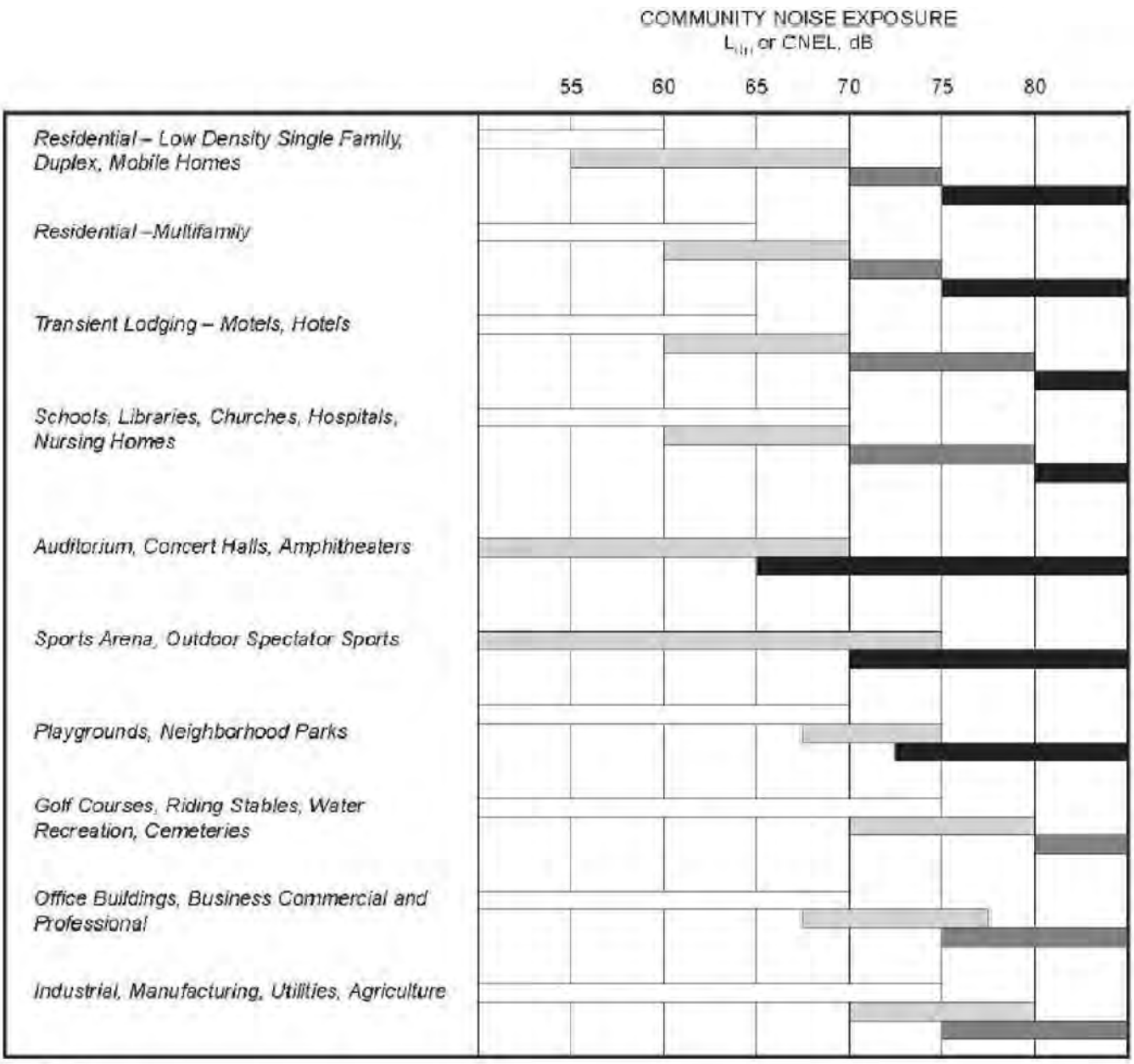
Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise and which is shown in Figure 3.14-1: Land Use Compatibility Matrix.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.



LEGEND:

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

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

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

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Source: California Department of Health. *Guidelines for the Preparation and Content of Noise Elements of the General Plan*. November, 1990

Figure 3.14-1
Devil's Gate Reservoir Sediment Removal and Management Project
Land Use Compatibility Matrix

Version Date: 9/9/2013

CHAMBERS GROUP

Local Regulations

The Proposed Project site is under a LACFCD easement and is located in the City of Pasadena. The community of Altadena, which is an unincorporated area of Los Angeles County, is located adjacent to the east side of the project site, and the City of La Cañada Flintridge is located on the west side of the project site. The applicable policies related to noise and vibration from the above jurisdictions' General Plans and Municipal Codes are provided below.

County of Los Angeles General Plan Noise and Vibration Policies

N 1.1 Employ effective noise abatement to achieve acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards.

N1.2 Ensure the compatibility of land uses throughout the County to minimize excessive noise levels.

N 2.3 Mitigate exterior and interior noises to the levels listed in Table 3.14-4 below to the extent feasible, for stationary sources:

Table 3.14-4: Los Angeles County Exterior Noise Standards

Noise Zone Level	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise (dB)
I	Noise-sensitive area, designated to ensure exceptional quiet	Anytime	45
II	Residential properties, zoned as such in the County Code Title 22	10:00 p.m. to 7:00 a.m. (nighttime) 7:00 a.m. to 10:00 p.m. (daytime)	45 50
III	Commercial properties, zoned as such in the County Code Title 22	10:00 p.m. to 7:00 a.m. (nighttime) 7:00 a.m. to 10:00 p.m. (daytime)	55 60
IV	Industrial properties, zoned as such in the County Code Title 22	Anytime	70

Source: Los Angeles County General Plan, 2007.

County of Los Angeles Municipal Code

The County of Los Angeles Municipal Code establishes the following applicable standards related to noise.

12.08.570 Activities Exempt From Noise Restrictions

H. Public Health and Safety Activities. All transportation, flood control, and utility company maintenance and construction operations at any time on public right-of-way, and those situations which may occur on private real property deemed necessary to serve the best interest of the public and to protect the public's health and well-being, including but not limited to street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, snow removal, house moving, vacuuming catch

basins, removal of damaged poles and vehicles, repair of water hydrants and mains, gas lines, oil lines, sewers, etc.

City of La Cañada Flintridge General Plan Noise and Vibration Policies

NE 1.1.5 Require developers to implement noise abatement that meets Caltrans' acoustical criteria or other standards established by the City if new developments cause increases in traffic volumes that result in roadway noise levels greater than 65 dB CNEL at sensitive receptors.

NE 2.2.2 Require new development to minimize noise impacts on adjacent uses through site and building design, setbacks, berms, landscaping, and/or other noise abatement techniques.

City of La Cañada Flintridge Municipal Code

The City of La Cañada Flintridge Municipal Code establishes the following applicable standards related to noise.

5.36.010 Construction noise prohibited when.

Except as otherwise provided in this chapter, a person may perform any construction or repair work of any kind upon any building or structure, or perform any earth excavating, filling or moving, where any of the foregoing entails the use of any air compressors; jack-hammers; power-driven drill, riveting machine; excavator, diesel-powered truck, tractor or other earth moving equipment; hand hammers on steel or iron; or any other machine, tool, device or equipment which makes loud noises exceeding a decibel level of sixty-five (65) dBA as measured from any adjacent residential property line during the following hours:

	During Standard Time:	**During Daylight Savings Time:**
Monday-Friday:	7:00 a.m. to 6:00 p.m.	7:00 a.m. to 7:00 p.m.
Saturday:	9:00 a.m. to 5:00 p.m.	9:00 a.m. to 5:00 p.m.
Sunday:	None	None
Holiday:	None	None

City of Pasadena General Plan Noise and Vibration Policies

7b The City will encourage limitations on construction activities adjacent to sensitive noise receptors as defined in Figure 3.14-1 (of General Plan).

7c The City will encourage construction and landscaping activities that employ techniques to minimize noise.

7d The City will enforce noise level restrictions contained in the City of Pasadena Noise Regulations (Chapter 9.36 of the Municipal Code), except during federal, State, or local emergencies (such as power generators required for emergencies).

City of Pasadena Municipal Code

The City of Pasadena Municipal Code establishes the following applicable standards related to noise.

9.36.070 Construction projects

A. No person shall operate any pile driver, power shovel, pneumatic hammer, derrick power hoist, forklift, cement mixer, or any other similar construction equipment within a residential district or within a radius of 500 feet therefrom at any time other than as listed below:

1. From 7:00 a.m. to 7:00 p.m. Monday through Friday;
2. From 8:00 a.m. to 5:00 p.m. on Saturday;
3. Operation of any of the listed construction is prohibited on Sundays and holidays.

B. No person shall perform any construction or repair work on buildings, structures, or projects within a residential district or within a radius of 500 feet therefrom in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance at any time other than as listed below:

1. From 7:00 a.m. to 7:00 p.m. Monday through Friday;
2. From 8:00 a.m. to 5:00 p.m. on Saturday;
3. Performance of construction or repair work is prohibited on Sundays and holidays.

9.36.080 Construction equipment

It is unlawful for any person to operate any powered construction equipment if the operation of such equipment emits noise at a level in excess of 85 dBA when measured within a radius of 100 feet from such equipment.

9.36.170 Exemptions

A. This chapter is not intended to regulate construction or maintenance and repair activities conducted by public agencies or their contractors necessitated by emergency conditions or deemed necessary by the city to serve the best interests of the public and to protect the public health, safety and welfare. These operations may include, but are not limited to, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic lights, unplugging sewers, vacuuming catch basins, repairing water hydrants and mains, gas lines, oil lines, storm drains, roads, sidewalks, etc.

3.14.4 Significance Criteria

- *NOISE-1: Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*
- *NOISE-2: Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

- *NOISE-3: Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*
- *NOISE-4: Cumulative Impacts*

3.14.5 Methodology

Existing Noise Conditions

To determine the existing noise level environment, noise measurements have been taken in the vicinity of the Proposed Project site. The field survey noted that noise within the Proposed Project area is generally characterized by vehicular traffic on the nearby roadways. The measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment are described in detail in Appendix I.

Modeled Existing Noise Levels

The noise contours of the nearby existing roadway have been calculated in order to provide the existing traffic noise levels. The distances to the 55, 60, 65, and 70 dBA CNEL noise contours were calculated, plus the noise level at the nearest sensitive receptor to the roadway, which was determined from aerial photos of the study area. FHWA Model printouts are provided in Appendix I.

Onsite Construction Equipment Noise

The noise impacts from construction of the Proposed Project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment. From this acquired data the FHWA developed the RCNM, which may be used for the prediction of construction noise.

Construction noise impacts to the nearby sensitive receptors have been calculated according to the FHWA-compiled equipment noise levels and usage factors and through use of the RCNM and the Proposed Project equipment list. For the analysis, equipment usage was placed at the nearest locations to the nearby sensitive receptors, and pieces of equipment were placed 100 feet apart.

Offsite Vehicular Noise

The Proposed Project would require export of material from the Proposed Project site through the use of trucks as well as vehicle trips from workers to the Proposed Project site. In order to quantify the potential noise impacts created and received by the Proposed Project and compare them to the existing noise levels, the existing roadway noise environment was modeled using the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway); the total average daily traffic (ADT) and the percentage of ADT which flows during the day, evening, and night; the travel speed; the vehicle mix on the roadway, which is a percentage of the volume of automobiles, medium trucks, and heavy trucks; the roadway grade; the angle of view of the observer exposed to the

roadway; and site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model. The roadway parameters and ADT volumes used for this study are presented in Appendix I. Only the roadway segments that had sensitive land uses (i.e., residential, school, parks, libraries, and hospitals) and to which the Proposed Project may generate additional vehicular trips were analyzed.

Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of a construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. The approximate vibration levels for particular construction activities found in Appendix I have been used to calculate the potential vibration impacts for the Proposed Project.

3.14.6 Impacts and Mitigation

NOISE-1 *Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.*

Sediment Removal/Reservoir Management

Onsite Construction Equipment Noise

Construction equipment onsite during removal of sediment activities would require the simultaneous operation of four front-end loaders, two bulldozers, one excavator, one water truck, one sorter/crusher, and two tender trucks (for fuel and maintenance). The sediment maintenance activities would require the simultaneous operation of two front-end loaders, one bulldozer, one excavator, one water truck, one sorter/crusher, and two tender trucks (for fuel and maintenance). Since the removal of sediment activities would require a greater amount of equipment, these noise calculations for onsite construction equipment have been based on the equipment list for sediment removal activities.

Noise impacts from onsite construction equipment activities associated with the Proposed Project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. Construction noise impacts to the nearby sensitive receptors are shown below in Table 3.14-5.

Table 3.14-5: Noise Levels of Onsite Construction Equipment at Nearby Sensitive Receptors

Receptor Description	Receptor Jurisdiction	Distance to Receptor (feet)	Construction Noise Levels[1]	
			dBA Leq	dBA L_{max}
Single-Family Home	Pasadena	140	71	73
Single-Family Home	Los Angeles County	180	69	71
JPL Office	La Cañada Flintridge	200	68	70
Hahamongna Watershed Park	Pasadena	20	86	90
La Cañada High School	La Cañada Flintridge	430	63	63
La Cañada Methodist Church	La Cañada Flintridge	500	62	62

Notes:
[1] Lmax is based on the maximum noise from the loudest piece of equipment and the Leq is the average noise from all equipment.
Source: RCNM, Federal Highway Administration, 2006

Table 3.14-5 above shows that construction noise impacts would range from 62 dBA Leq to 86 dBA Leq at the nearby receptors, with the highest noise levels occurring at the portion of Hahamongna Watershed Park adjacent to the west side of the reservoir.

The City of Pasadena and County of Los Angeles exempt public agencies from the Municipal Code noise requirements. The City of La Cañada Flintridge does not provide maximum noise thresholds of construction noise that occurs during the allowed times between Monday through Friday, 7:00 a.m. to 6:00 p.m. Standard Time, and 7:00 a.m. to 7:00 p.m. Daylight Savings Time and on Saturday between 7:00 a.m. and 5:00 p.m. Therefore, the Proposed Project will comply with all local ordinances that apply to sediment removal and reservoir management activities taking place during the allowed hours.

Offsite Vehicular Noise

The sediment removal and reservoir management activities for the Proposed Project would generate up to 425 daily round trips and 200 daily round trips, respectively, from haul trucks. Since activities for removal of sediment would involve a greater number of trips, these offsite vehicular noise calculations have been based on the sediment removal activities.

The haul trucks would export the material from the project site to one of the following sites: Manning Pit, Waste Management Facility, Vulcan Materials Reliance Facility, Scholl Canyon Landfill, Bradley Landfill, Boulevard Pit, Sun Valley Fill Site, or Sheldon Pit.

The California Department of Health has developed the noise compatibility matrix, shown above in Figure 3.14-1: Land Use Compatibility Matrix, that has been adopted by most of the jurisdictions that may be impacted by the Proposed Project's vehicular noise and details normally acceptable noise levels for different land uses that include 60 dB CNEL for single-family homes and 70 dB CNEL for schools, libraries, churches, and parks. Neither the California Department of Health nor any of the local jurisdictions provide any direction for sensitive receptors that already exceed the normally acceptable noise levels for the Without Project condition; however, the Federal Transit Administration (2006), which assesses noise and vibration impacts from transit projects, found that when the ambient noise is between 60 and 64, a noise exposure increase of 2 dB is allowed before a significant impact would occur; when the ambient noise is between 65 and 74 dB Ldn, a noise exposure increase of 1 dB is

allowed before a significant impact would occur; and when the ambient noise exceeds 74 dB Ldn, any increase in noise exposure would create a significant impact.

The potential offsite traffic noise impacts created by the offsite vehicle trips generated from the Proposed Project have been analyzed through utilization of the FHWA Model and parameters described above. The FHWA model calculation printouts are provided in Appendix I. A comparison of the existing conditions to the estimated with-project conditions is provided in Table 3.14-6: Project Traffic Noise Contributions Near Devil's Gate Dam for access to and from the Proposed Project site from I-210.

Table 3.14-6: Project Traffic Noise Contributions Near Devil's Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor[1]			Threshold
		Existing	Existing Plus Route 1A	Project Contribution	
I-210 to Devil's Gate Ingress					
Berkshire Place	East of I-210 northbound ramps[2]	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place[3]	59	59	1	70 dB
Oak Grove Drive	East of Foothill Freeway Overpass[4]	60	60	0	60 dB
Windsor Avenue	North of I-210 northbound ramps[4]	66	66	0	> +1 dB
Devil's Gate Egress to I-210					
Berkshire Place	East of I-210 northbound ramps[2]	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place[3]	59	59	0	70 dB
Oak Grove Drive	East of Foothill Freeway Overpass[4]	60	60	0	60 dB
Windsor Avenue	North of I-210 northbound ramps[4]	66	66	0	> +1 dB

Notes:
[1] Distance to nearest receptor, does not take into account existing noise barriers.
[2] Nearest sensitive receptor is La Cañada High School.
[3] Nearest sensitive receptor is La Cañada United Methodist Church.
[4] Nearest sensitive receptor is residential.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table 3.14-6: Project Traffic Noise Contributions Near Devil's Gate Dam shows that at most, the project's contributions to traffic noise for access to and from the Proposed Project site from I-210 would increase the roadway noise by up to 1 dB. The Proposed Project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard that is not already exceeded under existing conditions. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceeds the normally compatible residential noise standard, the noise level increase from the Proposed Project will be less than a 1-dB increase. In order to be considered significant, the noise level increase would need to be greater than a 1-dB increase. Therefore, roadway noise impacts would be less than significant for access to and from the Proposed Project site from I-210.

A comparison of the existing conditions to the estimated with-project conditions is provided in Table 3.14-7 for access to and from Manning Pit SPS.

Table 3.14-7: Project Traffic Noise Contributions to/from Manning Pit SPS

Roadway	Segment	dBA CNEL at Nearest Receptor[1]			Threshold
		Existing	Existing Plus Route 2A	Project Contribution	
I-210 Manning Pit SPS					
Vincent Avenue	South of Gladstone Street[3]	65	66	1	> +1 dB
Vincent Avenue	South of Arrow Highway[3]	67	67	0	> +1 dB
Arrow Highway	East of Vincent Avenue[3]	69	70	1	> +1 dB
Arrow Highway	East of Lark Ellen Avenue[3]	69	70	1	> +1 dB
Arrow Highway	East of Enid Avenue[2]	70	70	0	70 dB
Azusa Avenue	North of Arrow Highway[3]	69	69	0	> +1 dB
Azusa Avenue	North of Gladstone Street[3]	66	66	0	> +1 dB

Notes:
[1] Distance to nearest residential or school use, does not take into account existing noise barriers.
[2] Nearest sensitive receptor is Gladstone High School.
[3] Nearest sensitive receptor is residential.
The haul routes to Waste Management Facility and Vulcan Materials Reliance Facility will not travel by any sensitive receptors and therefore have not been analyzed.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table 3.14-7 shows that at most, the project's contributions to traffic noise associated with travel to and from Manning Pit SPS would increase the roadway noise by up to 1 dB. The Proposed Project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard that did not already exceed the standards for existing conditions. The roadway segments of Vincent Avenue south of Gladstone Street, Vincent Avenue south of Arrow Highway, Arrow Highway east of Vincent Avenue, Arrow Highway east of Lark Ellen Avenue, Azusa Avenue north of Arrow Highway, and Azusa Avenue north of Gladstone Street all currently exceed the normally compatible residential noise standard with noise levels that range between 65 and 69 dB CNEL. The noise level increase from the Proposed Project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant for these roadway segments. Roadway noise impacts would be less than significant for travel to and from Manning Pit SPS. Travel from I-210 to the Waste Management Facility via Irwindale Avenue and Gladstone Street and Vulcan Materials Reliance Facility via Irwindale Avenue would not pass by any noise sensitive land use and noise impacts will be less than significant.

A comparison of the existing conditions to the estimated with-project conditions is provided in Table 3.14-8 for access to and from the Scholl Canyon Landfill.

Table 3.14-8: Project Traffic Noise Contributions to/from Scholl Canyon Landfill

Roadway	Segment	dBA CNEL at Nearest Receptor[1]			Threshold
		Existing	Existing Plus Route 4A	Project Contribution	
Scholl Canyon Road	North of SR-134 Westbound Ramps[2]	54	60	6	60 dB
Figueroa Street	South of Eagle Vista Drive[3]	63	64	1	70 dB

Notes:
[1] Distance to nearest receptor, does not take into account existing noise barriers.
[2] Nearest sensitive receptor is residential.
[3] Nearest sensitive receptor is Eagle Rock Recreation Center.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table 3.14-8 shows that at most, the project traffic noise contributions to and from Scholl Canyon Landfill would increase the roadway noise by up to 6 dB. The Proposed Project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with-project condition that did not already exceed the standards for the without-project condition. Roadway noise impacts would be less than significant for access to and from Scholl Canyon Landfill.

A comparison of the existing conditions to the estimated with-project conditions is provided in Table 3.14-9 for access to and from Sheldon Pit, Sun Valley Fill Site, and Bradley Landfill.

Table 3.14-9: Project Traffic Noise Contributions to/from Sheldon Pit, Sun Valley Fill Site, and Bradley Landfill

Roadway	Segment	dBA CNEL at Nearest Receptor[1]			Threshold
		Existing	Existing Plus Route 5A	Project Contribution	
Foothill Boulevard	South of I-210 Westbound Ramps[2]	62	63	1	> +2 dB
Osborne Street	West of Foothill Boulevard[3]	65	66	1	70 dB
Glenoaks Boulevard	South of Osborne Street[2]	69	69	0	> +1 dB

Notes:
[1] Distance to nearest receptor, does not take into account existing noise barriers.
[2] Nearest sensitive receptor is residential.
[3] Nearest sensitive receptor is Pacoima Youth Athletic Foundation (park use).
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table 3.14-9 shows that at most, the project's contributions to traffic noise from travel to and from Sheldon Pit, Sun Valley Fill Site, and Bradley Landfill would increase the roadway noise by up to 1 dB. The Proposed Project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard that did not already exceed the standards for existing conditions. The roadway segment of Foothill Boulevard south of the I-210 westbound ramps currently exceeds the normally compatible residential noise standard with an existing noise level of 62 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. The roadway segment of Glenoaks Boulevard south of Osborne Street currently exceeds the normally compatible residential noise standard with an existing noise level of 69 dBA CNEL, which allows for a project increase of greater

than 1 dB before it is considered significant. Roadway noise impacts would be less than significant for travel to and from Sheldon Pit, Sun Valley Fill Site, and Bradley Landfill.

A comparison of the existing conditions to the estimated with-project conditions is provided in Table 3.14-10 for access to and from Boulevard Pit SPS.

Table 3.14-10: Project Traffic Noise Contributions to/from Boulevard Pit SPS

Roadway	Segment	dBA CNEL at Nearest Receptor[1]			Threshold
		Existing	Existing Plus Route 8A	Project Contribution	
Branford Street	East of Laurel Canyon Boulevard[3]	64	65	1	> +1 dB
Branford Street	West of Laurel Canyon Boulevard[3]	63	63	0	> +2 dB

Notes:
[1] Distance to nearest receptor, does not take into account existing noise barriers.
[2] Nearest sensitive receptor is residential.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table 3.14-10 shows that at most, the project's contributions to traffic noise from travel to and from Boulevard Pit SPS would increase the roadway noise by up to 1 dB. The Proposed Project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard that did not already exceed the standards for existing conditions. Both analyzed roadway segments currently exceed the normally compatible residential noise standard with existing noise levels that range between 63 and 64 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. Roadway noise impacts would be less than significant for travel to and from Boulevard Pit SPS.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

The Proposed Project will comply with all local noise ordinances, and roadway noise impacts will be less than significant.

NOISE-2 *Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.*

Sediment Removal/Reservoir Management

Onsite Construction Equipment Vibration Impacts

Vibration impacts primarily occur in structures where people are sitting or lying down and are more sensitive to vibration in these positions. The primary source of vibration during construction would be from the onsite operation of a bulldozer. Impacts from onsite equipment vibration to nearby sensitive receptors have been calculated through use of typical vibration propagation rates, and the vibration levels for a bulldozer are shown below in Table 3.14-11.

Table 3.14-11: Vibration Impacts of Onsite Construction Equipment at Nearby Sensitive Receptors

Receptor Description	Receptor Jurisdiction	Distance to Receptor (feet)	Maximum Vibration Level Peak Particle Velocity inch/second
Single-Family Home	Pasadena	140	0.013
Single-Family Home	Los Angeles County	180	0.010
JPL Office	La Cañada Flintridge	200	0.009
La Cañada High School	La Cañada Flintridge	430	0.004
La Cañada Methodist Church	La Cañada Flintridge	500	0.003
County of Los Angeles Vibration Standard			0.01

Notes: Based on vibration levels for a large bulldozer and vibration propagation rates detailed in Caltrans, 2004.

Table 3.14-11 above shows that vibration impacts from onsite construction equipment would range from 0.003 to 0.013-inch-per-second peak particle velocity. Since the Cities of Pasadena and La Cañada Flintridge do not provide vibration standards, the County of Los Angeles vibration standards have been used to analyze the vibration impacts to all nearby sensitive receptors. Table 3.14-11 shows that only the nearby single-family homes in the City of Pasadena would experience vibration levels that would exceed the 0.01-inch-per-second vibration standard. This would be considered a significant impact.

Mitigation Measure MM N-1 is provided that would restrict the use of large bulldozers and other large equipment (greater than 200 horsepower) from operating within 180 feet of any offsite residential structure. Equipment that is not performing any earth-moving activities and is solely operating for entering or leaving the site via the access roads to the reservoir is exempted from this requirement. Through implementation of Mitigation Measure MM N-1, the onsite construction equipment vibration impacts to nearby sensitive receptors would be reduced to less than significant.

Offsite Truck Operations Vibration Impacts

Although considerable data is available on the vibration levels created by construction equipment and trucks operating on dirt roads at construction sites, relatively little quantitative data exists on vibration impacts from trucks operating on paved roads, which produce much lower vibration levels than dirt roads due to their smoother surfaces and compacted road bases. The City of Concord, California, did a comprehensive survey of the vibration impacts from the city's major roadways and freeways and found that the roadways create vibration levels up to 64 VdB at 20 feet or 0.003-inch-per-second peak particle velocity. The nearest sensitive receptors to the roadways would be single-family homes as close as 50 feet to the roadways travelled by Proposed Project trucks. Based on typical vibration propagation rates, the vibration level at the nearest homes would be 0.001-inch-per-second peak particle velocity, which is within the County of Los Angeles 0.01-inch-per-second vibration standard. Impacts would be less than significant.

Mitigation Measures

MM N-1: The LACFCD shall restrict the operation of any off-road construction equipment that is powered by a greater than 200-horsepower engine from operating within 180 feet of any offsite residential structure. Equipment that is not performing any earth-moving activities and is solely

operating for entering or leaving the site via the access roads to the reservoir is exempted from this requirement.

Residual Impacts After Mitigation

Through implementation of Mitigation Measure MM N-1, the onsite construction equipment vibration impacts to nearby sensitive receptors would be reduced to less than significant.

NOISE-3 *Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.*

Sediment Removal/Reservoir Management

The Proposed Project would not create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above noise levels existing without the Proposed Project. For this analysis, both the sediment removal activities and reservoir management activities have been considered as temporary activities, since they would occur only for limited durations of time. The construction activities associated with the removal of the sediment may create temporary onsite noise impacts from the operation of construction equipment as well offsite noise impacts from the use of haul trucks to export material offsite.

Onsite Construction Equipment Noise

The analysis above found that the onsite equipment that would be operated during the removal of sediment would not exceed any construction noise standards at the nearby sensitive receptors. Therefore, any temporary noise level increase from onsite construction noise would be less than significant.

Offsite Vehicular Noise

The sediment removal activities for the Proposed Project would generate up to 425 daily round trips from haul trucks and up to 17 daily round trips from workers commuting to the project site. The analysis above found that the offsite vehicular trips would not create an exceedance of the normally acceptable noise standards for nearby sensitive land uses for locations that do not already exceed the standards for existing conditions. The analysis also found that for the locations that currently exceed the normally acceptable noise standard, the Proposed Project noise contribution to these roadway segments would be within the Federal Transit Administration's allowable noise exposure increase levels. Therefore, the temporary noise level increase created from offsite vehicular noise impacts would result in a less than significant impact.

Mitigation Measures

No mitigation measures are necessary.

Residual Impacts After Mitigation

Temporary noise level increase from onsite construction noise and offsite vehicular noise would be less than significant.

NOISE-4 Cumulative Impacts

Onsite Construction Equipment Noise

Cumulatively, the Proposed Project would not be expected to incrementally add to the noise levels during construction of most of the cumulative projects, as they are either not going to coincide with the Proposed Project with respect to construction phasing or worst-case construction noise levels would be separated by enough distance not to cumulatively add to one another. If the construction phasing of the Hahamongna Watershed Park MBMU Project and the Arroyo Seco Canyon Project occur at the same time as the Proposed Project, a cumulative increase in vibration impacts could occur to nearby sensitive receptors. Through implementation of Mitigation Measure MM N-1, the Proposed Project's contribution to temporary cumulative noise vibration level increase from onsite construction equipment would be reduced to less than significant.

Offsite Vehicular Noise

The offsite vehicular noise analysis is based on the traffic impact analysis, which took future projects into account during traffic modeling and, therefore, is cumulative in nature. The Project Year 2014 Model included the following projects:

- Hahamongna Watershed Park Multi-Benefit/Multi-Use (MBMU) Project
- National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory (JPL) On-Site Parking Structure
- Temporary Use of the Rose Bowl Stadium by the National Football League (NFL)
- Azusa Material Recovery Facility and Waste Transfer Station Project
- Metro Gold Line Foothill Extension
- Arroyo Seco Canyon Project

The Project Year 2014 Model also included an annual increase factor of 4.5 percent, totaling 9 percent for 2 years. This is a conservative estimated growth factor to account for any construction improvements and cumulative projects expected to occur in the surrounding area up to 2014. As shown above, no significant impacts are expected with offsite noise impacts.

Mitigation Measures

See Mitigation Measure **MM N-1**.

Residual Impacts After Mitigation

With implementation of Mitigation Measure MM N-1, the Proposed Project's contribution to cumulative vibration impacts to nearby sensitive receptors would be less than significant.

3.15 RECREATION/PUBLIC SERVICES

3.15.1 Introduction

This section provides an overview of the recreational resources, including recreational resources associated with public services, in the vicinity of Devil's Gate Reservoir and evaluates potential impacts that could result from Proposed Project implementation. Recreational resources include facilities developed for recreation, such as designated parks, trails, and picnic areas, as well as land where dispersed recreational activities such as hiking, biking, horseback riding, and bird-watching/nature walks, etc. may take place. This section focuses on temporary and indirect impacts, as well as long-term impacts to recreational resources as a result of the implementation of the Proposed Project.

As noted in the Initial Study (Appendix A), impacts associated with fire protection, police protection, schools, and other public facilities were found to have less than significant impacts and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.15.2 Existing Environmental Setting

Project Site and Immediate Surroundings

Numerous recreational facilities are found in the vicinity of the Proposed Project site (See Figure 3.15-1: Area Recreational Facilities). The Proposed Project site is located within the Hahamongna Watershed Park. Due to the recreational opportunities in the surrounding area, the Proposed Project site is also used as an unofficial recreation area. Common recreational activities that occur within the reservoir include hiking, biking, horseback riding, bird-watching, and nature walks. These activities also involve the trails adjacent to but not within the reservoir. Outside of its main purpose of flood control, the use of the reservoir as an unofficial recreation area is dependent on safety, weather, and seasonal conditions as the reservoir receives natural storm inflows and holds water for flood control purposes.

Hahamongna Watershed Park

Hahamongna Watershed Park is approximately 300 acres of parkland and open space located at the base of Arroyo Seco Canyon, in the floodplain behind Devil's Gate Dam. The park includes areas within and adjacent to the project site.

The Oak Grove Area of Hahamongna Watershed Park

Hahamongna Watershed Park includes the Oak Grove area of Hahamongna Watershed Park, which contains picnic facilities, restrooms, an equestrian staging area, a disc golf course, and a sports field used for informal recreation activities. Access to the Oak Grove area of Hahamongna Watershed Park is provided at the main park entrance at the intersection of Foothill Boulevard and Oak Grove Drive (City of Pasadena 2012b).

Oak Grove Disc Golf Course

The Oak Grove Disc Golf Course is located in Hahamongna Watershed Park west of the Proposed Project site. The course was established in 1975 and hosts 18+ holes. The Oak Grove Disc Golf Course was the first permanent disc golf course established in the world and is recognized by the Professional Disc Golf Association.

Park Trails

Approximately six trails for pedestrian, bicycle, and equestrian use are adjacent to the Proposed Project site (see Figure 3.15-2: Devil's Gate Area Trails) (City of Pasadena 2013). These include:

Altadena Crest Trail

The Altadena Crest Trail is located in the northern part of Hahamongna Watershed Park and provides access to the park from the community of Altadena. This trail is currently restricted to equestrian and hiking use only.

Arroyo Seco (Rim of the Valley) Trail

The Arroyo Seco Trail, a portion of the Rim of the Valley Trail, links all three sections of the Arroyo Seco together. This trail travels in a parallel fashion along both sides of the arroyo. The trail is currently restricted to equestrian and hiking use only.

Flint Wash (Rim of the Valley) Trail

The Flint Wash Trail, a portion of the Rim of the Valley Trail, begins at the southwest corner of Hahamongna Watershed Park at the confluence of Flint Wash and Devil's Gate Reservoir.

Gabrielino Trail

The Gabrielino Trail is a regional trail that begins at the intersection of Windsor Avenue and Ventura Street. The trail lies along the east boundary of Hahamongna Watershed Park north of Ventura Street. USFS has designated this trail as a multi-use trail for equestrians, hikers, and bicycles.

Gould Canyon Trail

The Gould Canyon trailhead is located just west of Hahamongna Watershed Park and connects to the La Cañada Flintridge trail system.

West Rim Trail

Internal to the park, the West Rim Trail leads north from the Flint Wash trailhead connection to the Equestrian Staging Area and the upper terrace picnic area.

Maintenance Roads

Maintenance roads within the basin are used by the LACFCD, Southern California Edison (SCE), and the City of Pasadena, among others, for operations and maintenance of Devil's Gate Reservoir and other

facilities in the area. These roads are used as unofficial trails when reservoir water levels and conditions permit.

Recreation Uses

Hahamongna Watershed Park Use

Hahamongna Watershed Park is used by individuals and organized groups. Organized groups known to frequent the area include:

Disc Golfers

Approximately 750 disc golfers use the Oak Grove Disk Golf Course each week, with a majority of the use being on the weekends. The course is used the most during the fall and spring months, with fewer users in the summer due to the dry and hot conditions. Disc golfers bring their own equipment to the course, as rental equipment is not available at this time. In addition, the Oak Grove Disc Golf Club offers both monthly and weekly tournaments, with the monthly tournament held the third Sunday of each month and weekly tournaments occurring each Tuesday and Wednesday. Other disc golf courses in the area include Verdugo Hills Disc Golf Course approximately 6.1 miles northwest, DeBell Disc Golf Course approximately 7.2 miles west, and Chavez Ridge Disc Golf Course approximately 8.5 miles southwest of the Oak Grove Disc Golf Course (Oak Grove Disc Golf Club 2012).

Tom Sawyer Camp

The Tom Sawyer Camp utilizes the Hahamongna Watershed Park as a summer day camp for youth ages 3 to 14 years old. It offers year-round horseback riding lessons, typically on the weekends, provided by the Rose Bowl Riders organization, also based within the park. The camp's main use is primarily during a 10-week period from June to August, Monday through Friday, from 7:30 a.m. to 6:00 p.m. of each year. During the summer, Tom Sawyer Camp offers its facility to approximately 1,200 campers. The camp has a staff of approximately 200 and has 45 vans to transport members. Weekly riding lessons, on average, include approximately 30 children and adults. The camp is based out of Hahamongna Watershed Park, and 90 percent of all activities take place within the park (Tom Sawyer Camp 2012).

Rose Bowl Riders

Rose Bowl Riders is a non-profit/all-volunteer organization that is based out of Hahamongna Watershed Park. The organization provides horseback riding, riding lessons, boarding, horseshows, a horsemanship clinic (open to the public), and additional membership activities. The organization has over 200 members of all ages, including a small special-needs population. Rose Bowl Riders utilizes Hahamongna Watershed Park recreational area year-round on a daily basis, primarily on weekday mornings and afternoons, and throughout the day on the weekends. Rose Bowl Riders is located in the northwest section of Hahamongna Watershed Park on approximately 12 acres of land. While Rose Bowl Riders' activities revolve around the Hahamongna Watershed Park area, currently two alternative sites where members can ride, train, board horses, and park trailers are located within a 15-mile radius. The San Pascual Stables are located approximately 6.5 miles south, and Griffith Park is approximately 14 miles southwest of Hahamongna Watershed Park (Rose Bowl Riders 2012).

Pasadena Audubon Society

The Pasadena Audubon Society is a Southern California Chapter of the National Audubon Society. Their mission is to bring an interest in birds to the community through birding, education, and the conservation of bird habitats. The organization provides several bird walks a month, programs, and birding classes to its members, which number approximately 1,400. Roughly 20 members visit Hahamongna Watershed Park on a weekly basis. Birds use the Hahamongna area as a migration, resting, and feeding place year-round (Pasadena Audubon Society 2012). An additional 30 members use the area a few times a month, while approximately 100 members attend the beginners' walk provided once a month. The Audubon Society holds official walks from September through June, but individuals bird-watch year-round. The monthly bird walks are held the first Saturday of each month in the morning.

Many additional bird-watching areas are located around Pasadena and surrounding areas with easy access to a variety of habitats (Pasadena Audubon Society website 2013). These include the following:

- Upper Arroyo Seco - Shaded canyon with live oaks, white alders, and a permanent stream.
- Lower Arroyo Park - Narrow canyon (corridor) with oaks, sycamores, and chaparral shrubs and a permanent stream. Good for sparrows in fall and winter. Swifts and swallows nest under the bridge.
- Eaton Canyon Natural Area - Birding around the Nature Center, large oak terrace, some water in the stream.
- Las Flores Canyon And The Cobb Estate - The shade of the oaks in the canyon and the thickets and trees of the Cobb Estate.
- Huntington Library And Botanical Gardens - Extensive garden plantings attract many species of birds.
- Almansor Park - Wood ducks year round, a variety of waders when the water level is not too high, and grazing waterfowl and gulls in winter.
- Switzer Picnic Area – Variety of birds in one location with mountain birds, riparian birds, chaparral birds, and oak woodland birds.
- Santa Anita Canyon – Riparian and chaparral birds found in habitat consisting of a stream with alders and oaks. Black swift and American dipper are found here.
- Santa Fe Dam Recreational Area – Alluvial coastal scrub habitat with paved walkways around the lake and raptors present in the winter months.

<u>City of Pasadena, Recreation Department</u>

The City of Pasadena's Recreation Department maintains a large portion of Hahamongna Watershed Park. In calendar year 2010, approximately 10,200 visitors came to Hahamongna Watershed Park to utilize the sports and recreational facilities available by permit through the City. These included sporting events and tournaments, City special events, picnics, and equine-related clinics and shows. Certain sporting activities, such as disc golf, softball, youth soccer, hiking, horseback riding, and bicycling, are

conducted on a daily basis at Hahamongna Watershed Park. Various camping and picnicking areas are also utilized throughout the year on a daily basis. Other events, such as use of the Amphitheater and the Environmental Education Center, generally occur once a year or as needed (City of Pasadena 2012d).

Area Recreational Facilities

Other recreational facilities in the surrounding area include Brookside Golf Course, Brookside Park, Charles White Park, and Loma Alta Park, among others (see Table 3.15-1 below) (City of Pasadena Dept. of Public Works website 2012; Google Earth 2012).

Table 3.15-1: Area Recreational Facilities

Recreational Facilities	Onsite Activities	Approximate Driving Distance from Proposed Project Site
Angeles National Forest	Multiple hiking and camping opportunities	5.8 miles
Annandale Golf Course	A private golf course	4.9 miles
Brenner Park	Basketball court, picnic shelter, ball field, playground equipment, restroom facilities, tennis court, athletic field with lighting, and an open field	3.3 miles
Brookside Fitness Trail	14-station exercise trail	4.2 miles
Brookside Golf Course	Two golf courses with a combined 36 holes	2.7 miles
Brookside Park	Baseball diamond, softball fields, tennis courts, two playgrounds, picnic areas, fitness trail, and bleacher seating	4.2 miles
Central Park	Horseshoe pits, lawn bowling, open area, playground equipment, walkway lighting, and restroom facilities	4.8 miles
Charles White Park	Multipurpose field, walking path, fitness zone, picnic area, children's play area, and a recreation office	3.1 miles
Chevy Chase Country Club	A private country club with golf, swimming, and banquet facilities	3.3 miles
Eagle Rock Hillside Park	Park with playground area	9.1 miles
Eagle Rock Recreation Center	Auditorium, barbecue pits, baseball diamond (lighted/unlighted), basketball courts (lighted/indoor, unlighted/outdoor), children's play area, football field (unlighted), indoor gym (without weights), picnic tables, tennis courts (unlighted).	5.9 miles
Emerald Isle Park	Basketball court, children's play area, two tennis courts, and picnic area	2.8 miles
Jackie Robinson Park	Basketball courts, open field, softball diamond, roller skating rink, picnic area, swimming pool, gymnasium, recreational room, lounge, game area, meeting room, and a kitchen	3.7 miles
Kidspace Children's Museum	Museum comprised of exhibits and programs for children 12 and under	3.7 miles

Table 3.15-1: Area Recreational Facilities

Recreational Facilities	Onsite Activities	Approximate Driving Distance from Proposed Project Site
La Cañada Flintridge Country Club	A members-only country club that provides recreational opportunities including golf, tennis, swimming, and fitness rooms, among other recreational facilities.	4.2 miles
La Pintoresca Park	Basketball court, skate area, picnic tables, playground area, and a water park	3.2 miles
Loma Alta Park	Basketball and tennis courts, lighted baseball fields, gymnasium, swimming pool, picnic areas, multipurpose facility, community garden, play areas, equestrian ring, computer lab, and an indoor kitchen	3.6 miles
Lower Arroyo Park	Natural park, fly-casting pond and clubhouse, archery range and clubhouse, a system of rubble walls that retain the slopes and help define paths, multi-use trails, the La Casita del Arroyo community center, the Aids Memorial Grove, and several promontory outlook points such as the Bird Sanctuary	4.3 miles
Memorial Park	Large open lawn space, separate playgrounds for toddlers (covered) and older children, picnic tables, hillside walkway, gazebo with bandstand, restrooms; and memorials to the city's military veterans, placed on the base of the gazebo	2.5 miles
Olberz Park	Large, open lawn space	2.4 miles
Pasadena Memorial Park	Various memorials, amphitheater, play equipment, open area, and restroom facilities	4.5 miles
Rose Bowl Aquatics Center	Two Olympic size pools, warm water pool, diving platforms, hydro spa, exercise room, two conference rooms, clubhouse, lockers, showers, and a pro shop	4.2 miles
Rose Bowl Stadium	Facility used to accommodate football games, concerts, religious services, celebrations, and a flea market	3.0 miles
San Rafael Park	Play park equipment, open area	6.1 miles
Scholl Canyon Golf Course	Golf course, tennis, club, banquet facilities, and clubhouse	10.1 miles
Scholl Canyon Park	Children's play area, picnic areas, special facilities	8.9 miles

Table 3.15-1: Area Recreational Facilities

Recreational Facilities	Onsite Activities	Approximate Driving Distance from Proposed Project Site
Villa Parke	Large auditorium with stage and storage area, social/recreation room, weight room, boxing room, teen facility meeting rooms, senior room, several small meeting rooms, two kitchens, lounge, and a gymnasium with showers and dressing rooms. Recreation activities include a complete aerobics program, self-defense (Jujitsu), arts and crafts, seasonal sports leagues, a unique Summer Enrichment Day Camp, and the City's largest youth soccer program	4.5 miles

Brookside Fitness Trail

The Brookside Fitness Trail is located in Brookside Park, south of the Proposed Project site. The trail provides a 2/3-mile loop with 14 fitness stations targeting stretching, balancing, coordination, and strength-building exercises (City of Pasadena Department of Public Works website 2012).

Brookside Golf Course

The Brookside Golf Course is located in the central portion of the Arroyo Seco, south of the Proposed Project site in the City of Pasadena. The course opened in 1928 shortly after the construction of the Rose Bowl and is presently a public course that contains two courses with a total of 36 holes. The Arroyo Seco Channel runs through the golf course, and the course is immediately to the north of the Rose Bowl Stadium. The course is open only during daytime hours, and golfers must reserve a tee time prior to arriving at the course. The Brookside Golf Course has hosted major golf championships including the Los Angeles Open, among others (American Golf website 2012). In addition, a pathway around the golf course and other nearby facilities provides a pathway for runners and bicyclists to use.

Brookside Park

Brookside Park is located in the central portion of the Arroyo Seco, south of the Proposed Project site in the City of Pasadena. The park consists of approximately 62 acres with amenities including historic Jackie Robinson Baseball Stadium, softball fields, tennis courts, two playgrounds, picnic facilities, a fitness trail, bleacher seating, and restrooms. The Rose Bowl Aquatics Center and Kidspace Children's Museum are also located within the park (City of Pasadena Department of Public Works website 2012).

Charles White Park

Charles White Park is located east of the Proposed Project site in the community of Altadena. The park is located on 5 acres of land with facilities including a multipurpose field, a walking path, a fitness zone, picnic and barbeque areas, two children's play areas, restrooms, and a recreation office (Los Angeles County Parks and Recreation website 2012).

Jackie Robinson Park

Jackie Robinson Park is located southeast of the Proposed Project site in the City of Pasadena. The park is located on 7 acres of land with facilities includes four basketballs courts, an open field, two softball diamonds, a roller skating rink, a picnic area, restrooms, and drinking fountains. Robinson Park Center is also located on the site with facilities including a swimming pool, gymnasium, social recreational room, lounge, game area, meeting room, kitchen, music room, restrooms, and drinking fountains (City of Pasadena Department of Public Works website 2012).

Kidspace Children's Museum

The Kidspace Children's Museum is located in Brookside Park, south of the Proposed Project site. The museum is housed in the former Fanny Morrison Horticultural Center and offers exhibits and programs developed especially for children under the age of 12 (Kidspace Museum website 2012).

La Pintoresca Park

La Pintoresca Park is located southeast of the Proposed Project site in the City of Pasadena. The park is located on 2.9 acres of land with facilities including a basketball court, skate area, picnic tables, playground area, a water park, restrooms, and drinking fountains (City of Pasadena Department of Public Works website 2012).

Loma Alta Park

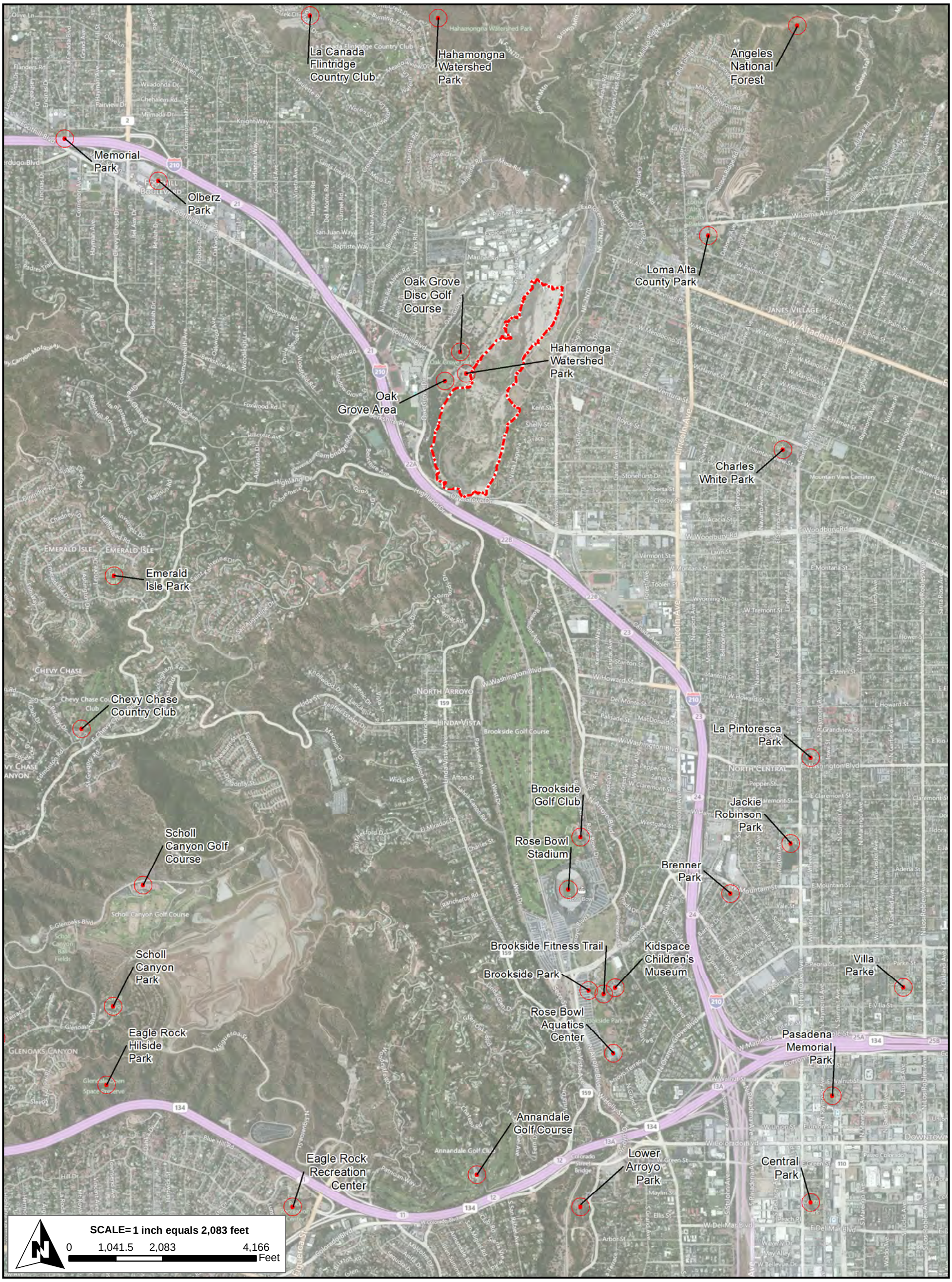
Loma Alta Park is located northeast of the Proposed Project site in the community of Altadena. The park is located on 7.33 acres of land with facilities including two outdoor basketball courts, tennis courts, a lighted baseball diamond, a gymnasium, a swimming pool, picnic areas, a community building with multi-purpose rooms, a community garden, two play areas, an equestrian ring, a computer lab, and an indoor kitchen (Los Angeles County Parks and Recreation website 2012).

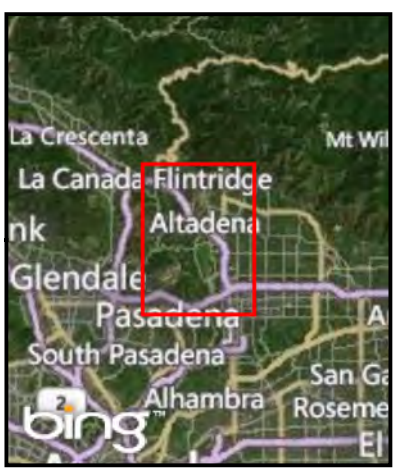
Rose Bowl Aquatics Center

The Rose Bowl Aquatics Center is located in Brookside Park, south of the Proposed Project site. The center hosts two Olympic-size pools, one 55,000-gallon warm-water pool, diving platforms, two hydro spas, a weight and exercise room, two large conference rooms, and a clubhouse building with locker rooms, showers, pro shop, and administrative offices (Rose Bowl Aquatics website 2012).

Rose Bowl Stadium

The Rose Bowl Stadium is a National Historic Landmark located south of the Proposed Project site located in the central portion of the Arroyo Seco in the City of Pasadena. The stadium was built in 1922 to accommodate patrons who wished to see football games. Today the stadium has an official seating capacity of 92,542 and is known for the New Year's Day college football game held after the Rose Parade. The Rose Bowl hosts all the University of California, Los Angeles (UCLA) home college football games, in addition to hosting NFL Super Bowl Games, Olympic and World Cup Soccer matches, concerts, religious services, Fourth of July Celebrations, and the world's largest flea market (Rose Bowl Stadium 2012).





Recreational Facilities

Proposed Project Boundary

Figure 3.15-1
Devil's Gate Area
Recreational Facilities

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Devil's Gate Excavation Limit

Existing Trails

- Altadena Crest Trail
- Arroyo Seco Trail
- Flint Wash Trail
- Gabrielino Trail
- Gould Canyon Trail
- West Rim Trail

Figure 3.15-2
Devil's Gate Area Designated Trails

Version Date: 10/5/2013

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\\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.15-2 Devil's Gate Area Designated Trails.mxd

3.15.3 Applicable Regulations

LACFCD

Through easements granted in May of 1919 and March of 1965, the City of Pasadena granted the LACFCD, under a perpetual easement, the right to construct, reconstruct, inspect, maintain, repair, and operate Devil's Gate Dam, its spillway, bypasses, tunnels, and other support facilities as may be necessary for the construction and maintenance of a reservoir capable of impounding the waters of the Arroyo Seco for purposes of storage and control and to control such waters as may be necessary in the prevention of damage by flood (City of Pasadena 1919/1965).

City of Pasadena General Plan

The City of Pasadena is the landowner of the project site. The Proposed Project site has a General Plan Land Use designation of Open Space and is zoned as Open Space (OS). "Open Space" is defined as follows: "This category is for a variety of active and passive public recreational facilities and for City-owned open space facilities. This includes natural open spaces and areas which have been designated as environmentally and ecologically significant. This category also applies to land which is publicly owned, though in some instances public access may be restricted. Most importantly, this designation only applies to lands owned by the City."

The City of Pasadena General Plan Objectives and Policies pertaining to the Proposed Project are outlined below.

- OBJECTIVE 9 – Open Space Preservation And Acquisition: Preserve and acquire open space in Pasadena in order to enhance the quality of Pasadena life.
- Policy 9.1 – Open Space Corridors: Development of open space corridors, easement and acquisition programs, and trails shall be established where feasible.
- Policy 9.2 – Arroyo Seco: Continue and complete comprehensive planning for, and implementation of, plans for the Arroyo, including restoration of the natural area of the Lower Arroyo and the development of the Hahamongna Watershed Park Plan.
- Policy 9.4 – Adequate Open Space: Provide an adequate total quantity and equitable distribution of public or publicly accessible open spaces throughout the City.
- Policy 9.5 – Stewardship of the Natural Environment: Encourage and promote the stewardship of Pasadena's natural environment, including water conservation, clean air, natural open space protection, and recycling. Encourage the use of native, water conserving, and regionally appropriate landscaping.

The General Plan Update Open Space and Conservation Element (City of Pasadena 2012c), provides a blueprint for natural open space and conservation. Implementation Measures found in this Element pertaining to the Proposed Project are outlined below.

- Protect Existing Open Space: Continue to preserve and restore the Arroyo Seco and Eaton Canyon.

- Zoning Changes: Protect the existing natural open space within the Hahamongna Watershed Park Master Plan area.

City of Pasadena Zoning Code

The Proposed Project site is zoned as Open Space (OS). As described in Section 17.26.020(A) of the City's Zoning Code, "The OS district is applied to sites with open space, parks, and recreational facilities of a landscaped, open character having a minimum contiguous site area of two acres. The OS zoning district is consistent with and implements the Open Space land use designation of the General Plan." Section 17.26.030 of the Code specifies that public safety facilities uses meet the intent of the OS zone and are conditionally allowed uses in the OS zone.

Hahamongna Watershed Park Master Plan

The Proposed Project site is also within the Hahamongna Watershed Park Master Plan (HWPMP 2003) area. Applicable Goals and Objectives of the HWPMP include the following:

Goal 1: Preserve, restore, and enhance the native habitats.

Goal 2: The Devil's Gate flood control basin will be managed to provide protection to the developed and natural downstream areas.

Objectives:

- *Facilitate the dam and reservoir maintenance operations in a manner that is compatible with the proposed features of the Master Plan and will result in minimal impacts to the surrounding area.*
- *Maintain or improve the flood capacity behind Devil's Gate Dam.*
- *Develop a sediment removal plan that minimizes the impact to the basin and to the surrounding neighborhoods.*
- *Develop a grading plan that allows habitat restoration and recreational activities to coexist with flood management and water conservation.*
- *Develop a multi-agency task force to review maintenance, sediment removal, dam operation, permit, and liability issues on a continual basis after this plan is adopted.*

Goal 5: Enrich and promote the unique history and culture of Hahamongna Watershed Park.

Objectives:

- *Develop design guidelines to ensure aesthetic compatibility and quality construction for any improvements made within Hahamongna Watershed Park.*

Goal 6: Provide a safe and secure park.

Objectives:

- *Develop guidelines and delegate agency responsibilities for recreation, flood management, and water conservation liabilities.*

3.15.4 Significance Criteria

- *RECREATION-1: Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*
- *RECREATION-2: Would the project include recreational facilities or require the construction or expansion of existing recreational facilities which might have an adverse physical effect on the environment?*
- *PUBLIC SERVICES-1: Would the project result in substantial adverse impacts associated with the provision of or need for new or physically altered recreational facilities, the construction of which could cause significant environmental impacts?*
- *RECREATION-3: Cumulative Impacts*

3.15.5 Methodology

The City of Pasadena General Plan and the Hahamongna Watershed Park Master Plan were utilized to aid in the development of this analysis. Interviews with several individuals associated with various recreational activities that take place in and around the Proposed Project site also provided information for this analysis. Additionally, site visits were conducted, and aerial and topographic maps were examined to determine existing recreational uses.

3.15.6 Impacts and Mitigation

RECREATION-1 *Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.*

The Proposed Project will not result in the construction of new residences or facilitate the development of residences, or result in an increase in area population. Therefore, implementation of the Proposed Project will not result in increased use or the physical deterioration associated with increased use for neighborhood or regional parks or other recreational facilities due to any increases in area population.

Sediment Removal Impacts

Proposed Project sediment removal will occur over the course of five years. It involves clearing plants and vegetation in the configuration footprint followed by the large-scale removal of accumulated sediment and trucking the sediment offsite. During project sediment removal, most of the Proposed Project site will be closed to public use from the dam face to the edge of the Proposed Project's excavation limit boundaries (see Figure 2.1-1: Proposed Project Location and Vicinity Map). Maintenance roads within the basin are used by the LACFCD, Southern California Edison (SCE), and the City of Pasadena, among others, for operations and maintenance of Devil's Gate Reservoir and other

facilities in the area. The majority of the maintenance roads will be closed during sediment removal; however these roads are not officially designated for recreational uses and are often not available for unofficial recreation use due to reservoir water levels or maintenance activities.

Designated Recreational Uses

As detailed below, implementation of sediment removal will result in temporarily restricted access to portions of designated trails and indirect impacts to existing recreation uses associated with construction activities. These impacts may increase the use of other area parks and recreational facilities such as those listed in Table 3.15-1, Area Recreational Facilities.

The Oak Grove area of Hahamongna Watershed Park and the associated facilities including Oak Grove Disk Golf Course will remain open during sediment removal and will continue to provide active recreational facilities to the area. Sediment removal activities will not limit the use of the Oak Grove area of Hahamongna Watershed Park by individuals or by organizations such as the Oak Grove Disc Golf Club, the Rose Bowl Riders, or Tom Sawyer Camp.

Activities such as hiking, biking, horseback riding, bird-watching, and nature walks will be limited to trails located outside the excavation boundary or to trails opened in absence of removal activities. Of the six designated trails in and adjacent to the Proposed Project site, three of these trails, Flint Wash Trail, Gabrielino Trail, and Gould Canyon Trail, will remain open during sediment removal and will continue to provide active recreational facilities to the area. Portions of the Altadena Crest Trail, Arroyo Seco Trail, and West Rim Trail will either be closed when sediment removal activities are under way and/or are near the trail. A small portion of the Altadena Crest Trail (an estimated 0.2 mile) will be closed during the whole sediment removal phase. Figure 3.15-3: Devil's Gate Area Impacts shows the location of the different access conditions during sediment removal.

Sediment removal activities will not limit use of the Oak Grove Area of Hahamongna Watershed Park or much of the designated trails; however, use of these facilities may be less desirable due to construction-related emissions, noise, dust, visual, and traffic impacts associated with sediment removal. These impacts are described in detail in Sections 3.4, 3.5, 3.14, and 3.16.

Recreational users may choose to visit other area parks, recreational facilities, or trails due to the temporary access restrictions or the indirect effects of construction-related activities. Due to the number of other recreational facilities and trails in the vicinity, it is anticipated that these visitors will be dispersed throughout the area and that no single park or facility will experience a substantial increase in use. Therefore, the Proposed Project will not increase use of other existing parks or recreation facilities such that substantial physical deterioration of these facilities will occur or be accelerated. Impacts to other existing parks and recreation facilities during sediment removal will be temporary and less than significant.

Devil's Gate Excavation Limit

Trail & Maintenance Road Closures

- Closed during the full duration of sediment removal
- To remain open during sediment removal
- Closed during sediment removal with possible opening on a seasonal basis
- Temporarily closed while sediment removal is occuring in the area

Figure 3.15-3
Devil's Gate Area Impacts to Designated Trails

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\\Cgi-gisdata01\gis_data\Projects\20000s\20201 - 20400\20346 Devil's Gate EIR\20346 Figure 3.15-3 Devil's Gate Area Impacts to Designated Trails.mxd

Reservoir Management Impacts

After the annual proposed sediment removal project management, access to Devil's Gate Reservoir will be similar to existing conditions for most of the year. The Oak Grove area of Hahamongna Watershed Park and the trails found in and around the reservoir would be beneficially affected in the long-term through the reduction of potential disruption by flooding or being buried under sediment.

Under reservoir management Option 1, the reservoir will be temporarily closed to public access every year for vegetation and sediment maintenance. This will occur during the late summer/early fall over an estimated five-week period, Monday through Friday. The length of time will vary depending on the amount of sediment deposited in the reservoir over the course of the year.

The Oak Grove area of Hahamongna Watershed Park and most of the designated trails will remain open during reservoir management activities and will continue to provide active recreational facilities to the area. The proposed reservoir management activities will typically occur only during the weekdays; therefore, visitors of Hahamongna Watershed Park on the weekends would not be affected by the proposed reservoir management activities. Under reservoir management Option 2, a smaller portion of the reservoir will be closed for reservoir management activities (see Figure 2.5-5: Proposed Project, Configuration A Excavation Area and Reduced Management Area, Option 2).

Recreational users may choose to visit other area parks, recreational facilities, or trails due to the temporary access restrictions or the indirect construction-related activities during reservoir management activities; however, reservoir management activities will occur over a relatively short time period. In addition, with the number of other recreational facilities and trails in the vicinity, it is anticipated that these visitors will be dispersed throughout the area and that no single park or facility will experience a substantial increase in use. Therefore, the Proposed Project will not increase use of other existing parks or recreation facilities such that substantial physical deterioration of these facilities will occur or be accelerated. Impacts to other existing parks and recreation facilities during reservoir management will be temporary and less than significant.

Mitigation Measures

No mitigation measures are required.

Residual Impacts after Mitigation

The Proposed Project will not result in any significant impacts associated with increased use of other existing parks or recreational facilities.

RECREATION-2 *Include recreational facilities or require the construction or expansion of existing recreational facilities which might have an adverse physical effect on the environment.*

As discussed in detail above under RECREATION-1, recreational users may choose to visit other area parks, recreational facilities, or trails due to the temporary access restrictions or the indirect effects of construction-related activities during reservoir management activities. It is anticipated that these visitors will be dispersed throughout the area and that no single park or facility will experience a substantial increase in use. Therefore, the Proposed Project will not require the construction or

expansion of existing recreational facilities which might have an adverse physical effect on the environment.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

The Proposed Project will not result in any significant impacts associated with construction or expansion of existing recreational facilities.

PUBLIC SERVICES-1 *Result in substantial adverse impacts associated with the provision of or need for new or physically altered recreational facilities, the construction of which could cause significant environmental impacts.*

As discussed in detail above under RECREATION-2, the Proposed Project will not result in a substantial increase in use of any one park or facility. Therefore, the Proposed Project will not require the provision of or need for new or physically altered recreational facilities, the construction of which could cause significant environmental impacts.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

The Proposed Project will not result in any significant impacts associated with the construction or expansion of recreational facilities.

RECREATION-3 Cumulative Impacts

Most of the cumulative projects will not result in the construction of new residences or facilitate the development of residences and, therefore, will not result in increased population or the associated increased demand for neighborhood or regional parks or other recreational facilities. Only four of the cumulative projects within the immediate vicinity of the Proposed Project site (Rose Bowl NFL Stadium designation project, Hahamongna Watershed Park MBMU Project, Arroyo Seco Canyon Project, and Devil's Gate Water Conservation Project) would have the potential to combine with the Proposed Project to create a cumulative recreation impact.

The Rose Bowl NFL Stadium designation project could result in an increase in visitor population to onsite and proximate parks and recreational facilities (Impact Sciences, Inc. 2012). The nearest active and passive recreational facilities, Brookside Park, Rose Bowl Aquatics Center, and Rose Bowl Park to the south as well as Brookside Golf Course to the north could experience additional usage from the Rose Bowl NFL Stadium designation. Additionally, the Rose Bowl NFL Stadium designation could result in the potential unavailability of these facilities or substantial disruption of activities during major stadium events for 25 days per year.

In the long term, the Hahamongna Watershed Park MBMU Project and the Arroyo Seco Canyon Project will involve improvements and expansion of the existing park facilities, resulting in greater recreational opportunities for Pasadena residents and surrounding communities. In the short term, construction of these two projects, as well as the Devil's Gate Water Conservation Project, could also temporarily limit access or result in construction-related emissions, noise, dust, visual, and traffic impacts. Recreational users may choose to visit other area parks, recreational facilities, or trails due to the temporary access restrictions or the indirect effects of construction-related activities during reservoir management activities. It is anticipated that these visitors will be dispersed throughout the area and that there will not be a substantial increase in use of any one park or facility. Therefore, cumulative impacts to recreation uses are expected to be less than significant.

Mitigation Measure

No mitigation measures are required.

Residual Impacts after Mitigation

Cumulative impacts to recreation are less than significant.

3.16 TRANSPORTATION AND TRAFFIC

3.16.1 Introduction

As noted in the Initial Study (Appendix A), impacts associated with air traffic patterns were found to have less than significant impacts and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.16.2 Existing Environmental Setting

Potential impacts to traffic and circulation associated with hauling excavated sediment to offsite disposal sites were analyzed in the traffic impact analysis report prepared for the Proposed Project (Appendix J). As described in Chapter 2.0 – Project Description, hauling excavated sediment offsite would require haul routes to each of the eight potential disposal facilities. The traffic report contains analysis of multiple variations for the project haul routes. This included a route for the Sun Valley disposal sites that used SR-134 to I-5, but this route was determined to have more impacts than the proposed routes.

LACFCD selected the following haul routes to the disposal sites since they were identified by the local jurisdictions and/or disposal site operators as designated and/or preferred haul routes to the sites.

Proposed Project Site and Freeway Access

Trucks will access the Proposed Project site from I-210 by exiting at Windsor Avenue/Arroyo Boulevard, turning north at Windsor Avenue, turning left onto northbound Oak Grove Drive, and then entering the eastern reservoir access road.

Loaded trucks will exit the reservoir on the existing access road, turn right onto northbound Oak Grove Drive, then left onto westbound Berkshire Place, and then to I-210 eastbound to disposal sites in Azusa and Irwindale and/or to I-210 westbound to disposal sites in Sun Valley.

Waste Management Facility/Vulcan Materials Reliance Facility/Manning Pit SPS Routes

As shown in Figure 2.5-2, trucks carrying sediment to the Waste Management Facility or the Manning Pit SPS will follow I-210 east, exiting at Irwindale Avenue, turning right onto Irwindale Avenue southbound, turning left onto eastbound Gladstone Street, then turning left into the Waste Management Facility or turning right onto southbound Vincent Avenue and turning right into Manning Pit SPS. Trucks returning to I-210 will take Vincent Avenue north and/or turn left onto westbound Gladstone Street and then turn right onto northbound Irwindale Avenue to I-210 west. Trucks carrying sediment to the Vulcan Materials Reliance Facility will follow I-210 east, exiting at Irwindale Avenue, turning left onto Irwindale Avenue northbound, and entering the facility immediately north of Foothill Boulevard. Trucks returning to I-210 will take Irwindale Avenue south and merge right onto I-210 west.

Sun Valley Disposal Sites Routes

As shown in Figure 2.5-3, trucks carrying sediment to Sheldon Pit, Sun Valley Fill Site, and Bradley Landfill will follow I-210 west until exiting at the Osborne Street/Foothill Boulevard interchange; turning left onto Foothill Boulevard westbound, then left onto Osborne Street westbound, then left onto Glenoaks Boulevard southbound, and then left onto Sheldon Street eastbound. Trucks accessing Bradley Landfill will turn left onto Glenoaks Boulevard, then right onto Peoria Street. Trucks will then follow this route in reverse to return to I-210.

Trucks accessing Boulevard Pit will follow I-210 west until exiting at the Wheatland Avenue interchange; turning right onto Wheatland Avenue northbound, right onto Foothill Boulevard eastbound, then right onto Wentworth Street westbound, the left onto Glenoaks Boulevard, right onto Tuxford Street, then right onto San Fernando Road, then left onto Branford Street. Trucks will then follow this route in reverse to return to I-210.

Scholl Canyon Landfill Route

As shown in Figure 2.5-4, for vegetation and organic material disposal, the trucks will follow I-210 east to SR-134 west, exit Figueroa Street northbound, and then turn right on northbound Scholl Canyon Road to the Scholl Canyon Landfill. Exiting southbound on Scholl Canyon Road, returning trucks will turn right onto Figueroa Street to access eastbound SR-134 and continue to I-210 west.

Table 3.16-1 presents the streets to be used for these haul routes.

Table 3.16-1: Project Haul Route Streets

Proposed Haul Routes	Streets To Be Used
To/From Devil's Gate Reservoir to eastern disposal sites	▪ Exit WB I-210 at Windsor Avenue/Arroyo Boulevard ▪ Turn right onto EB Windsor Avenue and then left onto NB Oak Grove Drive ▪ Enter and exit the project site on Oak Grove Drive ▪ Turn right onto NB Oak Grove Drive and then left onto WB Berkshire Place ▪ Enter EB I-210 at Berkshire Place
To/From Devil's Gate Reservoir Area to western disposal sites	▪ Exit EB I-210 at Windsor Avenue/Arroyo Boulevard ▪ Turn left onto EB Windsor Avenue and then left onto NB Oak Grove Drive ▪ Enter and exit the project site on Oak Grove Drive ▪ Turn right onto NB Oak Grove Drive and then left onto WB Berkshire Place ▪ Enter WB I-210 at Berkshire Place
To/From Manning Pit	▪ Exit EB I-210 at Irwindale Avenue ▪ Turn right onto SB Irwindale Avenue ▪ Turn left onto EB Gladstone Street and then right onto SB Vincent Avenue ▪ Enter and exit the disposal site on Vincent Avenue ▪ Turn left onto NB Vincent Avenue and then left onto WB Gladstone Street ▪ Turn right onto NB Irwindale Avenue ▪ Enter WB I-210 at Irwindale Avenue

Table 3.16-1: Project Haul Route Streets

Proposed Haul Routes	Streets To Be Used
To/From Vulcan Materials Reliance Facility	▪ Exit EB I-210 at Irwindale Avenue ▪ Turn left onto NB Irwindale Avenue ▪ Enter and exit the disposal site at the intersection of Irwindale Avenue and on Foothill Boulevard ▪ Head south on Irwindale Avenue ▪ Enter WB I-210 at Irwindale Avenue
To/From Waste Management Facility	▪ Exit EB I-210 at Irwindale Avenue ▪ Turn right onto SB Irwindale Avenue ▪ Turn left onto EB Gladstone Street ▪ Enter and exit the disposal site on Gladstone Street ▪ Turn right onto WB Gladstone Street ▪ Turn right onto NB Irwindale Avenue ▪ Enter WB I-210 at Irwindale Avenue
To/From Scholl Canyon Landfill	▪ Exit WB SR-134 at Figueroa Street ▪ Turn right onto NB Scholl Canyon Road ▪ Enter and exit the disposal site on Scholl Canyon Road ▪ Turn right onto SB Scholl Canyon Road ▪ Enter EB SR-134 at Figueroa Street
To/From Sheldon Pit	▪ Exit WB I-210 at the Osborne Street/Foothill Boulevard interchange ▪ Turn left onto WB Foothill Boulevard ▪ Turn left onto WB Osborne Street ▪ Turn left onto SB Glenoaks Boulevard ▪ Turn left onto EB Sheldon Street ▪ Enter and exit the disposal site on Sheldon Street ▪ Turn right onto WB Sheldon Street ▪ Turn right onto NB Glenoaks Boulevard ▪ Turn right onto EB Osborne Street ▪ Turn right onto EB Foothill Boulevard ▪ Enter EB I-210 at the Osborne Street/Foothill Boulevard interchange
To/From Sun Valley Fill Site	▪ Exit WB I-210 at the Osborne Street/Foothill Boulevard interchange ▪ Turn left onto WB Foothill Boulevard ▪ Turn left onto WB Osborne Street ▪ Turn left onto SB Glenoaks Boulevard ▪ Turn left onto EB Sheldon Street ▪ Enter the disposal site on Sheldon Street ▪ Exit the disposal site on Glenoaks Boulevard ▪ Turn right onto NB Glenoaks Boulevard ▪ Turn right onto EB Osborne Street ▪ Turn right onto EB Foothill Boulevard ▪ Enter EB I-210 at the Osborne Street/Foothill Boulevard interchange

Table 3.16-1: Project Haul Route Streets

Proposed Haul Routes	Streets To Be Used
To/From Bradley Landfill	▪ Exit WB I-210 at the Osborne Street/Foothill Boulevard interchange ▪ Turn left onto WB Foothill Boulevard ▪ Turn left onto WB Osborne Street ▪ Turn left onto SB Glenoaks Boulevard ▪ Turn right onto WB Peoria Street ▪ Enter and exit the disposal site on Peoria Street ▪ Turn left onto EB Peoria Street ▪ Turn left onto NB Glenoaks Boulevard ▪ Turn right onto EB Osborne Street Turn right onto EB Foothill Boulevard ▪ Enter EB I-210 at the Osborne Street/Foothill Boulevard
To/From Boulevard Pit	▪ Exit WB I-210 at the Wheatland Avenue interchange ▪ Turn right onto NB Wheatland Avenue then right onto EB Foothill Boulevard ▪ Turn right onto Wentworth Street ▪ Turn left onto Glenoaks Boulevard ▪ Turn right onto Tuxford Street then right onto San Fernando Road ▪ Turn left onto Branford Street ▪ Enter and exit the disposal site on Branford Street ▪ Turn right onto EB Branford Street ▪ Turn right onto San Fernando Road then left on to Tuxford Street ▪ Turn left onto NB Glenoaks Boulevard ▪ Turn right onto EB Sheldon Street ▪ Turn left onto WB Foothill Boulevard then left onto SB Wheatland Avenue ▪ Enter EB I-210 at the Wheatland Avenue interchange

The proposed haul routes would consist of the roadways described below.

Devil's Gate Reservoir to/from I-210

Oak Grove Drive is a north-south, four-lane arterial road with a striped median to the north of the Foothill Freeway Overpass and a raised median to the south. The roadway provides two travel lanes in each direction and a bike lane in each direction. Oak Grove Drive provides direct access to the project site and freeway access from the project site through the intersections of Berkshire Place and Windsor Avenue. On-street parking is not permitted along Oak Grove Drive. Pavement conditions range from fair to poor conditions.

Berkshire Place is a west-east, four-lane collector road with two travel lanes in each direction, a bike lane in each direction, and a striped two-way left turn lane median. The road provides access to I-210 from the residential neighborhoods to the north and west of the project site. On-street parking is not permitted along Berkshire Place. Pavement conditions range from good to fair conditions.

Windsor Avenue is a north-south, four lane arterial road with two travel lanes in each direction, one bike lane on the southbound side, and a striped two-way left turn lane median. Windsor Avenue provides regional access within the City of Pasadena and access to I-210. On-street parking is not

permitted along the west side, and some street parking is allowed on the east side of the roadway. Pavement conditions range from good to fair conditions.

Waste Management Facility, Vulcan Materials Reliance Facility, and Manning Pit Area to/from I-210

Irwindale Avenue is a north-south, four-lane arterial road with two travel lanes in each direction that has a raised median to the north of First Street and a striped two-way left turn lane median between First Street and Gladstone Street. Irwindale Avenue provides regional access within the Cities of Azusa and Irwindale and local access to I-210 and Interstate 10. On-street parking is generally permitted on both sides of the roadway between First Street and Gladstone Street. Pavement conditions range from good to fair conditions.

Foothill Boulevard is an east-west, four-lane arterial road with two travel lanes in each direction and a striped or raised median. Foothill Boulevard (Route 66) generally follows the alignment of the I-210 freeway. Pavement conditions range from good to fair.

Gladstone Street is a west-east, four-lane collector street with two travel lanes in each direction and a striped two-way left turn lane median. Gladstone Street provides regional access within the City of Azusa and access to I-210. On-street parking is permitted along some segments of the roadway, but these areas are not adjacent. Pavement conditions range from good to fair conditions.

Vincent Avenue is a north-south, four-lane collector road with two travel lanes in each direction and a striped two-way left turn lane median along certain sections of the roadway. Vincent Avenue provides regional access within the City of Azusa and Irwindale. On-street parking is generally permitted along the west side of the roadway and prohibited on the east side. Pavement conditions range from fair to poor conditions.

Arrow Highway is a west-east, four-lane arterial highway with two travel lanes in each direction and a striped two-way left turn lane median. Arrow Highway serves as an alternative to I-210 by providing access from the San Bernardino, Rancho Cucamonga, and San Dimas areas to Azusa, Covina, and Irwindale. It also provides regional access within Azusa, Covina, and Irwindale as well as access to Interstate 605 and SR-57. On-street parking is generally permitted along both sides of the roadway. Pavement conditions range from good to fair conditions.

Azusa Avenue (SR-39) is a north-south, divided four-lane arterial highway with two travel lanes in each direction and a raised median. Azusa Avenue (SR-39) provides access from the Cities of Azusa and Covina to Orange County. It also provides regional access to I-210 and Interstate 10. On-street parking is generally permitted along some segments of the roadway. Pavement conditions range from good to fair conditions.

First Street is a west-east, four-lane collector road with two travel lanes in each direction with a striped median. It provides regional access within the City of Azusa and access to westbound I-210. On-street parking is generally prohibited along both sides of the roadway. Pavement conditions range from good to fair conditions.

Scholl Canyon Landfill Area to/from SR-134

Figueroa Street is a north-south, four-lane arterial road with two travel lanes in each direction and a striped median. It provides access from the City of Los Angeles to the Eagle Rock area. It also provides regional access to SR-134. On-street parking is generally permitted along the west side of the roadway and prohibited on the east side. Pavement conditions range from fair to poor conditions. Scholl Canyon Road is a west-east, two-lane collector road with one travel lane in each direction and a striped median. Scholl Canyon Road provides access to the Scholl Canyon Landfill. On-street parking is generally permitted along both sides of the roadway. Pavement conditions are poor.

Boulevard, Bradley, Sun Valley Fill Site, and Sheldon Pits/Landfill to/from Freeways

Foothill Boulevard is a north-south, four-lane arterial road with two travel lanes in each direction, a striped bike lane in each direction, and a striped two-way left turn lane median. It provides access from the La Cañada Flintridge area to the San Fernando Valley area. It also provides regional access to I-210. On-street parking is generally prohibited along both sides of the roadway. Pavement conditions range from good to fair.

Osborne Street is a west-east, four-lane collector road with two travel lanes in each direction and a striped two-way left turn lane median. Osborne Street provides local access to I-210 and I-5. On-street parking is generally permitted along both sides of the roadway. Pavement conditions range from good to fair.

Branford Street is a west-east collector road with four lanes in some sections and three lanes in other sections and a striped, two-way left turn lane median. Branford Street provides access to I-5. Pavement conditions range from good to fair.

Glenoaks Boulevard is a north-south, four-lane arterial road with two travel lanes in each direction, a striped bike lane in each direction, and a striped two-way left turn lane median. It provides access from the City of San Fernando to the Cities of Los Angeles and Burbank. It also provides regional access to SR-118 and I-5. On-street parking is generally permitted along both sides of the roadway. Pavement conditions range from fair to poor.

Sheldon Street is west-east, four-lane arterial road with two travel lanes in each direction, a striped bike lane in each direction, and a two-way left turn lane. Sheldon Street provides local access to I-5 and the Sun Valley Fill Site and Sheldon pit. On-street parking is generally prohibited along both sides of the roadway. Pavement conditions range from good to fair.

Laurel Canyon Boulevard is a north-south, four-lane arterial road with two travel lanes in each direction and a striped two-way left turn lane median. It provides access from the City of San Fernando to the City of Los Angeles. It also provides regional access to SR-118 and I-5. On-street parking is generally permitted along both sides of the roadway. Pavement conditions range from good to fair.

San Fernando Road is a north-south, four-lane arterial road with two travel lanes in each direction and a striped two-way left turn lane median. It provides access from the City of San Fernando to the Cities of Los Angeles and Burbank. It also provides regional access to SR-118 and I-5. On-street parking is generally permitted along the west side of the roadway and prohibited on the east side of the roadway. Pavement conditions range from good to fair.

Wheatland Avenue is a north-south, two-lane collector road with one travel lane in each direction and a striped median. Wheatland Avenue provides the Sunland community access to I-210. On-street parking is generally allowed along both sides of the roadway. Pavement conditions range from fair to poor.

Wentworth Street is a west-east, four-lane arterial road with two travel lanes in each direction, a striped bike lane in each direction, and a two-way left turn lane. Wentworth Street provides local access to the Sunland area. On-street parking is generally prohibited along both sides of the roadway. Pavement conditions range from good to fair.

Tuxford Street is a west-east, four-lane collector road with two travel lanes in each direction and a two-way left turn lane. Tuxford Street provides local access to I-5. On-street parking is generally allowed along both sides of the roadway. Pavement conditions range from good to fair.

Peoria Street is a west-east, two-lane local road with one travel lane in each direction. Peoria Street provides access to Bradley Landfill. On-street parking is generally allowed along the both sides of the roadway. Pavement conditions range from fair to poor.

Intersections

Potential impacts from traffic associated with the Proposed Project were analyzed for the following 52 intersections:

1. Berkshire Place and I-210 eastbound ramps (La Cañada Flintridge/Caltrans)
2. Berkshire Place and I-210 westbound ramps (La Cañada Flintridge/Caltrans)
3. Oak Grove Drive and Berkshire Place (Pasadena)
4. Oak Grove Drive and Foothill Freeway Overpass (La Cañada Flintridge)
5. Windsor Avenue and Oak Grove Drive/Woodbury Road (Altadena/Los Angeles County)
6. Windsor Avenue/Arroyo Boulevard and I-210 westbound ramps (Los Angeles County/Caltrans)
7. Windsor Avenue/Arroyo Boulevard and I-210 eastbound ramps (Pasadena/Caltrans)
8. Irwindale Avenue and I-210 westbound ramps (Caltrans, Irwindale)
9. Irwindale Avenue and I-210 eastbound ramps (Caltrans, Irwindale)
10. Irwindale Avenue and First Street (Irwindale/Azusa)
11. Irwindale Avenue and Gladstone Street (Irwindale/Azusa)
12. Vincent Avenue and Gladstone Street (Azusa)
13. Vincent Avenue and Arrow Highway (Irwindale/Azusa)
14. Arrow Highway and Lark Ellen Avenue (County of Los Angeles)
15. Arrow Highway and Enid Avenue (County of Los Angeles)
16. Azusa Avenue and Arrow Highway (Azusa/Covina)
17. Azusa Avenue and Gladstone Street (Azusa)
18. Azusa Avenue and I-210 eastbound ramps (Caltrans/ Azusa)
19. Azusa Avenue and First Street (Azusa)
20. First Street and Alameda Street/I-210 westbound ramps (Caltrans, Azusa)
21. Figueroa Street/Scholl Canyon Road and SR-134 westbound ramps (City of Los Angeles, Caltrans)
22. Figueroa Street and Eagle Vista Drive (City of Los Angeles)
23. Figueroa Street and SR-134 eastbound ramps (City of Los Angeles, Caltrans)
24. Foothill Boulevard and I-210 westbound ramps (City of Los Angeles, Caltrans)
25. Foothill Boulevard and I-210 eastbound ramps (City of Los Angeles, Caltrans)

26. Foothill Boulevard and Osborne Street (City of Los Angeles)
27. Glenoaks Boulevard and Osborne Street (City of Los Angeles)
28. Glenoaks Boulevard and Montague Street (City of Los Angeles)
29. Glenoaks Boulevard and Branford Street (City of Los Angeles)
30. Glenoaks Boulevard and Sheldon Street (City of Los Angeles)
31. Glenoaks Boulevard and Peoria Street (City of Los Angeles)
32. Glenoaks Boulevard and Tuxford Street (City of Los Angeles)
33. Glenoaks Boulevard and Penroe Street (City of Los Angeles)
34. Glenoaks Boulevard and Sunland Boulevard (City of Los Angeles)
35. Glenoaks Boulevard and Roscoe Boulevard (City of Los Angeles)
36. Roscoe Boulevard and I-5 northbound ramps (City of Los Angeles/Caltrans)
37. Roscoe Boulevard and I-5 southbound ramps (City of Los Angeles/Caltrans)
38. Branford Street and I-5 southbound ramps (City of Los Angeles/Caltrans)
39. Branford Street and I-5 northbound ramps (City of Los Angeles/Caltrans)
40. Branford Street and Laurel Canyon Boulevard (City of Los Angeles)
41. Osborne Street and I-5 southbound ramps (City of Los Angeles/Caltrans)
42. Osborne Street and I-5 northbound ramps (City of Los Angeles/Caltrans)
43. Osborne Street and Laurel Canyon Boulevard (City of Los Angeles)
44. Wheatland Avenue and I-210 eastbound ramps (City of Los Angeles/Caltrans)
45. Wheatland Avenue and I-210 westbound ramps (City of Los Angeles/Caltrans)
46. Wheatland Avenue and Foothill Boulevard (City of Los Angeles)
47. Wentworth Street and Foothill Boulevard (City of Los Angeles)
48. Tuxford Street and San Fernando Road (City of Los Angeles)
49. Lankershim Boulevard and San Fernando Road (City of Los Angeles)
50. Sheldon Street and San Fernando Road (City of Los Angeles)
51. Branford Street and San Fernando Road (City of Los Angeles)
52. Irwindale Avenue and Foothill Boulevard (City of Irwindale)

Freeway Facilities

The proposed haul routes have the potential to impact the following freeway facilities:

Interstate 210 Freeway (I-210) provides regional access within the study area and runs west to east to the east of the SR-134 interchange and runs north to south to the north of the SR-134 interchange. To the east of the SR-134 interchange, I-210 is an eight-lane freeway with four lanes in each direction and one carpool lane in each direction. To the north of the SR-134 interchange, I-210 becomes an eight-lane freeway with four lanes in each direction. This freeway is an interstate facility that provides travel between the San Bernardino, Rancho Cucamonga, and San Dimas areas to the Pasadena and San Fernando areas.

Interstate 5 Freeway (I-5) provides regional access within the study area and runs north to south, connecting southern California to northern California. I-5 is an eight-lane freeway with four lanes in each direction. This freeway is an interstate facility that provides travel between Los Angeles to Orange and San Diego counties and between Los Angeles to Bakersfield, Sacramento, and San Francisco.

State Route 134 Freeway (SR-134) provides regional access within the study area and runs west to east from the I-210 interchange to the US-101 and SR-170 interchange in Hollywood. SR-134 is an eight-lane

freeway with four lanes in each direction and one carpool lane in each direction. This freeway is a state facility that provides travel between the Ventura, Hollywood, and Burbank areas to the Pasadena, San Dimas, and San Bernardino areas.

State Route 2 Freeway (SR-2) provides regional access within the study area and runs north to south from south of the I-5 interchange in Los Angeles to the I-210 interchange in La Cañada Flintridge. SR-2 is an eight-lane freeway with four lanes in each direction. This freeway is a state facility that provides travel between the La Cañada Flintridge and Glendale areas to the Los Angeles and Hollywood areas.

An increase in truck traffic along the freeway and ramps can impact the level of service (LOS) of the freeway and ramps adversely. In order to ensure adequate freeway and ramp operations, this study has identified 28 freeway segments and 54 on- and off-ramps for analysis. The 28 freeway segments identified for analysis consist of the following:

1. I-210 between Windsor Avenue/Arroyo Boulevard and Berkshire Place
2. I-210 between Lincoln Avenue and Windsor Avenue/Arroyo Boulevard
3. I-210 between SR-134 and Mountain Street
4. SR-134 between San Rafael Avenue and Figueroa Street.
5. SR-134 between I-210 and San Rafael Avenue
6. I-210 between SR-134 and Lake Avenue
7. I-210 between I-605 and Irwindale Avenue
8. I-210 between Irwindale Avenue and Azusa Avenue
9. I-210 between Berkshire Place and Foothill Boulevard
10. I-210 between Angeles Crest Highway and SR-2 (Glendale Freeway)
11. SR-2 between I-210 and Mountain Street
12. SR-2 between Mountain Street and SR-134
13. SR-134 between SR-2 and Figueroa Street
14. SR-134 between SR-2 and Glendale Avenue
15. SR-134 between Pacific Avenue and Concord Street
16. SR-134 between Concord Street and I-5
17. I-5 between SR-134 and Western Avenue
18. I-5 between North Hollywood Way and Roscoe Boulevard/Glenoaks Boulevard
19. I-5 between Sheldon Street/Laurel Canyon Boulevard and SR-170
20. I-5 between SR-170 and Branford Street
21. I-210 between SR-2 and Montrose Avenue
22. I-210 between Sunland Boulevard and Wheatland Avenue
23. I-210 between Wheatland Avenue and Foothill Boulevard/Osborne Street
24. I-210 between Foothill Boulevard/Osborne Street and SR-118
25. SR-118 between I-210 and Glenoaks Boulevard
26. SR-118 between San Fernando Road and I-5
27. I-5 between SR-118 and Van Nuys Boulevard
28. I-5 between Tierra Bella Street and Osborne Street

The 54 on-ramps and off-ramps identified for analysis consist of the following:

1. Berkshire Place and the eastbound I-210 off-ramp (Diverge Point)
2. Berkshire Place and the westbound I-210 on-ramp (Merge Point)
3. Berkshire Place and the eastbound I-210 on-ramp (Merge Point)

4. Berkshire Place and the westbound I-210 off-ramp (Diverge Point)
5. Windsor Avenue/Arroyo Boulevard and the eastbound I-210 off-ramp (Diverge Point)
6. Windsor Avenue/Arroyo Boulevard and the westbound I-210 on-ramp (Merge Point)
7. Windsor Avenue/Arroyo Boulevard and the eastbound I-210 on-ramp (Merge Point)
8. Windsor Avenue/Arroyo Boulevard and the westbound I-210 off-ramp (Diverge Point)
9. Southbound I-210 Transition ramp to westbound SR-134 mainline and eastbound I-210 mainline (Diverge Point)
10. Westbound I-210 and eastbound SR-134 transition ramp to the westbound I-210 mainline (Merge Point)
11. Eastbound I-210 transition ramp to westbound SR-134 mainline (Merge Point)
12. Eastbound SR-134 transition ramp to westbound I-210 mainline (Diverge Point)
13. Figueroa St/Scholl Canyon Road and westbound SR-134 off-ramp (Diverge Point)
14. Figueroa Street and eastbound SR-134 eastbound on-ramp (Merge Point)
15. Eastbound I-210 transition ramp to eastbound I-210 mainline (Merge Point)
16. Westbound I-210 transition ramp to westbound I-210 mainline (Diverge Point)
17. Irwindale Avenue and eastbound I-210 off-ramp (Diverge Point)
18. Irwindale Avenue and westbound I-210 on-ramp (Merge Point)
19. First Street/Alameda Street and westbound I-210 on-ramp (Merge Point)
20. Westbound I-210 transition ramp to southbound SR-2 mainline (Diverge Point)
21. Northbound SR-2 transition ramp to eastbound I-210 mainline (Merge Point)
22. Westbound I-210 transition ramp to southbound SR-2 mainline. (Merge Point)
23. Northbound SR-2 transition ramp to eastbound I-210 mainline (Diverge Point)
24. Southbound SR-2 transition ramp to eastbound SR-134 mainline (Diverge Point)
25. Westbound and eastbound SR-134 Transition ramp to northbound SR-2 mainline (Merge Point)
26. Southbound SR-2 transition ramp to eastbound SR-134 mainline (Merge Point)
27. Westbound SR-134 transition ramp to northbound SR-2 mainline (Diverge Point)
28. Figueroa Street and eastbound SR-134 off-ramp (Diverge Point)
29. Figueroa Street and westbound SR-134 on-ramp (Merge Point)
30. Southbound SR-2 transition ramp to westbound SR-134 mainline (Merge Point)
31. Eastbound SR-134 transition ramp to northbound SR-2 mainline (Diverge Point)
32. Westbound SR-134 transition ramp to northbound I-5 mainline (Diverge Point)
33. Southbound I-5 transition ramp to eastbound SR-134 mainline (Merge Point)
34. Westbound SR-134 transition ramp to northbound I-5 mainline (Merge Point)
35. Southbound I-5 transition ramp to eastbound SR-134 mainline (Diverge Point)
36. Roscoe Boulevard/Glenoaks Boulevard and northbound I-5 mainline off-ramp (Diverge Point)
37. Roscoe Boulevard/Glenoaks Boulevard and southbound I-5 mainline on-ramp (Merge Point)
38. Branford Street and southbound I-5 mainline on-ramp (Merge Point)
39. Branford Street and northbound I-5 mainline off-ramp (Diverge Point)
40. Wheatland Avenue and westbound I-210 mainline off-ramp (Diverge Point)
41. Wheatland Avenue and eastbound I-210 mainline on-ramp (Merge Point)
42. Foothill Boulevard/Osborne Street and westbound I-210 mainline off-ramp (Diverge Point)
43. Foothill Boulevard/Osborne Street and eastbound I-210 mainline on-ramp (Merge Point)
44. Westbound I-210 transition ramp to westbound SR-118 mainline (Diverge Point)
45. Eastbound SR-118 transition ramp to eastbound I-210 mainline (Merge Point)
46. Westbound I-210 transition ramp to westbound SR-118 mainline (Merge Point)
47. Eastbound SR-118 transition ramp to eastbound I-210 mainline (Diverge Point)
48. Westbound SR-118 transition ramp to southbound I-5 mainline (Diverge Point)

49. Northbound I-5 transition ramp to eastbound SR-118 mainline (Merge Point)
50. Westbound SR-118 transition ramp to southbound I-5 mainline (Merge Point)
51. Northbound I-5 transition ramp to eastbound SR-118 mainline (Diverge Point)
52. Osborne Street and southbound I-5 mainline off-ramp (Diverge Point)
53. Osborne Street and northbound I-5 mainline on-ramp (Merge Point)
54. Irwindale Avenue and westbound I-210 on-ramp. (Merge Point)

3.16.3 Applicable Regulations

City of Pasadena General Plan Mobility Element

The Mobility Element of the City of Pasadena General Plan provides a framework of objectives and policies to guide transportation development. The Mobility Element has been developed to serve two purposes for the City of Pasadena:

- The Mobility Element contains objectives and policies that will guide the future development towards the City's Guiding Principle related to mobility – Pasadena will be a city where people can circulate without cars.

- The Mobility Element addresses the requirements of California state law designed to evaluate the transportation needs of the community within the context of the region and to present a comprehensive plan to meet those needs.

The Mobility element seeks to meet its first purpose through development of an integrated and multimodal transportation system that integrates public transit services, parking strategies, bicycle facilities, car-sharing programs, and pedestrian components into the larger regional transportation system. The Mobility Element has identified the following four objectives in pursuit of this goal:

- Promote a livable community

- Encourage non-auto travel

- Protect neighborhoods by discouraging traffic from intruding into community neighborhoods

- Manage multimodal corridors to promote and improve citywide transportation services

Each of these objectives is supported by numerous policies to guide future transportation development in the City. Relevant policies from the "Protect neighborhoods by discouraging traffic from intruding into community neighborhoods" section of the Mobility Element include:

- Policy 3.1 Make the most efficient use of major corridors and discourage auto and truck traffic from using local streets to bypass congested intersections. Review new development along multimodal corridors to eliminate or minimize the intrusion of traffic from these projects.

- Policy 3.5 Promote safe travel in neighborhoods and enforce traffic regulations with particular attention given to sensitive uses such as schools, senior centers, hospitals, community services, and parks.

Relevant policies from the "Manage multimodal corridors to promote and improve citywide transportation services" section of the Mobility Element include:

- Policy 4.1 Develop and implement appropriate traffic management measures and improved directional signage to keep traffic on designated major multimodal corridors and to accommodate the needs of users along the corridor and the needs of multimodal and peak-hour travelers.

- Policy 4.5 Ensure safe and efficient travel and traffic management throughout the City, while providing adequate access for all users.

City of Los Angeles General Plan Transportation Element

The purpose of the Transportation Element of the City of Los Angeles general Plan is to provide a guide for the further development of a citywide transportation system. The Transportation Element places its primary emphasis on maximizing the efficiency of existing and proposed transportation infrastructure through:

- advanced transportation technology,
- reduction of vehicle trips, and
- focusing growth in proximity to public transit.

In order to establish a citywide strategy to achieve long-term mobility and accessibility within the City of Los Angeles, the Transportation Element has established goals, objectives, and policies. The Transportation Element has identified the following three goals:

- Adequate accessibility to work opportunities and essential services, and acceptable levels of mobility for all those who live, work, travel, or move goods in Los Angeles.

- A street system maintained in a good to excellent condition adequate to facilitate the movement of those reliant on the system.

- An integrated system of pedestrian priority street segments, bikeways, and scenic highways which strengthens the City's image while also providing access to employment opportunities, essential services, and open space.

Each of these goals is supported by numerous objectives and policies to guide future transportation development in the City of Los Angeles. Relevant policies under the Transportation Element's Objective 4, to preserve the existing character of lower density residential areas and maintain pedestrian-oriented environments where appropriate, include:

- Policy 4.1 – Seek to eliminate or minimize the intrusion of traffic generated by new regional or local development into residential neighborhoods while preserving an adequate collector street system.

- Policy 4.2 – Incorporate traffic management measures to control traffic speeds and volumes on local and collector streets within low density residential neighborhoods to assure safe and

orderly traffic flow. Traffic management measures for such local streets may include partial closures and/or traffic diverters.

City of Irwindale General Plan Infrastructure Element

The Infrastructure Element of the City of Irwindale General Plan provides a guide for the ongoing development of the City of Irwindale's roadway system. The purpose of the Infrastructure Element is to promote the maintenance of a safe and efficient circulation system for the City of Irwindale. The policies included in the Infrastructure Element focus on the City of Irwindale's commitment to maintaining highest standards of service with respect to circulation and infrastructure and to improve safe and efficient circulating in the City of Irwindale. Additionally, the City of Irwindale implements a number of programs within the Infrastructure Element. A relevant program is:

- Truck Route Planning. The City will work with other cities, public agencies, and stakeholders to establish a system of truck route plans for the sub-region.

City of Azusa General Plan Mobility Element

The City of Azusa seeks to become a pedestrian-friendly, transit-oriented community. The Mobility Element of the City of Azusa provides a guided approach to local transportation choices for the City of Azusa as an integral part of the regional circulation pattern. The Mobility Element includes ideas to facilitate change for the City of Azusa, such as:

- Promote the construction of two Gold Line Light Rail Stations – Downtown and Monrovia Nursery.
- Increase roadway capacity at the western and southern edges of the City thus relieving through traffic on Azusa Avenue.
- Create a "river parkway" that links to I-210 interchange and Sierra Madre Avenue.
- Create new north-south routes south of the freeway to improve southwestern circulation.
- Add bike and pedestrian links to schools, commercial centers, and public centers.
- Study the conversion of Azusa and San Gabriel Avenues to two-way traffic.
- Replace Vernon Avenue interchange with a new interchange at Zachary Padilla to reclaim the surrounding neighborhood.

Relevant policies under the Mobility Element goal to balance the roadway with the planning lands use in the City include:

- Policy 1.2 – Maintain Level of Service D on roadway segments and at signalized intersections throughout the City, except in the downtown area, the University District, and in the vicinity of freeway interchanges where Level of Service E shall be maintained in these areas.
- Policy 1.4 – Work with adjacent jurisdictions and agencies to ensure that development projects and infrastructure projects outside the City of Azusa do not adversely impact the City.

A relevant policy under the Mobility Element goal to focus truck traffic onto appropriate arterial corridors within the City, and keep truck traffic out of residential neighborhoods, is:

- Policy 7.1 Modify the truck route network in accordance with the Truck Route Plan.

City of La Cañada Flintridge Circulation Element

The Circulation Element of La Cañada Flintridge's General Plan is intended to guide the development of the City of La Cañada Flintridge's circulation system. The Circulation element includes goals, objectives, and policies to establish a foundation to guide future circulation- and transportation-related decisions within the City.

A relevant policy under the Circulation Element's goal to maintain a safe, multi-modal, efficient, economical, and aesthetically pleasing circulation system providing for the circulation of people, goods, and services to serve the existing and future needs of the City of La Cañada Flintridge, is:

- Policy 1.1.4 – Participate in transportation planning efforts that involve other governmental agencies, mandated programs, and regulations in order to minimize potential environmental impacts related to transportation in and around the City.

Metropolitan Transit Authority

Los Angeles County Metropolitan Transportation Authority (LACMTA) is the Congestion Management Agency for Los Angeles County. LACMTA is responsible for transportation planning, design, construction, and operation of transportation systems.

California Department of Transportation

The California Department of Transportation (Caltrans) manages more than 50,000 miles of California's highway and freeway lanes, provides intercity rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Caltrans carries out its mission of improving mobility across California with six primary programs: Aeronautics, Highway Transportation, Mass Transportation, Transportation Planning Administration, and the Equipment Service Center. State routes in the vicinity of the Proposed Project site are the Golden State Freeway (I-5) and the Hollywood Freeway (SR-170).

3.16.4 Significance Criteria

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

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

- *TRANSPORTATION-3: Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*
- *TRANSPORTATION-4: Would the project result in inadequate emergency access?*
- *TRANSPORTATION-5: Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities supporting alternative transportation (e.g., bus turnouts, bicycle racks)?*
- *TRANSPORTATION-6: Cumulative Impacts*

3.16.5 Methodology

The traffic impact report (Appendix J) analyzed whether implementation of the Proposed Project would impact LOS standards at each intersection, freeway segment, and freeway on- and off-ramp used by the Proposed Project haul routes and associated impacts to congestion management plans.

Level of Service Analysis for Local Intersections

In order to verify the intersection capacity analysis impacts, present LOS was analyzed for the signalized and unsignalized study intersections. Based on the existing intersection geometrics and traffic volumes during the AM, Mid-day, and PM peak hours, the intersection capacity analyses for the signalized and unsignalized intersections were conducted using Trafficware Ltd Synchro version 8, which implements the methods of the 2010 Highway Capacity Manual (HCM) and 2003 Intersection Capacity Utilization (ICU) methods. Table 3.16-2 presents the LOS standards utilized in the critical movement analysis for LOS and volume capacity (V/C) ratios. Further details on the methodology used in the traffic impact analysis are presented in Appendix J.

It is important to note that each city/jurisdiction has different criteria and thresholds to identify the lowest acceptable service levels. Each jurisdiction along the truck haul routes follows either the ICU, CMA, or HCM methodologies for signalized intersections. Synchro analysis was used to conduct the intersection capacity analyses for the signalized and unsignalized intersections since Synchro can provide the LOS per the HCM and ICU methodologies. To further understand the concepts and differences between the methodologies used by the local jurisdictions, each methodology is described below.

Critical Movement Analysis (CMA)

The Critical Movement Analysis methodology is a method developed by the Transportation Research Board (TRB) Circular 212. Under the CMA methodology the LOS is determined by dividing the volume of vehicles that pass through the facility over the capacity of that facility. This ratio is known as the volume-to-capacity (V/C) ratio. A V/C ratio value of 1.00 or greater indicates that an intersection is at or exceeding capacity. The V/C ratio value is based upon volumes by lane, signal phasing, and approach lane configurations. The LOS values range from LOS A to LOS F, where a LOS A indicates excellent operating conditions and a LOS F represents congested conditions with excessive vehicle delay. Table 3.16-2 presents the threshold table for signalized intersections per the CMA methodology.

Table 3.16-2: Critical Movement Analysis (CMA) –LOS and V/C Thresholds

Level of Service (LOS)	Volume/Capacity Ratio (V/C)	Definition
A	0.000 – 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally, drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower-volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles that intersection approaches can accommodate; long lines of vehicles may wait through several signal cycles.
F	Greater than 1.000	FAILURE. Backups from nearby intersections or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays occur with continuously increasing queue lengths.

ICU

The ICU traffic analysis methodology is similar to the CMA methodology. Like the CMA method the ICU method uses V/C ratios to determine a LOS for an intersection; however, the ICU method compares the V/C ratios of conflicting turn movements at an intersection, sums these critical conflicting V/C ratios for each intersection approach, and determines the overall ICU. The resulting ICU is expressed in terms of LOS, where LOS A represents free-flow activity and LOS F represents overcapacity operation. The ICU thresholds are similar to the thresholds of the CMA methodology but can vary by local jurisdictions.

HCM Methodology

The HCM traffic analysis methodology was developed by the Transportation Research Board (TRB). Under the HCM methodology the LOS of an intersection is determined based on the delay of vehicles at the intersections. For signalized intersections the HCM measures the LOS based on control delay. Control delay is a portion of the total delay attributed to a signalized intersection and consists of initial acceleration delay, queue move-up time, stopped delay, and final acceleration delay. The HCM bases its delay on an adjusted flow using a mean control delay for the highest 15-minute period within the hour. The LOS for signalized intersections ranges from LOS A, which indicates excellent operating conditions and LOS F, which represents congested conditions with excessive vehicle delay.

Level of Service Analysis Criteria for Freeways and Ramps:

The proposed haul routes for the Devil's Gate Reservoir Sediment Removal and Management Project will require the expected truck trips to travel through the I-210, I-5, SR-2, and SR-134 freeways from which 28 freeway segments and 54 ramps were identified for analysis. The LOS analysis done on the

freeways and ramps was conducted per Caltrans requirements, which consists of the use of the HCM 2010 methodologies. To determine the LOS per the HCM 2010 methodology, Highway Capacity 2010 software, (HCS) which is developed by McTrans, was used for the freeway mainline analysis, ramp analysis, and weaving analysis.

Freeway Mainline HCM Analysis:

The freeway mainline LOS analysis was conducted using existing mainline volumes provided by Caltrans for each segment identified for analysis. The HCM methodology for determining the LOS of a basic freeway segment consists of inputting the existing geometric data, free-flow speed (FFS), base free-flow speed (BFFS), and mainline volumes into specific formulas described in Chapter 23 of the HCM. The procedure consists of adjusting the BFFS and mainline volume based on the existing conditions of the freeway. After the adjustments are made, a speed-flow curve is used to determine the average passenger car speed in order to compute the density of the freeway segment to determine the LOS of that segment.

To determine the mainline LOS, the mainline volumes and required criteria are inputted into the HCS 2010 software, which calculates the freeway segment density value using the HCM methodology. Caltrans District 7 has established that the densities in a freeway mainline should not exceed 35 number of cars per mile per lane (pc/mi/ln), which corresponds to a LOS D. Caltrans has determined that freeway segments that operate below LOS D should be identified and improved to an acceptable LOS.

Ramp HCM Analysis

The HCM methodology for determining the LOS of a freeway ramp consists of inputting the existing geometric data, ramp free-flow speed, and the existing ramp volumes into specific formulas described in Chapter 25 of the HCM. The volume (demand) is adjusted, and then a demand flow rate is computed for a merging (entering) maneuver in an on-ramp or a diverging (exiting) maneuver in an off-ramp. Capacity is then computed and compared to the adjusted flow. After this, the density for the ramp can be computed and the LOS of the ramp can be determined.

To determine the freeway ramp LOS, a ramp merge and diverge analysis was carried out through the use of the freeway-to-arterial interchanges analysis in the HCS software. According to Chapter 13 of the HCM, the merge and diverge ramp areas focus on an influential area of 1,500 feet, which includes the acceleration or deceleration lane and adjacent freeway lanes. The HCM methodology has three major steps that need to be followed.

The first step is the determination of traffic entering the freeway lanes immediately upstream of the merge area for a merging maneuver or at the beginning of a deceleration lane of the diverge area for a diverging maneuver. The second step is to determine the capacity for the corresponding segment. The final step is the determination of the density of flow within the influence area and the LOS based on that density value.

The HCS software computes a density value for a freeway ramp using the same HCM procedure. Caltrans District 7 has established that the densities in a freeway ramp should not exceed 35.0 pc/mi/ln, which corresponds to a LOS D. Caltrans has determined that freeway ramps that operate below LOS D should be identified and improved to an acceptable LOS.

Capacity analyses were conducted for 52 intersections, 28 freeway segments, and 54 freeway on- and off-ramps based on the following three traffic models:

- Existing Conditions
- Existing Conditions with Project
- Project Year 2014

The work day is divided into three peak hour periods. The AM peak period consists of the hours 7 a.m. to 10 a.m. The MID-DAY peak period consists of the hours 10 a.m. to 4 p.m. The PM peak period consists of the hours from 4 p.m. to 6 p.m.

3.16.6 Impacts and Mitigation

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

Sediment Removal

The Proposed Project would adhere to traffic regulations regarding truck traffic. However, during sediment removal, Proposed Project truck traffic is expected to impact traffic LOS on the existing roadway network. Potential impacts regarding existing LOS are discussed under TRANSPORTATION-2 below. This increase in traffic would result in significant impacts to the efficiency of the circulation system. Implementation of Mitigation Measures MM TRA-1 and TRA-2 would reduce this impact but not to a level of less than significant.

Other potential impact reduction measures discussed under TRANSPORTATION-2 below could reduce impacts to less than significant. However, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, this impact could remain potentially significant.

Reservoir Management

Truck traffic associated with reservoir management is not expected to adversely affect traffic LOS on the existing roadway network. Therefore, impacts to the efficiency of the circulation system would be less than significant.

Mitigation Measures

MM TRA-1: Proposed Project haul trucks will not deliver to the Vulcan Material Reliance Facility during the PM peak period.

MM TRA-2: Proposed Project haul trucks will not deliver to the Boulevard Pit during the PM peak period.

Residual Impacts After Mitigation

Implementation of the mitigation measures described above would reduce impacts to traffic and circulation but not to a level of less than significant. Other potential impact reduction measures discussed under TRANSPORTATION-2 below could reduce impacts to less than significant. However, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, this impact could remain potentially significant.

TRANSPORTATION-2 *Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways.*

Sediment Removal

The Proposed Project would utilize the project haul routes listed in Table 3.16-1 shown above. Impacts to intersections, freeway segments, and freeway on- and off-ramps based on the selected Proposed Project haul routes are presented below.

Intersections

Devil's Gate Reservoir to/from I-210 (eastern disposal sites)

Table 3.16-3 shows the LOS for Proposed Project traffic at year 2014 for the intersections between the reservoir and I-210. All the intersections are anticipated to continue to operate at an LOS D or better for all utilized intersections during the MID-DAY and PM peak periods. Therefore, no significant impacts will occur at these intersections during the MID-DAY and PM peak periods. The Berkshire Place and I-210 eastbound ramps intersection is anticipated to operate at an unacceptable LOS during the AM peak hour, resulting in a significant impact. Table 3.16-3: LOS for Devil's Gate Reservoir to/from I-210 (eastern disposal sites), Year 2014 with Project Traffic AM Peak Period shows the contribution of Proposed Project traffic to existing conditions and year 2014 conditions for the AM peak period.

In order to reduce the impacts to the Berkshire Place and I-210 eastbound ramps intersection during the AM peak period, sediment removal trucks would have to use an alternative route during this period. This alternative route would involve as follows: Loaded trucks will exit the reservoir on the improved, existing westerly access road, turning left onto southbound Oak Grove Drive, then right onto westbound Windsor Avenue, and then east onto I-210 east, to disposal sites in Azusa and Irwindale or I-210 west to the Sun Valley disposal sites.

As shown in Table 3.16-5: Alternative Haul Route to I-210 to Eastern Disposal Sites AM Peak Hour, under this route all the intersections are anticipated to continue to operate at an LOS C or better for all utilized intersections for the AM Peak Period. However, use of this alternative route would require implementation of the following potential impact reduction measure:

- Proposed Project haul trucks would avoid using the Berkshire Place and I-210 eastbound ramps intersection during the AM peak period by instead using the Windsor/Arroyo and I-210 ramps. This would require the median on Oak Grove Drive to be restriped to a Two Way Left Turn Lane (TWLTL). Trucks exiting the Devil's Gate Reservoir driveway will cross the two lanes of oncoming westbound traffic on Oak Grove Drive and utilize the TWLTL if necessary to merge into the eastbound traffic. The changes to Oak Grove Drive would require the approval of the City of Pasadena.

The impact reduction measure discussed above cannot be legally imposed by the LACFCD since the location is under the jurisdiction of the City of Pasadena. Every reasonable effort will be made to coordinate with and receive approval to implement this impact reduction measure; however, LACFCD cannot guarantee that this impact reduction measure will be implemented. Therefore this impact would remain potentially significant.

Table 3.16-3: LOS for Devil's Gate Reservoir to/from I-210 (eastern disposal sites), Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				MID-DAY (2-4 PM)				PM			
Intersection # / Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
1	Berkshire Place and I-210 eastbound ramps	F	51.4	-	-	B	10.8	-	-	C	23.7	-	-	D	31.6	-	-
2	Berkshire Place and I-210 westbound ramps	A	9.5	-	-	A	4.9	-	-	A	7.2	-	-	A	3.8	-	-
3	Oak Grove Drive and Berkshire Place	B	19.2	0.93	B	A	5.6	0.29	A	A	8.4	0.57	B	A	8	0.57	B
4	Oak Grove Drive and Foothill Freeway Overpass	C	19.2	-	-	A	9.6	-	-	A	9.5	-	-	B	11.3	-	-
5	Windsor Avenue and Oak Grove Drive/Woodbury Road	C	34.7	0.94	D	B	14.3	0.54	A	B	17.1	0.58	A	C	24.9	0.76	C
6	Windsor Avenue/Arroyo Boulevard and I-210 westbound ramps	B	10.4	0.66	B	A	6	0.31	A	A	7.3	0.41	A	A	8.2	0.45	B

Table 3.16-4: Devil's Gate Reservoir to/from I-210 (eastern disposal sites) AM Peak Period

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project Mitigation		
	Intersection # / Name	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
1	Berkshire Place and I-210 eastbound ramps	-	D	-	E	YES	-	F	N/A*	N/A*	YES
2	Berkshire Place and I-210 westbound ramps	-	A	-	A	NO	-	A	NMR**	NMR**	NO
3	Oak Grove Drive and Berkshire Place	0.50	A	0.67	A	NO	0.93	B	NMR**	NMR**	NO
4	Oak Grove Drive and Foothill Freeway Overpass	-	B	-	C	NO	-	C	NMR**	NMR**	NO
5	Windsor Avenue and Oak Grove Drive/Woodbury Road	0.87	C	0.86	C	NO	0.94	C	NMR**	NMR**	NO
6	Windsor Avenue/Arroyo Boulevard and I-210 westbound ramps	0.53	A	0.57	A	NO	0.66	B	NMR**	NMR**	NO

*No mitigation available.
**No mitigation required.

Table 3.16-5: Alternative Haul Route to I-210 to Eastern Disposal Sites AM Peak Hour

AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project and Impact Reduction Measure*		Year 2014 with Project and Mitigation		
Intersection # / Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
4	Oak Grove Drive and Foothill Freeway Overpass	-	B	-	C	NO	-	C	NMR**	NMR**	NO
5	Windsor Avenue and Oak Grove Drive/Woodbury Road	0.87	C	0.86	C	NO	0.94	C	NMR**	NMR**	NO
6	Windsor Avenue/Arroyo Boulevard and I-210 westbound ramps	0.53	A	0.60	A	NO	0.68	B	NMR**	NMR**	NO
7	Windsor Avenue/Arroyo Boulevard and I-210 eastbound ramps	0.49	C	0.53	C	NO	0.39	C	NMR**	NMR**	NO

* Use of this alternative route would require implementation of the impact reduction measure discussed above. LACFCD cannot guarantee implementation of this measure. Measure would require approval from the City of Pasadena.
**No mitigation required.

Devil's Gate Reservoir to/from I-210 (western disposal sites)

Table 3.16-6 shows the LOS for Proposed Project traffic at year 2014 for the intersections between the reservoir and I-210. Table 3.16-7: Devil's Gate Reservoir to/from I-210 (western disposal sites) AM Peak Period shows the contribution of Proposed Project traffic to existing conditions and year 2014 conditions for the AM peak period. All the intersections are anticipated to continue to operate at an LOS C or better for all utilized intersections throughout the day. Therefore, no significant impacts will occur at these intersections.

Table 3.16-6: LOS for Devil's Gate Reservoir to/from I-210 (western disposal sites), Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				MID-DAY (2-4 PM)				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
2	Berkshire Place and I-210 westbound ramps (3)	B	10.4	-	-	A	4.6	-	-	A	6.6	-	-	A	3.5	-	-
3	Oak Grove Drive and Berkshire Place	B	19.2	0.93	B	A	5.6	0.29	A	A	8.4	0.57	B	A	8	0.57	B
4	Oak Grove Drive and Foothill Freeway Overpass (3)	C	19.2	-	-	A	9.6	-	-	A	9.5	-	-	B	11.3	-	-

Table 3.16-6: LOS for Devil's Gate Reservoir to/from I-210 (western disposal sites), Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				MID-DAY (2-4 PM)				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
5	Windsor Avenue and Oak Grove Drive/Woodbury Road	C	34.7	0.94	D	B	14.3	0.54	A	B	17.1	0.58	A	C	24.9	0.76	C
6	Windsor Avenue/Arroyo Boulevard and I-210 westbound ramps	A	9.7	0.61	B	A	5.7	0.37	A	A	6.4	0.37	A	A	7.8	0.44	B
7	Windsor Avenue/Arroyo Boulevard and I-210 eastbound ramps	C	28.6	0.57	A	B	16.1	0.39	A	B	17.4	0.42	A	C	26.8	0.63	A

Table 3.16-7: Devil's Gate Reservoir to/from I-210 (western disposal sites) AM Peak Period

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Mitigation		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
2	Berkshire Place and I-210 westbound ramps	-	A	-	A	NO-	-	B	NMR*	NMR*	NO
3	Oak Grove Drive and Berkshire Place	0.50	A	0.67	A	NO	0.93	B	NMR*	NMR*	NO
4	Oak Grove Drive and Foothill Freeway Overpass	-	B	-	C	NO	-	C	NMR*	NMR*	NO
5	Windsor Avenue and Oak Grove Drive/Woodbury Road	0.87	C	0.86	C	NO	0.94	C	NMR*	NMR*	NO
6	Windsor Avenue/Arroyo Boulevard and I-210 westbound ramps	0.53	A	0.55	A	NO	0.61	A	NMR*	NMR*	NO
7	Windsor Avenue/Arroyo Boulevard and I-210 eastbound ramps	0.49	C	0.53	C	NO	0.57	C	NMR*	NMR*	NO

*No mitigation required.

Manning Pit Area to/from I-210

Table 3.16-8 shows the LOS for Proposed Project traffic at year 2014 for the intersections between Manning Pit and I-210. Table 3.16-9 shows the contribution of Proposed Project traffic to existing conditions and year 2014 conditions for the AM peak period. All the intersections are anticipated to continue to operate at an LOS C or better for all utilized intersections throughout the day. Therefore, no significant impacts will occur at these intersections.

Table 3.16-8: LOS for Manning Pit Area to/from I-210 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
8	Irwindale Avenue and I-210 westbound ramps	A	7.1	0.56	A	A	7.4	0.53	A	A	7.3	0.56	A
9	Irwindale Avenue and I-210 eastbound ramps	C	27.9	0.93	C	C	22.0	0.79	C	C	26.9	0.91	D
10	Irwindale Avenue and First Street	B	10.6	0.63	B	B	14.2	0.65	B	C	23.2	0.86	C
11	Irwindale Avenue and Gladstone Street	C	29.9	0.92	D	B	16.0	0.72	B	C	30.2	0.95	D
12	Vincent Avenue and Gladstone Street	B	14.3	0.80	C	A	8.9	0.45	A	B	14.4	0.72	C
13	Vincent Avenue and Arrow Highway	B	17.6	0.90	D	A	9.8	0.45	A	B	15.4	0.93	D

Table 3.16-9: Manning Pit Area to/from I-210, AM Peak Period

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Mitigation		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
8	Irwindale Avenue and I-210 westbound ramps	0.48	A	0.5	A	NO	0.56	A	NMR*	NMR*	NO
9	Irwindale Avenue and I-210 Eastbound Ramps	0.84	C	0.85	C	NO	0.93	C	NMR*	NMR*	NO
10	Irwindale Avenue and First Street	0.6	B	0.64	B	NO	0.63	B	NMR*	NMR*	NO
11	Irwindale Avenue and Gladstone Street	0.81	C	0.87	C	NO	0.92	C	NMR*	NMR*	NO

Table 3.16-9: Manning Pit Area to/from I-210, AM Peak Period

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Mitigation		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
12	Vincent Avenue and Gladstone Street	0.61	B	0.72	B	NO	0.8	B	NMR*	NMR*	NO
13	Vincent Avenue and Arrow Highway	0.77	B	0.8	B	NO	0.9	B	NMR*	NMR*	NO

*No mitigation required.

Waste Management to/from I-210

Table 3.16-10 shows the LOS for Proposed Project traffic at year 2014 for the intersections between Waste Management and I-210. Table 3.16-11 shows the contribution of Proposed Project traffic to existing conditions and year 2014 conditions for the AM peak period. All the intersections are anticipated to continue to operate at an LOS C or better for all utilized intersections throughout the day. Therefore, no significant impacts will occur at these intersections.

Table 3.16-10: LOS for Waste Management Facility to/from I-210 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
8	Irwindale Avenue and I-210 westbound ramps	A	7.1	0.56	A	A	7.4	0.53	A	A	7.3	0.56	A
9	Irwindale Avenue and I-210 eastbound ramps	C	27.9	0.93	C	C	22.0	0.79	C	C	26.9	0.91	D
10	Irwindale Avenue and First Street	B	10.6	0.63	B	B	14.2	0.65	B	C	23.2	0.86	C
11	Irwindale Avenue and Gladstone Street	C	29.9	0.92	D	B	16.0	0.72	B	C	30.2	0.95	D
12	Vincent Avenue and Gladstone Street	B	11.7	0.68	B	A	8.7	0.31	A	B	11.0	0.57	B

Table 3.16-11: Waste Management to/from I-210, AM Peak Period

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Mitigation		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
8	Irwindale Avenue and I-210 westbound ramps	0.48	A	0.5	A	NO	0.56	A	NMR*	NMR*	NO
9	Irwindale Avenue and I-210 eastbound ramps	0.84	C	0.85	C	NO	0.93	C	NMR*	NMR*	NO
10	Irwindale Avenue and First Street	0.6	B	0.64	B	NO	0.63	B	NMR*	NMR*	NO
11	Irwindale Avenue and Gladstone Street	0.81	C	0.87	C	NO	0.92	C	NMR*	NMR*	NO
12	Vincent Avenue and Gladstone Street	0.61	B	0.65	B	NO	0.68	B	NMR*	NMR*	NO

*No mitigation required.

Vulcan Material Reliance Facility to/from I-210

Table 3.16-12 shows the LOS for Proposed Project traffic at year 2014 for the intersections between Vulcan Material Reliance Facility and I-210. All the intersections are anticipated to continue to operate at an LOS D or better for all utilized intersections during the AM and MID-Day peak periods. Therefore, no significant impacts will occur at these intersections during these time periods. The Irwindale Avenue/Foothill Boulevard intersection is anticipated to operate at an unacceptable LOS during the PM peak hour, resulting in a significant impact. Table 3.16-13 shows the contribution of Proposed Project traffic to existing conditions and year 2014 conditions for the PM peak period. Implementation of Mitigation Measure MM TRA-1 would reduce the impact to the Irwindale Avenue/Foothill Boulevard intersection to less than significant.

Table 3.16-12: LOS for Vulcan Material Reliance Facility to/from I-210 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY				PM			
Intersection # / Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
8	Irwindale Avenue and I-210 westbound ramps	A	7.2	0.57	A	A	7.5	0.54	A	A	7.5	0.58	A
9	Irwindale Avenue and I-210 eastbound ramps	C	27.9	0.90	C	C	22.5	0.80	C	C	26.6	0.88	D
53	Irwindale Avenue and Foothill Boulevard	C	30.0	0.87	C	D	46.8	1.01	D	E	77.1	1.09	F

Table 3.16-13: Vulcan Material Reliance Facility to/from I-210, PM Peak Period

Intersection PM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Mitigation		
Intersection # / Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
8	Irwindale Avenue and I-210 westbound ramps	0.50	A	0.52	A	NO	0.58	A	NPPT*	NPPT*	NO
9	Irwindale Avenue and I-210 eastbound ramps	0.83	C	0.84	C	NO	0.88	C	NPPT*	NPPT*	NO
53	Irwindale Avenue and Foothill Boulevard	0.94	D	1.05	D	NO	1.09	E	NPPT*	NPPT*	NO

*No Proposed Project traffic during PM peak hour with implementation of Mitigation Measure MM TRA-1.

Scholl Canyon Landfill to/from SR-134

Table 3.16-14 shows the LOS for Proposed Project traffic at Year 2014 for the intersections between Scholl Canyon Landfill and SR-134. All the intersections are anticipated to continue to operate at an LOS B or better for all utilized intersections during the MID-DAY peak period. Therefore, no significant impacts will occur at these intersections during the MID-DAY peak period.

The Figueroa St/Scholl Canyon Road and SR-134 westbound ramps intersection is anticipated to operate at an unacceptable LOS during the AM and PM peak hours, resulting in a significant impact. Reducing this impact to less than significant would require implementation of the following potential impact reduction measure:

- Figueroa Street/Scholl Canyon Road and SR-134 westbound ramps: Restripe the westbound right turn lane to a shared left-right turn lane and the northbound through lane to a shared through-right turn lane. The northbound direction will include a shared through-right turn lane and a right turn lane. The southbound direction will include a shared through-left turn lane and a through turn lane. The westbound direction will include a left turn lane and a shared left-right turn lane. This impact reduction measure will require the approval of the City of Los Angeles and Caltrans.

Table 3.16-15 and Table 3.16-16 show the contribution of Proposed Project traffic to existing conditions and year 2014 conditions for the AM and PM peak periods, respectively. As shown in these tables, implementation of the impact reduction measure discussed above would reduce the impact to the Figueroa St/Scholl Canyon Road and SR-134 westbound ramps intersection to less than significant.

This impact reduction measure cannot be legally imposed by the LACFCD. Every reasonable effort will be made to coordinate with and receive approval to implement the impact reduction measure; however, LACFCD cannot guarantee that the measure will be implemented therefore this impact could remain significant.

Table 3.16-14: LOS for Scholl Canyon Landfill to/from SR-134 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
21	Figueroa St/Scholl Canyon Road and SR-134 westbound ramps	E	41.2	-	-	B	14.4	-	-	E	49.9	-	-
	With Lane Modification	C	15.3	-	-	B	11.0	-	-	C	15.7	-	-
22	Figueroa Street and Eagle Vista Drive	B	14.2	-	-	B	12.8	-	-	C	22.9	-	-
23	Figueroa Street and SR-134 eastbound ramps	A	9.2	0.66	B	A	6.4	0.44	A	A	8.6	0.63	B

Table 3.16-15: Scholl Canyon Landfill to/from SR-134, AM Peak Hours

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure*		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
21	Figueroa St/Scholl Canyon Road and SR-134 Westbound Ramps	-	D	-	E	YES	-	E	-	C	NO
22	Figueroa Street and Eagle Vista Drive	-	B	-	B	NO	-	B	NMR**	NMR**	NO
23	Figueroa Street and SR-134 Eastbound Ramps	0.5	A	0.57	A	NO	0.66	A	NMR**	NMR**	NO

* Use of this alternative route would require implementation of the impact reduction measure discussed above. LACFCD cannot guarantee implementation of this measure. Measure would require approval from the City of Los Angeles and Caltrans.
**No mitigation required.

Table 3.16-16: Scholl Canyon Landfill to/from SR-134, PM Peak Hours

Intersection PM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
21	Figueroa St/Scholl Canyon Road and SR-134 westbound ramps	-	D	-	D	YES	-	E	-	C	NO
22	Figueroa Street and Eagle Vista Drive	-	C	-	C	NO	-	C	NMR*	NMR*	NO
23	Figueroa Street and SR-134 eastbound ramps	0.46	A	0.55	A	NO	0.63	A	NMR*	NMR*	NO

*No mitigation required.

Sheldon Pit to/from I-210

The preferred route identified for Sheldon Pit is the route that has been designated by the site operator for site access. Table 3.16-17 shows the LOS for Proposed Project traffic at year 2014 for the intersections between the Sheldon Pit and I-210. All the intersections are anticipated to continue to operate at an LOS D or better for all utilized intersections during the MID-DAY peak period. Therefore, no significant impacts will occur at these intersections during the MID-DAY peak period.

Table 3.16-18 and Table 3.16-19 show the contribution of Proposed Project traffic to existing conditions and Year 2014 conditions for the AM and PM peak periods, respectively. The Glenoaks Boulevard and Osborne Street intersection is anticipated to operate at an unacceptable LOS during the AM and PM peak hours, resulting in a significant impact.

Table 3.16-17: LOS for Sheldon Pit to/from I-210 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
24	Foothill Boulevard and I-210 westbound ramps	A	5.8	0.30	A	A	5.9	0.31	A	A	8.5	0.56	A
25	Foothill Boulevard and I-210 eastbound ramps	A	6.4	0.32	A	A	6.7	0.33	A	A	7.9	0.44	A
26	Foothill Boulevard and Osborne Street	C	20.7	0.78	D	B	10.8	0.56	A	C	21.1	0.88	D
27	Glenoaks Boulevard and Osborne Street	F	105.7	1.15	F	D	35.4	0.88	C	E	55.4	0.95	E
28	Glenoaks Boulevard and Montague Street	B	10.5	0.79	B	A	9.5	0.41	A	A	10.0	0.62	C
29	Glenoaks Boulevard and Branford Street	B	17.9	0.80	C	B	16.5	0.65	B	C	21.9	0.91	D
30	Glenoaks Boulevard and Sheldon Street	B	14.2	0.86	E	A	8.1	0.56	B	C	21.8	1.10	D

Table 3.16-18: Sheldon Pit to/from I-210, AM Peak Hours

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
24	Foothill Boulevard and I-210 westbound ramps	0.51	A	0.57	A	NO	0.30	A	NMR*	NMR*	NO
25	Foothill Boulevard and I-210 eastbound ramps	0.60	A	0.63	A	NO	0.32	A	NMR*	NMR*	NO
26	Foothill Boulevard and Osborne Street	0.89	B	1.16	D	NO	0.78	C	NMR*	NMR*	NO
27	Glenoaks Boulevard and Osborne Street	0.99	E	1.13	F	YES	1.15	F	N/A**	N/A**	YES

Table 3.16-18: Sheldon Pit to/from I-210, AM Peak Hours

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
28	Glenoaks Boulevard and Montague Street	0.69	A	0.72	A	NO	0.79	B	NMR*	NMR*	NO
29	Glenoaks Boulevard and Branford Street	0.77	B	0.81	B	NO	0.80	B	NMR*	NMR*	NO
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.78	B	NO	0.86	B	NMR*	NMR*	NO

*No mitigation required.
**No mitigation available.

Table 3.16-19: Sheldon Pit to/from I-210, PM Peak Hours

Intersection PM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure		
Intersection # / Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
24	Foothill Boulevard and I-210 westbound ramps	0.46	A	0.50	A	NO	0.56	A	NMR*	NMR*	NO
25	Foothill Boulevard and I-210 eastbound ramps	0.39	A	0.41	A	NO	0.44	A	NMR*	NMR*	NO
26	Foothill Boulevard and Osborne Street	0.73	B	0.91	B	NO	0.88	C	NMR*	NMR*	NO
27	Glenoaks Boulevard and Osborne Street	0.90	D	0.90	D	NO	0.95	E	N/A**	N/A**	YES
28	Glenoaks Boulevard and Montague Street	0.55	A	0.58	A	NO	0.62	A	NMR*	NMR*	NO
29	Glenoaks Boulevard and Branford Street	0.76	C	0.80	C	NO	0.91	C	NMR*	NMR*	NO
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.95	B	NO	1.10	C	NMR*	NMR*	NO

*No mitigation required.
**No mitigation available.

Sun Valley Fill Site to/from I-210

The preferred route identified for the Sun Valley Fill Site is the route that has been designated by the site operator for site access. Table 3.16-20 shows the LOS for Sun Valley Fill Site to/from I-210 Intersections, Year 2014 with Project Traffic for the intersections between the Sheldon Pit and I-210. All the intersections are anticipated to continue to operate at an LOS D or better for all utilized

intersections during the MID-DAY peak period. Therefore, no significant impacts will occur at these intersections during the MID-DAY peak period.

Table 3.16-21 and Table 3.16-23 show the contribution of Proposed Project traffic to existing conditions and Year 2014 conditions for the AM and PM peak periods, respectively. The Glenoaks Boulevard and Osborne Street intersection is anticipated to operate at an unacceptable LOS during the AM and PM peak hours, resulting in a significant impact.

Table 3.16-20: LOS for Sun Valley Fill Site to/from I-210 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
24	Foothill Boulevard and I-210 westbound ramps	A	5.8	0.30	A	A	5.9	0.31	A	A	8.5	0.56	A
25	Foothill Boulevard and I-210 eastbound ramps	A	6.4	0.32	A	A	6.7	0.33	A	A	7.9	0.44	A
26	Foothill Boulevard and Osborne Street	C	20.7	0.78	D	B	10.8	0.56	A	C	21.1	0.88	D
27	Glenoaks Boulevard and Osborne Street	F	105.7	1.15	F	D	35.4	0.88	C	E	55.4	0.95	E
28	Glenoaks Boulevard and Montague Street	B	10.5	0.79	B	A	9.5	0.41	A	A	10.0	0.62	C
29	Glenoaks Boulevard and Branford Street	B	17.9	0.80	C	B	16.5	0.65	B	C	21.9	0.91	D
30	Glenoaks Boulevard and Sheldon Street	B	14.2	0.86	E	A	8.1	0.56	B	C	21.8	1.10	D

Table 3.16-21: Sun Valley Fill Site to/from I-210, AM Peak Hours

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
24	Foothill Boulevard and I-210 westbound ramps	0.51	A	0.57	A	NO	0.30	A	NMR*	NMR*	NO
25	Foothill Boulevard and I-210 eastbound ramps	0.60	A	0.63	A	NO	0.32	A	NMR*	NMR*	NO
26	Foothill Boulevard and Osborne Street	0.89	B	1.16	D	NO	0.78	C	NMR*	NMR*	NO
27	Glenoaks Boulevard and Osborne Street	0.99	E	1.13	F	YES	1.15	F	N/A**	N/A**	YES
28	Glenoaks Boulevard and Montague Street	0.69	A	0.72	A	NO	0.79	B	NMR*	NMR*	NO
29	Glenoaks Boulevard and Branford Street	0.77	B	0.81	B	NO	0.80	B	NMR*	NMR*	NO
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.78	B	NO	0.86	B	NMR*	NMR*	NO

*No mitigation required.
**No mitigation available.

Table 3.16-22: Sun Valley Fill Site to/from I-210, PM Peak Hours

Intersection PM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Potential Impact Reduction Measure		
Intersection # / Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
24	Foothill Boulevard and I-210 westbound ramps	0.46	A	0.50	A	NO	0.56	A	NMR*	NMR*	NO
25	Foothill Boulevard and I-210 eastbound ramps	0.39	A	0.41	A	NO	0.44	A	NMR*	NMR*	NO
26	Foothill Boulevard and Osborne Street	0.73	B	0.91	B	NO	0.88	C	NMR*	NMR*	NO
27	Glenoaks Boulevard and Osborne Street	0.90	D	0.90	D	NO	0.95	E	N/A**	N/A**	YES
28	Glenoaks Boulevard and Montague Street	0.55	A	0.58	A	NO	0.62	A	NMR*	NMR*	NO
29	Glenoaks Boulevard and Branford Street	0.76	C	0.80	C	NO	0.91	C	NMR*	NMR*	NO
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.95	B	NO	1.10	C	NMR*	NMR*	NO

*No mitigation required.
**No mitigation available.

Bradley Landfill to/from I-210

The preferred route identified for Bradley Landfill is the route that has been designated by the site operator for site access. Table 3.16-23 below shows the LOS for Proposed Project traffic at Year 2014 for the intersections between the Bradley Landfill and I-210. All the intersections are anticipated to continue to operate at an LOS D or better for all utilized intersections during the MID-DAY peak period. Therefore, no significant impacts will occur at these intersections during the MID-DAY peak period.

Table 3.16-23 and Table 3.16-24 show the contribution of Proposed Project traffic to existing conditions and Year 2014 conditions for the AM and PM Peak Periods, respectively. The Glenoaks Boulevard and Osborne Street intersection is anticipated to operate at an unacceptable LOS during the AM and PM peak hours, resulting in a significant impact.

Table 3.16-23: LOS for Bradley Landfill to/from I-210 Intersections, Year 2014 with Project Traffic

Intersection		AM				MID-DAY (12-2 PM)				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS	HCM LOS	HCM Delay	HCM V/C	ICU LOS
24	Foothill Boulevard and I-210 westbound ramps	A	5.8	0.30	A	A	5.9	0.31	A	A	8.5	0.56	A
25	Foothill Boulevard and I-210 eastbound ramps	A	6.4	0.32	A	A	6.7	0.33	A	A	7.9	0.44	A
26	Foothill Boulevard and Osborne Street	C	20.7	0.78	D	B	10.8	0.56	A	C	21.1	0.88	D
27	Glenoaks Boulevard and Osborne Street	F	105.7	1.15	F	D	35.4	0.88	C	E	55.4	0.95	E
28	Glenoaks Boulevard and Montague Street	B	10.5	0.79	B	A	9.5	0.41	A	A	10.0	0.62	C
29	Glenoaks Boulevard and Branford Street	B	17.9	0.80	C	B	16.5	0.65	B	C	21.9	0.91	D
30	Glenoaks Boulevard and Sheldon Street	B	14.2	0.86	E	A	8.1	0.56	B	C	21.8	1.10	D
31	Glenoaks Boulevard and Peoria Street	A	6.2	0.64	A	A	5.4	0.42	A	A	6.4	0.56	A

Table 3.16-24: Bradley Landfill to/from I-210, AM Peak Hours

Intersection AM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Impact Reduction Measure		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
24	Foothill Boulevard and I-210 westbound ramps	0.51	A	0.57	A	NO	0.30	A	NMR*	NMR*	NO
25	Foothill Boulevard and I-210 eastbound ramps	0.60	A	0.63	A	NO	0.32	A	NMR*	NMR*	NO
26	Foothill Boulevard and Osborne Street	0.89	B	1.16	D	NO	0.78	C	NMR*	NMR*	NO
27	Glenoaks Boulevard and Osborne Street	0.99	E	1.13	F	YES	1.15	F	N/A**	N/A**	YES
28	Glenoaks Boulevard and Montague Street	0.69	A	0.72	A	NO-	0.79	B	NMR*	NMR*	NO
29	Glenoaks Boulevard and Branford Street	0.77	B	0.81	B	NO	0.80	B	NMR*	NMR*	NO
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.78	B	NO	0.86	B	NMR*	NMR*	NO
31	Glenoaks Boulevard and Peoria Street	0.54	B	0.61	A	NO	0.64	A	NMR*	NMR*	NO

*No mitigation required.
**No mitigation available.

Table 3.16-25: Bradley Landfill to/from I-210, PM Peak Hours

Intersection PM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Impact Reduction Measure		
Intersection # / Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
24	Foothill Boulevard and I-210 westbound ramps	0.46	A	0.50	A	NO	0.56	A	NMR*	NMR*	NO
25	Foothill Boulevard and I-210 eastbound ramps	0.39	A	0.41	A	NO	0.44	A	NMR*	NMR*	NO
26	Foothill Boulevard and Osborne Street	0.73	B	0.91	B	NO	0.88	C	NMR*	NMR*	NO
27	Glenoaks Boulevard and Osborne Street	0.90	D	0.90	D	NO	0.95	E	N/A**	N/A**	YES
28	Glenoaks Boulevard and Montague Street	0.55	A	0.58	A	NO	0.62	A	NMR*	NMR*	NO
29	Glenoaks Boulevard and Branford Street	0.76	C	0.80	C	NO	0.91	C	NMR*	NMR*	NO
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.78	B	NO	0.86	B	NMR*	NMR*	NO
31	Glenoaks Boulevard and Peoria Street	0.52	B	0.55	A	NO	0.56	A	NMR*	NMR*	NO

*No mitigation required.
**No mitigation available.

Boulevard Pit to/from I-210

The preferred route identified for Boulevard Pit is the route that has been designated by the site operator for site access. Table 3.16-26 shows the LOS for Proposed Project traffic at Year 2014 for the intersections between Boulevard Pit and I-210. All the intersections are anticipated to continue to operate at an LOS D or better for all utilized intersections during the AM and MID-DAY peak periods. Therefore, no significant impacts will occur at these intersections during the AM and MID-DAY peak periods.

The Sheldon Street and San Fernando Road intersection and the Branford Street and San Fernando Road intersection are anticipated to operate at an unacceptable LOS during the PM peak hour, resulting in significant impacts.

Table 3.16-27 shows the contribution of Proposed Project traffic to existing conditions and Year 2014 conditions for the PM peak period. Mitigation Measure MM TRA-2 would reduce the impacts to less than significant.

Table 3.16-26: LOS for Boulevard Pit to/from I-210, Year 2014 with Project Traffic

Intersection		AM				MID-DAY				PM			
Intersection #/Name		HCM LOS	HCM Delay	HCM V/C	HCM LOS	HCM Delay	HCM V/C	HCM LOS	HCM Delay	HCM V/C	HCM LOS	HCM Delay	HCM V/C
30	Glenoaks Boulevard and Sheldon Street	B	14.7	0.87	D	A	7.6	0.50	A	B	13.7	0.86	D
31	Glenoaks Boulevard and Peoria Street	A	6.6	0.59	A	A	9.0	0.39	A	B	16.9	0.53	A
32	Glenoaks Boulevard and Tuxford Street	D	40.1	1.10	E	A	8.9	0.63	B	B	11.1	0.81	C
44	Wheatland Avenue and I-210 eastbound ramp	A	0	-	-	A	0	-	-	A	0	-	-
45	Wheatland Avenue and I-210 westbound ramp	B	11.1	-	-	A	8.8	-	-	B	10.2	-	-
46	Wheatland Avenue and Foothill Boulevard	B	11.3	0.46	A	B	10.6	0.39	A	B	10	0.47	A
47	Wentworth Street and Foothill Boulevard	C	28.4	0.88	A	B	10.4	0.45	A	A	9.7	0.48	A
48	Tuxford Street and San Fernando Road	D	40.1	0.80	C	C	34.7	0.80	B	C	34.8	0.75	C
49	Lankershim Boulevard and San Fernando Road	A	8.6	0.57	A	A	7.8	0.47	A	A	9.6	0.55	A
50	Sheldon Street and San Fernando Road	C	34.8	0.80	C	C	24.3	0.54	A	E	58.1	1.03	E
51	Branford Street and San Fernando Road	D	38.0	0.89	B	C	30.7	0.51	A	F	84.0	0.99	D

Table 3.16-27: Boulevard Pit to/from I-210, PM Peak Hours

Intersection PM Peak Hour		Existing Conditions		Existing Plus Project Conditions		Difference with vs. without project	Year 2014 with Project		Year 2014 with Project and Mitigation		
Intersection #/Name		HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact	HCM V/C	HCM LOS	HCM V/C	HCM LOS	Significant Impact
30	Glenoaks Boulevard and Sheldon Street	0.75	B	0.75	B	NO	0.86	B	NPPT*	NPPT*	NO
31	Glenoaks Boulevard and Peoria Street	0.52	B	0.54	B	NO	0.53	B	NPPT*	NPPT*	NO
32	Glenoaks Boulevard and Tuxford Street	0.54	A	0.65	A	NO	0.81	B	NPPT*	NPPT*	NO
44	Wheatland Avenue and I-210 eastbound ramp	-	A	-	A	NO	-	A	NPPT*	NPPT*	NO
45	Wheatland Avenue and I-210 westbound ramp	-	A	-	A	NO	-	B	NPPT*	NPPT*	NO
46	Wheatland Avenue and Foothill Boulevard	0.27	A	0.43	B	NO	0.47	B	NPPT*	NPPT*	NO
47	Wentworth Street and Foothill Boulevard	0.42	A	0.43	A	NO	0.48	A	NPPT*	NPPT*	NO
48	Tuxford Street and San Fernando Road	0.73	C	0.71	D	NO	0.75	C	NPPT*	NPPT*	NO
49	Lankershim Boulevard and San Fernando Road	0.46	A	0.51	A	NO	0.55	A	NPPT*	NPPT*	NO
50	Sheldon Street and San Fernando Road	0.94	D	0.94	D	NO	1.03	E	NPPT*	NPPT*	NO
51	Branford Street and San Fernando Road	0.92	E	0.95	E	NO	0.99	F	NPPT*	NPPT*	NO

*No Proposed Project traffic during PM peak hour with implementation of Mitigation Measure MM TRA-2.

Freeway Segments

The traffic study analyzed 28 freeway segments to determine the mainline Level-of-Service (LOS). From the traffic analysis it was determined that the increase in Proposed Project truck trips does not cause any major traffic impacts at the identified freeway segments.

Freeway On- and Off-Ramps

This traffic study analyzed 54 on and off-ramps to determine the Level-of-Service (LOS) of the utilized ramps with the study area. From the traffic analysis it was determined that the increase in Proposed Project truck trips do not cause any major traffic impacts at the identified freeway on- and off-ramps.

Reservoir Management

The reservoir management associated with the Proposed Project would require periodic management activities at the Devil's Gate Reservoir. Depending on storm events, sediment excavation/trucking offsite may be required over a period of a few weeks annually. Daily truck traffic is expected to be half the amount that will occur during sediment removal. Due to the limited time period and the reduced truck traffic, reservoir management activities are not expected to adversely affect traffic level of service on the existing roadway network. Therefore, impacts would be less than significant.

Mitigation Measures

See Mitigation Measures MM TRA-1 and MM TRA-2.

Residual Impacts After Mitigation

Implementation of the mitigation measures described above would reduce some but not all of the impacts to traffic and circulation to a level less than significant. Other potential impact reduction measures discussed above could reduce impacts to less than significant. However, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, these impacts could remain potentially significant.

TRANSPORTATION-3 *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).*

Sediment Removal

Implementation of the Proposed Project may include impact reduction measures described above that would require modifications to the existing roadway network. These modifications would consist of roadway restriping to reduce potential traffic impacts to a level less than significant. These changes would not alter existing roadway design and would be implemented consistently with all applicable traffic safety standards. The Proposed Project is limited to excavation and transportation of sediment that has accumulated in Devil's Gate Reservoir and would not introduce any new uses that would be incompatible with the existing roadway system. Therefore, impacts related to traffic hazards would be less than significant.

Reservoir Management

The reservoir management associated with the Proposed Project would not require any modifications to the existing roadway network and would not introduce any new uses that would be incompatible with the existing roadway system. Therefore, no impact would occur.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

The Proposed Project would result in a less than significant impact.

TRANSPORTATION-4 *Result in inadequate emergency access.*

Sediment Removal/Reservoir Management

The Proposed Project would not sever, or otherwise block access to, any existing roadways. No equipment staging will occur on public roadways during construction of the Proposed Project. The impact to emergency access would be a less than significant impact.

Mitigation Measures

No mitigation measures are required.

Residual Impacts After Mitigation

The Proposed Project would result in a less than significant impact.

TRANSPORTATION-5 *Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities supporting alternative transportation (e.g., bus turnouts, bicycle racks).*

Sediment Removal

The Proposed Project would be confined to the roadway network described in Section 3.16.2 and would not adversely affect alternative modes of public transportation such as light rail. Implementation of the Proposed Project would not require closure of any bus stops or disrupt any existing bus routes. The degrading of LOS at intersections, freeway segments, and freeway on- and off-ramps described above under TRANSPORTATION-2 could affect buses using the existing roadway network. This would be a significant impact.

Reservoir Management

The reservoir management associated with the Proposed Project would require periodic management activities at Devil's Gate Reservoir that would not adversely affect traffic level of service on the existing roadway network that could delay bus services. Therefore, reservoir management impacts would be less than significant.

Mitigation Measures

See Mitigation Measures MM TRA-1 and MM TRA-2.

Residual Impacts After Mitigation

Implementation of the mitigation measures described above would reduce some but not all of the impacts to traffic and circulation to a level less than significant. Other potential impact reduction measures discussed above could reduce impacts to less than significant. However, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, these impacts could remain potentially significant.

TRANSPORTATION-6 *Cumulative Impacts*

The traffic impact report took future projects into account during traffic modeling and, therefore, is cumulative in nature. The Project Year 2014 Model included the following projects:

- Hahamongna Watershed Park Multi-Benefit/Multi-Use (MBMU) Project

- National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory (JPL) On-Site Parking Structure
- Temporary Use of the Rose Bowl Stadium by the National Football League (NFL)
- Azusa Material Recovery Facility and Waste Transfer Station Project
- Metro Gold Line Foothill Extension
- Arroyo Seco Canyon Project
- Devil's Gate Water Conservation Project

The Project Year 2014 Model also included an annual increase factor of 4.5 percent totaling 9 percent for 2 years. This is a conservative estimated growth factor to account for any construction improvements and cumulative projects expected to occur in the surrounding area up to 2014.

As described above under TRANSPORTATION-2, during sediment removal the Proposed Project will result in significant delays at five intersections, resulting in significant cumulative impacts. Implementation of Mitigation Measures MM TRA-1 and MM TRA-2 would reduce the Proposed Project's contribution to these impacts but would not reduce the Proposed Project's contribution to a level that is to less than significant.

Mitigation Measures

See Mitigation Measures MM TRA-1 and MM TRA-2.

Residual Impacts After Mitigation

Implementation of the mitigation measures described above would reduce some but not all of the impacts to traffic and circulation to a level less than significant. Other potential impact reduction measures discussed above could reduce impacts to less than significant. However, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, these impacts could remain potentially significant.

3.17 UTILITIES AND SERVICE SYSTEMS

3.17.1 Introduction

This section addresses the effect of the Proposed Project on stormwater services. Included in this section are a description of the existing conditions of the Proposed Project area and thresholds for determining the significance of any anticipated impacts on utilities and service systems.

As noted in the Initial Study (Appendix A), impacts associated with: exceeding wastewater treatment requirements of the applicable Regional Water Quality Control Board; requiring or resulting in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; having sufficient water supplies available to serve the project from existing entitlements and resources, and would not require new or expanded entitlements; resulting in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; being served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; and violating federal, State, or local statues and regulations related to solid waste, were found to have no impact and are not discussed within the EIR.

The environmental baseline condition for the sediment removal phase is considered at the time of publication of the NOP. The environmental baseline conditions for reservoir management will be conditions post sediment removal, approximately in the year 2020.

3.17.2 Existing Environmental Setting

The Proposed Project site is entirely within the Arroyo Seco Watershed, which is directly tributary to the Los Angeles River Watershed. The Proposed Project is located in the reservoir of Devil's Gate Dam, which separates the upper and lower watersheds of the Arroyo Seco. Due to urbanization, large areas of impervious surfaces now occur within the watershed. The impervious surfaces and the steep, mountainous stream channels cause rainwater to flow quickly via storm drains or natural drainages to the Arroyo Seco. Approximately 31.9 square miles of stormwater runoff, originating from the Angeles National Forest, in addition to the communities of La Cañada Flintridge, Altadena, and Pasadena, drains along the Arroyo Seco Watershed toward Devil's Gate Reservoir through Flint Wash, Altadena West Drain, and other drains.

Twenty-three storm drains enter Devil's Gate Reservoir. Most of these storm drains divert runoff from residential neighborhoods of Pasadena, Altadena, and La Cañada Flintridge and from the JPL grounds (USACE 2010). Water also enters the reservoir from Flint Wash on the southwest side of the Proposed Project site (Chambers Group 2011). The stormwater entering Devil's Gate Reservoir flows through Devil's Gate Dam to the channelized lower section of the Arroyo Seco. The Arroyo Seco Channel drains to the Los Angeles River, which eventually outlets to the Pacific Ocean. The Arroyo Seco Channel is a natural creek for several hundred feet downstream of Devil's Gate Dam but soon converts to an engineered, concrete-lined flood control channel with a second natural section approximately 1,500 feet in length near the SR- 134 overpass. The confluence with the Los Angeles River is approximately 9 miles downstream of Devil's Gate Dam (Sediment Transport Capability Analysis 2012). Additional details regarding the watershed and drainage basin are located in Section 3.11, Hydrology and Water Quality.

LACFCD, Southern California Edison (SCE), Southern California Gas Company, and Pasadena Water and Power (PWP) hold easements within the Proposed Project site. Overhead power lines within the Proposed Project site include SCE and the PWP power lines. Some of these power poles are also utilized by Verizon and local cable companies. In addition, communication lines are also installed underground starting at Devil's Gate Dam and traveling along the east side of Oak Grove Drive to the JPL campus. A 12-inch high-pressure natural gas line owned by the Southern California Gas Company is buried from 3 to 8 feet deep and traverses the basin underground from Kent Street to Foothill Boulevard (USACE 2010).

JPL has set up a series of monitoring test wells throughout Devil's Gate Reservoir, on the JPL campus, and in the western residential areas of Altadena to track contaminants in the groundwater. Three water lines, 12-inch, 16-inch, and 30-inch lines, owned by the City of Pasadena run along the east side of the reservoir. (USACE 2010). The Oak Grove Drive sewer main runs near the Proposed Project site and serves the small local sewer line connections to the Oak Grove area of Hahamongna Watershed Park facilities (City of Pasadena 2012b).

3.17.3 Applicable Regulations

LACFCD

Through easements granted in May of 1919 and March of 1965, the City of Pasadena granted the LACFCD, under a perpetual easement, the right to construct, reconstruct, inspect, maintain, repair, and operate Devil's Gate Dam, its spillway, bypasses, tunnels, and other support facilities as may be necessary for the construction and maintenance of a reservoir capable of impounding the waters of the Arroyo Seco for purposes of storage and control and to control such waters as may be necessary in the prevention of damage by flood (City of Pasadena 1919/1965).

City of Pasadena Municipal Code

The Pasadena Municipal Code (Chapter 8.70) sets forth the minimum standards, provisions, and requirements for:

- Regulating non-stormwater discharges to the municipal stormwater system;
- Providing for the control of spillage, dumping, or disposal of materials into the municipal storm-water system;
- Reducing pollutants in stormwater and urban runoff to the maximum extent practicable.

The intent of this chapter is to protect and enhance water quality of our watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Federal Clean Water Act, and pursuant to National Pollutant Discharge Elimination System Permit No. CA0061654, as amended, and any successor legislation and permits.

Hahamongna Watershed Park Master Plan

The Proposed Project site is within the Hahamongna Watershed Park Master Plan (HWPMP 2003) area. Applicable Goals and Objectives of the HWPMP include the following:

Goal 2: The Devil's Gate flood control basin will be managed to provide protection to the developed and natural downstream areas.

Objectives:

- *Facilitate the dam and reservoir maintenance operations in a manner that is compatible with the proposed features of the Master Plan and will result in minimal impacts to the surrounding area.*
- *Maintain or improve the flood capacity behind Devil's Gate Dam.*
- *Develop a sediment removal plan that minimizes the impact to the basin and to the surrounding neighborhoods.*

3.17.4 Significance Criteria

- *UTILITIES-1: Would the project require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*
- *UTILITIES-2: Cumulative Impacts*

3.17.5 Methodology

Potential impacts related to utilities were evaluated on the basis of site-specific information prepared for the Proposed Project and developed through review of existing published reports and mapping.

3.17.6 Impacts and Mitigation

UTILITIES-1 *Require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.*

Sediment Removal

During sediment removal, the Proposed Project would not result in or require the construction of new or expansion of existing stormwater drainage systems.

Drainage patterns within the reservoir change on a regular basis depending on seasonal conditions, water flow, and sediment deposition. Sediment and vegetation removal operations would result in alterations of surface drainage characteristics at the project site due to clearing, grading, and excavation activities. Excavation, grading, and sediment placement activities will adhere to LACDPW specifications, which establish protocols for proper design of slopes and temporary sediment-collecting structures. Although the drainage characteristics for the site will be altered, the Proposed Project overall will result in a positive impact to drainage of Devil's Gate Reservoir because it will help restore the flood control capacity of Devil's Gate Dam and Reservoir.

The Proposed Project will add minimal impermeable surface area to the project site through paving the portion of the project access roads from Oak Grove Drive. This minimal increase in impervious surface area would not result in any significant increase in stormwater runoff that would require new stormwater drainage facilities.

In addition, these activities will not directly involve the existing storm drain outfalls, power lines, gas line, communication lines, water lines, sewer lines, or water wells. Impacts to these utility facilities will be avoided through compliance with City regulations regarding utility facilities, coordination with utility providers, and implementation of LACDPW BMPs.

Reservoir Management

During reservoir management, the Proposed Project would not result in or require the construction of new or expansion of existing stormwater drainage systems. Sediment that accumulates after the proposed removal will be removed through FAST operations or through mechanical excavation and trucking. The FAST operations are expected to be similar to historic FAST operations, and fine sediment discharged through FAST operations will be transported during storm flows to the Pacific Ocean via Arroyo Seco and the Los Angeles River. No impacts to stormwater facilities are expected during FAST operations. Any necessary mechanical removal during reservoir management is expected to be small (average 13,000 cubic yards per year). Impacts to stormwater facilities during mechanical removal will be avoided through compliance with City regulations regarding stormwater facilities and implementation of LACDPW BMPs.

Mitigation Measure

No mitigation measures related to utility facilities are required.

Residual Impacts after Mitigation

No significant unavoidable impacts would occur to utility facilities as a result of the Proposed Project.

UTILITIES-2 *Cumulative Impacts*

Impact Analysis

Overall, the Proposed Project will result in increased flood control abilities of Devil's Gate Dam. Related projects would be required to comply with City regulations to ensure that no impacts to stormwater facilities would occur. During reservoir management, the Proposed Project would not result in or require the construction of new or expansion of existing stormwater drainage systems. No cumulative impacts to stormwater facilities would occur.

Mitigation Measure

No mitigation measures are necessary.

Residual Impacts After Mitigation

Cumulative impacts related to stormwater facilities are less than significance.