

cyaneus), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), prairie falcon (*Falco mexicanus*), and peregrine falcon (*Falco peregrinus anatum*). The majority of the Moreno MDP Watershed includes at least moderate quality foraging habitat for the various raptor species, including the agricultural areas, grassland areas, and to a lesser extent the developed areas (GLA, pp. 41 and 47). Therefore, impacts to raptor foraging habitat would be cumulatively significant, and potentially individually significant. However, the District, Moreno Valley, and Riverside County are signatories to the MSHCP, which provides coverage for raptor foraging habitat. (GLA, p. 47) **Through compliance with the provision of the MSHCP for the individual MSHCP Facilities, potential impacts the loss of raptor foraging habitat are less than significant.**

Threshold B: *The proposed project would adversely affect any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service or 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.*

The MSHCP vegetation mapping (see **Figure 5.2-1a – Vegetation Map North**) identifies riparian scrub habitat in association with proposed Moreno MDP Lines A-1 and A-4. The MSHCP recognizes a number of different riparian categories, including riparian forest, riparian scrub, southern willow scrub, mule fat scrub, southern cottonwood/willow riparian, and southern sycamore/alder riparian. Other riparian categories are represented by a substantial component of invasive species, including giant reed (*Arundo donax*) and tamarisk (*Tamarix* spp.). However, the extent of riparian habitat is inadequately mapped within the Moreno MDP Watershed. Several of these categories appear to be associated with other drainage features within the Project area, including existing drainages associated with the proposed MDP Lines F, G, and K. The drainage feature associated with proposed Line K contains a substantial amount of giant reed (GLA, p. 28). As such, the full extent of riparian habitat within the Moreno MDP Watershed must be determined through Facility-specific mapping to ascertain which areas may be subject to MSHCP requirements (see **MM BIO 4**). (GLA, p. 28) **With implementation of MM BIO 4, impacts to riparian habitat will be considered less than significant with mitigation.**

GLA conducted a preliminary general assessment for waters subject to the jurisdictions of: (i) the ACOE pursuant to Section 404 of the CWA; (ii) the RWQCB pursuant to Section 401 of CWA; and/or (iii) CDFW pursuant to Section 1602 of the California Fish and Game Code. Features with the potential for jurisdiction were mapped (see **Figure 5.2-2 – Potential Jurisdictional Features Map**), including agricultural ditches and other roadside ditches, etc., however a comprehensive, wetland/waters delineation was not conducted. Facility-specific jurisdictional delineations will need to be conducted to determine whether features will be subject to the jurisdictions of the ACOE, RWQCB, and/or CDFW (see **MM BIO 8**). (GLA, p. 48)

The Project area contains roadside ditches and other ditches, which if later are shown to be historic diversions of natural waters, will be potential jurisdictional waters. In addition, there are several other

areas with the potential to support jurisdictional waters, but that are likely maintained by agricultural activities (GLA, p. 41).

Areas supporting hydrophytic vegetation (such as riparian areas identified in **Figures 5.2-1a and 5.2-1b – Vegetation Maps**) would need to be evaluated at a Facility-specific level to determine whether they satisfy wetland criteria. Any “isolated” wetlands will need to be evaluated by the ACOE and the Environmental Protection Agency (EPA) following their joint regulatory guidance, in order to confirm whether any of the “isolated” wetlands would be jurisdictional. **Therefore, with implementation of MM BIO 8, impacts to federally-protected wetlands will be considered less than significant with mitigation.**

Threshold C: *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.*

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation by human disturbance, or by the encroachment of urban development. Movement corridors are important as the combination of topography and other natural factors, in addition to urbanization, has fragmented or separated large open space areas. The fragmentation of natural habitat creates isolated ‘islands’ of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. According to the MSHCP, there are no special linkage corridors within the proposed Moreno MDP Watershed and will not directly impact or impede the use of any recognized wildlife nursery sites (GLA, p. 48).

Portions of the proposed Moreno MDP Facilities contain trees, shrubs, and herbaceous vegetation with the potential to support nesting birds. The MBTA and California Fish and Game Code prohibit impacts to nesting birds. Implementation of the proposed Moreno MDP will result in removing vegetation (i.e., trees, shrubs, and ground cover) suitable for nesting migratory birds (GLA, pp. 41, 47, and 48). **However, with implementation of mitigation measure MM BIO 9, which requires seasonal avoidance of vegetation removal and/or nesting bird surveys, potential impacts to migratory birds are less than significant with mitigation.**

Threshold D: *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

The *Moreno Valley General Plan* contains policies relating to the protection of biological resources and the Moreno Valley Municipal Code includes ordinances to implement such policies. Compliance with the MSHCP will conserve important resources such as mature trees, rock outcroppings, hills, ridges, and other prominent land forms, as open space. The location of specific Moreno MDP Facilities is dictated by engineering and hydraulic concerns. **The Project shall meet the goals and policies of the District, Moreno Valley, and Riverside County relative to the protection of biological resources through compliance with the MSHCP; impacts to local policies or ordinances protecting biological resources are less than significant.**

Threshold E: *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

MSHCP

As discussed in Section 5.2.2 – Related Regulations, the Moreno MDP is located within the boundaries of the MSHCP, the purpose of which is to conserve habitat for selected species throughout western Riverside County. The MSHCP consists of several Criteria Areas and Cells that assist in facilitating the process by which individual properties are evaluated for inclusion and subsequent conservation in the MSHCP. None of the proposed MDP Facilities are located within the MSHCP Criteria Area; thus, none of the potential footprints of the MDP Facilities are targeted for conservation (GLA, p. 6).

Section 3.2.1 of the MSHCP states that, “in the event that a Permittee elects to use property currently depicted as Public/Quasi Public (PQP) Lands on the MSHCP Plan map (Figure 3-1 of MSHCP) in a way that alters the land use such that it would not contribute to Reserve Assembly, the Permittee shall locate and acquire or otherwise encumber replacement acreage at a minimum ratio of 1:1 replacement taking into account direct and indirect effects of PQP Lands in one location with PQP Lands in another location. The Permittee must make findings that the replacement acreage is biologically equivalent or superior to the existing property as set forth in Section 6.5 of the MSHCP, Volume I.” Although the location of the MDP Facilities is conceptual, two proposed MDP Facilities, Lines A and J-9 coincide with PQP Lands. However, the proposed activities in these areas are not expected to adversely affect conservation values of PQP Lands. (GLA, p. 6)

In addition to Criteria Cell requirements, the MSHCP requires consistency with Sections 6.1.2 (Protection of Species within Riparian/Riverine Areas and Vernal Pools), 6.1.3 (Protection of Narrow Endemic Plant Species), 6.1.4 (Urban and Wildlands Interface), 6.3.2 (Additional Survey Needs and Procedures), Appendix C (Standard Best Management Practices), and 7.5.3 (Construction Guidelines). The Moreno MDP’s consistency with these sections is discussed below.

Section 6.1.2 Protection of Species within Riparian/Riverine Areas and Vernal Pools

Implementation of portions of the Moreno MDP will result in impacts to MSHCP riverine features, including in some cases, riparian habitat (GLA, p. 45). The Moreno MDP is not expected to impact vernal pools, as previously stated under Threshold A in Section 5.2.5 under the subheading “Listed Fairy Shrimp. (GLA, p. 43) Pursuant to Section 6.1.2 of the MSHCP, mitigation measures will be required for individual projects which cannot avoid all MSHCP riparian/riverine areas and vernal pools mapped within the footprint of the proposed Moreno MDP Facilities. If it is infeasible to avoid 100 percent of riparian/riverine areas, the loss of habitat must be mitigated for and approved through a Determination of Biologically Equivalent or Superior Preservation (DBESP). DBESP analyses must be submitted to the USFWS and CDFW for a 60-day review period. Mitigation measure **MM BIO 4**, which requires mapping of riparian/riverine areas and vernal pools, and avoidance of these features or 100 percent habitat replacement if avoidance is infeasible, incorporates the requirements of Section 6.1.2.

Therefore, with the incorporation of mitigation, the Moreno MDP Revision will comply with the requirements of the MSHCP, and is therefore consistent with Section 6.1.2.

Section 6.1.3 Protection of Narrow Endemic Plant Species

Section 6.1.3 of the MSHCP requires site-specific focused surveys for narrow endemic plant species where appropriate or suitable habitat is present within the NEPSSA. The proposed Moreno MDP Facilities do not occur within the NEPSSA (GLA, p. 6); therefore, the Moreno MDP Revision will comply with the requirements of the MSHCP, and is thus, consistent with Section 6.1.3.

Section 6.1.4 Urban and Wildlands Interface

Section 6.1.4 of the MSHCP addresses indirect effects associated with locating projects in proximity to the MSHCP Conservation Area, including effects associated with drainage, toxics, lighting, noise, and invasives. The proposed MDP Facilities do not occur adjacent to the MSHCP Conservation Area, and therefore are not expected to result in indirect impacts that would adversely affect wildlife resources within the Conservation Area (GLA, p. 46). Therefore, the Moreno MDP Revision will comply with the requirements of the MSHCP, and is thus, consistent with Section 6.1.4.

Section 6.3.2 Additional Survey Needs and Procedures

Section 6.3.2 requires habitat assessments and focused surveys (within suitable habitat) for the burrowing owl for projects within the burrowing owl survey area. The majority of the proposed Moreno MDP Facilities are within the burrowing owl survey area (GLA, p. 45). Thus, a habitat assessment and focused survey (if suitable habitat is present) are required for individual projects located within the Burrowing Owl Survey Area as required by mitigation measures **MM BIO 2** and **MM BIO 3**.

A portion of Line F occurs within the MSHCP survey area for LAPM and even though the area has been subject to past disturbance, there is some potential for LAPM to be present (GLA, p. 47). Mitigation measure **MM BIO 7**, which requires an LAPM habitat assessment for Facilities within the MSHCP LAPM survey area and a presence/absence trapping study in the event suitable habitat is present satisfies the requirements of Section 6.3.2.

Therefore, with the incorporation of mitigation, the Moreno MDP Revision will comply with the requirements of the MSHCP, and is therefore consistent with Section 6.3.2.

Section 7.0 Design Criteria and Appendix C BMPs

Section 7.5 of the MSHCP sets forth *Guidelines for Facilities Within the Criteria Area and Public/Quasi-Public Lands*. Section 7.5.1 outlines guidelines for planned roadways that are Covered Activities within the Criteria Area and Public/Quasi-Public (PQP) Lands and Section 7.5.2 outlines design guidelines for roads with the potential to result in impediments to wildlife movement. The guidelines in Sections 7.5.1 and 7.5.2 apply to projects involving the construction of roads and do not apply to the proposed Moreno MDP.

Construction of the Moreno MDP Facilities within PQP Lands, i.e., Lines A and J-9, is subject to the construction guidelines in Section 7.5.3. These guidelines require actions such as: preparation of water pollution and erosion control plans for projects involving the movement of more than 50 cubic yards of earth; consideration of seasonal breeding requirements; implementation of sediment and erosion

control measures; minimization of the disturbance footprint, and other practices to prevent indirect impacts to adjacent Conservation Areas.

Because the MDP Facilities will comply with NPDES regulations as discussed in Section 5.4 – Hydrology/Water Quality, and will implement mitigation measure **MM BIO 8**, the Moreno MDP will comply with the requirements of the MSHCP and is, therefore, consistent with Section 7 with mitigation.

Stephens' Kangaroo Rat Habitat Conservation Plan

As discussed in Section 5.2.2 – Related Regulations, the Moreno MDP is located within the boundary of the SKR HCP. Neither the SKR HCP nor MSHCP requires project-specific SKR surveys for sites located outside of the existing Core Reserves. Instead, payment of SKR fees for private projects and participation in the MSHCP for public works projects are sufficient to obtain take authorization for SKR, unless specific lands are targeted for conservation by SKR HCP or MSHCP.

Portions of the Moreno MDP Watershed contain habitat suitable to support SKR, including the grassland areas, and to some extent the agricultural areas. All of the proposed Moreno MDP Facilities occur within the SKR fee assessment area, but outside of the existing SKR reserves and areas additionally targeted for SKR conservation (**Figure 5.2-3 – MSHCP Map**); therefore, focused surveys for SKR are not required. (GLA, p. 47; SKR HCP).

As previously discussed under Threshold A, Moreno MDP Facilities, or portions of the Moreno MDP Facilities, constructed by the District, Moreno Valley, or Riverside County are exempt from payment of the SKR fee; however each public agency must contribute mitigation via the MSHCP. Any Moreno MDP Facilities, or portions of the Moreno Facilities, constructed as part of a private development project are required to pay the SKR HCP/MSHCP mitigation fee to receive coverage. Therefore, no requirements under the SKR HCP other than payment of the SKR HCP mitigation fee is required and potential impacts with regards to conflicting with the provisions of the SKR HCP will be less than significant. (GLA, p. 47)

Implementation of mitigation measures **MM BIO 1** through **MM BIO 8** will also ensure the Project is consistent with the MSHCP. The proposed Project is not located within any other adopted HCP or NCCP. **For the reasons discussed herein, implementation of the proposed Moreno MDP Revision will not conflict with an approved local, regional, or state conservation plan and impacts will be less than significant with mitigation.**

5.2.6 Proposed Mitigation Measures

An EIR is required to describe feasible mitigation measures which could minimize significant adverse impacts (*CEQA Guidelines*, Section 15126.4). Mitigation measures were evaluated for their ability to reduce potentially significant adverse impacts to special-status species and their habitat, as well as impacts to jurisdictional features.

MM BIO 1: Prior to construction of any individual MDP Facility, a Facility-specific general biological resources assessment shall be conducted by a qualified biologist. The general biological resource

assessments shall include project location, project description, regulatory context, methods for field surveys including weather, dates, and time of surveys, an identification of: sensitive plant or animal species that occur or may occur on site, other protected natural resources including sensitive vegetation communities, streams, rivers, vernal pools, and wetlands. The assessments shall include recommendations for subsequent surveys and mitigation measures, if needed. Since the Project is located within the Western Riverside County MSHCP Plan Area, the general biological assessments shall also include a MSHCP Consistency Analysis and Findings pursuant to Sections 6.1.2, 6.1.3, 6.1.4, and 6.3.2 of the MSHCP. For MDP Facilities located within a Criteria Cell, the assessments may be included as part of the Joint Project Review application. If an MDP Facility is being constructed as part of a private development project, the general biological resource assessment prepared for the development project may be utilized, at the discretion of Moreno Valley and the District, in lieu of preparing a separate document specifically for the MDP Facility.

MM BIO 2: In order to avoid impacts to burrowing owls and to comply with the MSHCP, burrowing owl habitat assessments for individual MDP Facilities will be conducted by a qualified biologist following the MSHCP Burrowing Owl Survey Instructions. The burrowing owl habitat assessment may be conducted as part of the general biological resources assessment in **MM BIO 1**. If the result of the habitat assessment indicates that suitable habitat is present, including suitable burrows, focused burrowing owl surveys shall be conducted for those areas with suitable habitat pursuant to Step II, Part B of the MSHCP Survey Instructions. If owls are found in the impact area of an MDP Facility, Species Objective 5 from the MSHCP shall be implemented. If avoidance is not feasible, then individual projects will require the approval of a Determination of Biologically Equivalent or Superior Preservation (DBESP) pursuant to the requirements of Section 6.3.2 of the MSHCP including appropriate mitigation, i.e., on-site or off-site enhancement, restoration, establishment (creation), preservation, relocation and/or payment into habitat mitigation banks or in lieu fee programs, or a combination of one or more of these options.

MM BIO 3: All future MDP facilities within the mapped survey area for Burrowing owls shall have a qualified biologist conduct a pre-construction survey for resident burrowing owls within 30 days prior to commencement of grading and construction activities. If ground-disturbing activities in these areas are delayed or suspended for more than 30 days after the pre-construction survey, the area shall be resurveyed for owls. Take of active nests shall be avoided. The pre-construction survey and any relocation activity will be conducted following accepted protocols and in coordination with the Regional Conservation Authority (RCA), California Department of Fish and Wildlife (CDFW), and U.S. Fish and Wildlife Service.

MM BIO 4: Construction of each future MDP Facility shall be compliant with Section 6.1.2 of the MSHCP. In conjunction with a delineation of jurisdictional waters (see **MM BIO 8**), MSHCP riparian/riverine areas and vernal pools will be mapped for individual projects. This mapping may be conducted as part of the general biological resources assessment in **MM BIO 1**. For areas not excluded as artificially created, the MSHCP requires 100 percent avoidance of riparian/riverine areas. If feasible, individual Facilities will avoid all MSHCP riparian/riverine areas and vernal pools mapped within such Facilities' footprint. If avoidance is not feasible, then individual MDP Facilities will require the approval of a DBESP

including appropriate mitigation, i.e., on-site or off-site enhancement, restoration, establishment (creation), preservation, payment into habitat mitigation banks or in lieu fee programs, or a combination of one or more of these options, to offset the loss of functions and values as they pertain to the MSHCP.

MM BIO 5: Within areas of suitable riparian habitat, a qualified biologist shall conduct protocol presence/absence surveys for the least Bell's vireo following USFWS protocols.

If least Bell's vireos are detected, then 90 percent of the occupied portions of the property that provide for long-term conservation value for the vireo shall be conserved in a manner consistent with conservation of the vireo, if feasible. If conservation is infeasible, then the loss of habitat must be mitigated for and approved through DBESP analyses, which must be submitted to the USFWS and CDFW for a 60-day review period.

MM BIO 6: A qualified biologist will assess individual project sites for habitat with the potential to support listed fairy shrimp, defined as vernal pools, stock ponds, ephemeral ponds, or other human-modified depressions. This assessment may be conducted as part of the general biological resources assessment in **MM BIO 1**. If potentially suitable habitat is identified, a qualified biologist will conduct presence/absence surveys for listed fairy shrimp following accepted protocols.

For areas not excluded as artificially created, the MSHCP requires 100 percent avoidance of vernal pools and listed fairy shrimp habitat. If listed fairy shrimp are detected and avoidance is not feasible, then (1) long-term conservation shall be implemented pursuant to Appendix E of the MSHCP if feasible; or (2) the loss of habitat must be mitigated for and approved through DBESP analyses, which must be submitted to the USFWS and CDFW for a 60-day review period.

MM BIO 7: A qualified biologist will conduct a habitat assessment for individual projects located within the MSHCP Los Angeles pocket mouse survey area. This assessment may be conducted as part of the general biological resources assessment in **MM BIO 1**. If suitable habitat is present, the biologist will conduct a presence/absence trapping study.

If a Los Angeles pocket mouse (LAPM) is detected, then 90 percent of those portions of the Facility footprint that provide for long-term conservation value for LAPM shall be avoided until it is demonstrated that the MSHCP conservation goals for LAPM have been met. If avoidance is not feasible the loss of habitat must be mitigated for and approved through a Determination of Biologically Equivalent or Superior Preservation (DBESP) pursuant to the requirements of Section 6.3.2 of the MSHCP including appropriate mitigation, i.e., on-site or off-site enhancement, restoration, establishment (creation), preservation, relocation and/or payment into habitat mitigation banks or in lieu fee programs, or a combination of one or more of these options. DBESP analyses must be submitted to the USFWS and CDFW for a 60-day review period.

MM BIO 8: Prior to construction, individual projects shall obtain the necessary authorizations from the regulatory agencies for proposed impacts to jurisdictional waters. Project-specific delineations may be required to determine the limits of the U.S. Army Corps of Engineers (ACOE), Regional Water Quality

Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW) jurisdiction. These delineations may be conducted as part of the general biological resources assessment in **MM BIO 1**. Impacts to jurisdictional waters will require authorization by the corresponding regulatory agency. Authorizations may include, but are not limited to, a Section 404 permit from the ACOE, a Section 401 Water Quality Certification from the RWQCB, and a Section 1602 Streambed Alteration Agreement from CDFW.

Project-specific impacts to jurisdictional waters shall be mitigated at the Facility level through the permitting process in a manner approved by the ACOE, CDFW, and the RWQCB, where applicable.

MM BIO 9: In order to comply with the MBTA and/or California Fish and Game Code, site-preparation activities (removal of trees and vegetation) shall be avoided, to the greatest extent possible, during the native and migratory bird species nesting season (generally February 1 through August 31).

If vegetation must be removed during the nesting season, a qualified biologist shall conduct a nesting bird survey of potentially suitable nesting vegetation prior to disturbance. Surveys shall be conducted no more than thirty (30) days prior to scheduled removals, and repeated if necessary. If active nests are identified, the biologist will recommend buffers around the vegetation containing the active nests. The vegetation containing the active nest shall not be removed, and no grading shall occur within the established buffer, until a qualified biologist has determined that the nest is no longer active (i.e., the juveniles are surviving independent from the nest). If clearing is not conducted within thirty (30) days of a negative survey, the nesting survey must be repeated to confirm the absence of nesting birds.

5.2.7 Environmental Effects after Mitigation Measures are Implemented

Based on the required compliance with the MSHCP for all future MDP Facilities, required permits from ACOE, RWQCB, and CDFW for jurisdictional resources, and the implementation of mitigation measures identified in Section 5.2.6, potential adverse impacts associated with special-status species, both plant and wildlife, riparian habitat, wetlands, wildlife movement, local policies, and approved habitat conservation plans will be reduced to less than significant.

Implementation of mitigation measure **MM BIO 1** will require that prior to construction of a specific MDP Facility, a Facility-specific biological resources assessment shall be conducted by a qualified biologist to determine what, if any, biological resources may be impacted. New mitigation or conditions substantially different than those described herein, may trigger subsequent CEQA documentation. However, due to the fluid nature of biological resources and related regulations, each Facility will be evaluated on a case-by-case basis at the time a project is proposed. As a Lead or Responsible Agency for District Facilities and storm drain connections, the District retains the discretion to utilize a CEQA document prepared for a private development project, if the document adequately addresses the impacts of the MDP Facilities. Implementation of mitigation measures **MM BIO 2 through MM BIO 9** will require focused surveys, replacement of lost habitat, and seasonal avoidance of vegetation removal

and/or nesting bird surveys as required by the MSHCP, MBTA, and California Department of Fish and Game Code.

Therefore, the Project is in compliance with local, state, and federal laws, including the MSHCP and CEQA, and potential impacts related to biological resources are less than significant with mitigation.

5.2.8 Cumulative Environmental Effects after Mitigation Measures are Implemented

A cumulatively considerable impact will occur if the Project in conjunction with the cumulative development projects and other future projects result in a significant impact to biological resources. As this Project is analyzed at the programmatic level, cumulative impacts are assessed by the MVGP FEIR, which accounts for the long-term development of Moreno Valley and its Sphere of Influence, which accounts for the locations of the proposed MDP Facilities. The cumulative impacts analysis regarding biological resources as part of MVGP FEIR, determined that the implementation of the MVGP will increase the likelihood that the native and semi-native vegetation communities will be reduced within the western Riverside County region. Riversidean Sage Scrub and Riversidean Alluvial Fan Scrub have been diminished by past development throughout the region. Many Moreno Valley Non-native Grasslands and Field/Croplands support significant wintering raptor populations. Under the MVGP, there is potential for losses of this wildlife resource in all of the Project sections. Native grasslands have been severely diminished throughout California, increasing the use of Non-native Grasslands by raptors. More recently, Non-native Grasslands have come under increased development pressure, as they frequently occur on relatively level, developable lands. The high value of this resource, coupled with the historic and recent regional losses and potential for large-scale losses under MVGP will result in cumulatively considerable raptor wintering and foraging impacts. Where Non-native Grasslands occur in smaller patches and can be demonstrated to lack significant raptor foraging value, their loss will not be individually or cumulatively significant. Impacts to sensitive species within the planning area may also occur and could be cumulatively considerable. However, the MSHCP will provide adequate take coverage and compensation for such anticipated losses. (MVGP FEIR, p. 7-5)

The MSHCP has been designed to compensate for the loss of biological resources throughout western Riverside County, and cumulative impacts to existing biological resources resulting through increased future development have been addressed in the MSHCP Final EIR/EIS dated June 17, 2003. Therefore, future development projects within the planning area that conform to the MSHCP will not result in cumulatively considerable impacts for those biological resources adequately covered by the MSHCP. For resources not covered adequately by the MSHCP, which would entail wetlands in the case of this Project, additional mitigation may be necessary. Any impacts to wetlands are considered cumulatively considerable. However, compliance with federal and state regulations and compliance with any conditions associated with regulatory permits from the permitting agencies (i.e., CDFW, USFWS, Regional Board) are expected to reduce these impacts to a level below significance and less than cumulatively considerable. Impacts to non-covered sensitive species or resources resulting from MVGP implementation are not expected to be cumulatively considerable. (MVGP FEIR, p. 7-6)

The Project's impacts will be mitigated with compliance to MSHCP and mitigation measures **MM BIO 1**, **MM BIO 4**, **MM BIO 5**, **MM BIO 6**, and **MM BIO 8**, which requires, as necessary, appropriate subsequent studies and cooperation with federal and state agencies for any applicable permitting and mitigation measures. Cumulative development projects and other future projects will be assessed individually for their compliance with the MSHCP. These other projects may also require additional mitigation measures as wetlands/riparian/riverine habitat impacts are regulated by certain federal and state agencies. It is reasonable to assume that any additional mitigation measures required of these other projects will bring these projects in conformance with the MSHCP and/or with the appropriate resource authorities.

Therefore, cumulative impacts will be less than significant with mitigation.

5.2.9 References

In addition to other documents, the following references were used in the preparation of this section of the Draft PEIR:

- Glenn Lukos Associates, *General Biological Report for the Moreno Master Drainage Plan*, February 27, 2012. (Appendix C) [Cited as GLA]
- City of Moreno Valley, *City of Moreno Valley General Plan*, July 11, 2006. (Available at http://www.moreno-valley.ca.us/city_hall/general-plan/06gppfinal/gp/gp-tot.pdf, accessed February 21, 2012.) [Cited as MVGP]
- City of Moreno Valley, *Moreno Valley Municipal Code*, August 2011. (Available at <http://qcode.us/codes/morenovalley/>, accessed February 21, 2012.) [Cited as MVMC]
- County of Riverside Transportation and Land Management Agency, *Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) – Volume I – The Plan*, approved June 17, 2003. (Available at http://www.wrc-rca.org/Permit_Docs/mshcp_vol1.html, accessed August 2013.) [Cited as MSHCP Vol I]
- Riverside County Habitat Conservation Agency, *Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County*. (Available at <http://www.skrplan.org/skr.html#017>, accessed August 12, 2013.) [Cited as SKR HCP]

5.3 Cultural Resources

Potential impacts related to:

- Disturbing any human remains, including those interred outside of formal cemeteries; was found to be less than significant in the Initial Study/Notice of Preparation (IS/NOP) prepared for this Project (Appendix A).

The following discussion addresses potential impacts related to:

- Causing a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Causing a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; and/or
- Directly or indirectly destroying a unique paleontological resource or site or unique geologic feature.

The following discussion of cultural resources within the Moreno MDP Boundary, is based on the *Phase I Archaeological Assessment, Moreno Master Drainage Plan Revision, City of Moreno Valley, Riverside County, California*; and *Paleontological Resources Assessment Report, Moreno Master Drainage Plan Revision, City of Moreno Valley, Riverside County, California*, prepared by CRM TECH. These reports are included as Appendices D.1 and D.2, respectively, of this Draft PEIR.

As discussed below, the Project's potential to have a substantial adverse effect, either directly or indirectly to cultural resources is considered to be **less than significant with mitigation incorporated**.

5.3.1 Setting

The Moreno MDP and MDP Facilities are proposed to be located within and or adjacent to both paved roadways and open fields in a rapidly urbanizing former agricultural area. Soils in the MDP Boundary consist of grayish-brown, medium grained sands with some decomposing granite near the hills and boulder outcrops. Past developments have removed almost all traces of the native landscape along the roadways, but some native vegetation was observed in the fields that have not been used for agriculture. Vegetation noted near the roadways consists mostly of introduced landscaping plants, while the rest of the MDP Watershed hosts scattered growths of tumbleweeds, wild mustards, cottonwood, datura, and the typical small grasses and shrubs. (CRM-B, pp. 5–6.)

Ethnohistoric Context

The Moreno MPD is located within an area where the traditional territories of three Native American groups overlap: the Serrano of the San Bernardino Mountains, the Luiseño of the Perris-Elsinore region, and the Gabrielino of the San Gabriel Valley, in addition to a late influx of Cahuilla during the 19th century. (CRM-A, p. 4.)

Despite their difference in linguistic affiliation, Native Americans who lived in the Moreno Valley area exhibited similar social organization and resource procurement strategies. The villages of these Native

Americans were based on clan or lineage groups. Archaeologically, their home/base sites are usually marked by midden deposits, often with bedrock mortar/metate features. During their seasonal rounds to exploit natural resources, small groups often ranged some distances in search of specific plants and animals. The gathering strategies of the Native Americans in this area often left behind signs of special use sites, such as boulder slicks, at the locations of the resources (CRM-A, p. 4).

Historic Context

In comparison to other nearby communities such as Riverside and San Jacinto, Moreno Valley is a “late-boomer” both in early development in the 19th century and in urban growth in the 20th century. By the mid-19th century, the area that constitutes present-day Moreno Valley remained essentially uninhabited, despite its location on a grassy plain surrounded by several large Mexican land grants. In 1853–1855, when the U.S. government initiated the first official land survey in Southern California, the only man-made features observed in the area were a few roads crisscrossing the desert floor, including a wagon road from San Bernardino to Temecula, a second one leading to San Jacinto, and several unidentified roads or trails. (CRM-A, pp. 4–5.)

The Moreno Valley area remained unclaimed public land until 1870, when a large tract of 13,471 acres was purchased from the U.S. government in one single transaction. It was on this vast acquisition that the 11,560-acre Alessandro Tract and the town of Alessandro, where the March Air Reserve Base lies today, were laid out and offered to settlers in 1887, during a land boom that swept through southern California in the 1880s. After this initial development scheme failed, the developers of Redlands in San Bernardino County, fresh from their acclaimed success in creating the Bear Valley Reservoir and the thriving Redlands colony, took over the Alessandro Tract with the intention of irrigating the land with an elaborate water system. (CRM-A, p. 5.)

Water from the Bear Valley Reservoir reached the Moreno Valley area in 1891, ushering in a few years of prosperity in the early 1890s. Two more communities came into being in the vicinity during this brief boom: New Haven, soon to be renamed Moreno, and Midland, also known as Armada. However, the boom soon turned to bust during the drought of the late 1890s, when Bear Valley water was no longer delivered to the Moreno Valley area. As a result, the budding towns in the area became largely abandoned, and many of the buildings were taken up and moved to Riverside. (CRM-A, p. 5.)

During the early 20th century, the Moreno Valley area began to recover slowly. In 1912, a 1,100-acre portion of the original Alessandro Tract was re-subdivided as the Sunnymead Orchard Tract, thus bestowing on the community formerly known as Midland or Armada, the new name of Sunnymead. Eleven years later, a series of land development projects began just to the west of Sunnymead, which ultimately resulted in the establishment of the community of Edgemont. (CRM-A, p. 5.)

Despite these development efforts, Moreno Valley’s economic prospect was severely hampered by the lack of reliable water supply until 1973, after the completion of the California Aqueduct and its southern terminus, Lake Perris. Since then, the promise of affordable housing brought an influx of commuters to the Moreno Valley area, setting off a period of rapid growth and urbanization. By 1984, when residents

in the communities of Moreno, Sunnymead, and Edgemont voted to incorporate as the City of Moreno Valley, the new city had already become the second most populous in Riverside County, due in large part to the availability of affordable housing. (CRM-A, p. 5.)

Paleontological Context

Paleontological resources constitute the remains of prehistoric life, exclusive of any human remains, and include the localities where fossils were collected as well as the sedimentary rock formations from which they were derived. The defining character of fossils or fossil deposits is their geologic age which is typically regarded as older than 10,000 years, the generally accepted temporal boundary marking the end of the last late Pleistocene glaciation and the beginning of the current Holocene epoch. (CRM-B, p. 3.)

Paleontological resources are defined as the remains or traces of prehistoric plant and animal life. Fossil remains commonly include marine shells; the bones and teeth of fish, reptiles, and mammals; leaf assemblages; and petrified wood. Fossil traces include internal and external molds (impressions) and casts created by these organisms (CRM-B, p. 3).

The Moreno MDP lies in the northern portion of the Peninsular Ranges province, and constitutes a part of an eroded mass of Cretaceous and older crystalline rock known as the Perris Block. The Peninsular Ranges province is bounded on the north by the Transverse Ranges province, on the northeast by the Colorado Desert province, and on the west by the Pacific Ocean. It extends southward to the southern tip of Baja California. (CRM-B, p. 5.)

The Perris Block was defined as a region between the San Jacinto and Elsinore-Chino fault zones, bounded on the north by the Cucamonga (San Gabriel) Fault and on the south by a vaguely delineated boundary near the southern end of the Temecula Valley. This structural block is located in the northern portion of the Peninsular Ranges province and is considered to have been active since Pliocene times. The Pliocene- and Pleistocene-age non-marine sedimentary rocks found filling the valley areas within the Perris Block have produced a few vertebrate fossils, as well as a few invertebrate fossil remains (CRM-B, p. 5).

Research Methods

Phase I Archaeological Assessment

Between October 2011 and January 2012, CRM Tech performed a cultural resources study on the Project footprint, which encompasses approximately 60 acres of vacant land and 30 miles of linear rights-of-way. The purpose of the study was to provide the District with the necessary information and analysis to determine whether implementation of the Moreno MDP, specifically the construction of future MDP Facilities, would cause substantial adverse change to any historical/ archaeological resources as mandated by CEQA. The research methods to prepare the Phase I Archaeological Assessment included a historical/archaeological resources records search, historical background research, contact with Native American representatives, and a systematic field survey of the proposed MDP Facilities. (CRM-A, p. i) The resulting Phase I Archaeological Assessment report, which is included as

Appendix D.1 to this Draft PEIR, contains a complete account of the methods, results of the various avenues of research and the final conclusion of the study.

A historical/archaeological resources records search was conducted at the Eastern Information Center (EIC) in October 2011.¹ The records search included an examination of maps and records on file at the EIC to determine if any previously identified cultural resources are located within or near the Project footprint. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory (CRM-A, pp. 4–5).

CRM TECH also conducted historical background research using published literature in local and regional history and historic maps of the Moreno Valley region. Maps consulted included the U.S. General Land Office's (GLO) land survey plat maps dated 1855–1883 and the U.S. Geological Survey's (USGS) topographic maps dated 1901–1953. (CRM-A, p. 6.)

CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a sacred lands file records search in addition to contacting a the 19 Native American representatives recommended by the NAHC in writing to solicit local Native American input regarding possible cultural resources concerns in connection with the Moreno MDP. (CRM-A, p. 6.)

A field survey of the MDP Watershed and alignments of the proposed MDP Facilities and proposed basin sites was conducted on October 27, November 1–3, and November 8, 2011. Because the proposed MDP Facility alignments are primarily confined within the heavily disturbed rights-of-way of various existing public roadways, most of the survey was conducted at a reconnaissance level by driving along the MDP Facility alignments and visually inspecting the surrounding ground surface for any indications of potential cultural resources. (CRM-A, p. 6.)

For those MDP Facilities with alignments lying outside the existing roadway rights-of-way and at the proposed MDP basin sites, a more intensive survey was conducted on foot by walking parallel transects spaced 15 meter (approximately 50 feet) apart. In this way, the entire MDP Watershed was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic periods (i.e., 50 years or older). Since much of the MDP Watershed lies under road pavement, visibility of the native ground surface was generally poor, but was excellent (95 percent) in areas of cleared and unpaved land. (CRM-A, p. 6.)

Paleontological Resources Assessment

Between October 2011 and January 2012, CRM TECH conducted performed a paleontological resources assessment on the Moreno MDP Project footprint, which encompasses approximately 60 acres of vacant land and 30 miles of linear rights-of-way. The purpose of the study was to provide the District with the necessary information and analysis to determine whether implementation of the Moreno MDP,

¹ The EIC is the State of California's official repository of cultural resources records for Riverside County.

specifically the construction of future MDP Facilities would potentially impact any significant paleontological resources as mandated by CEQA. The research methods in the paleontological resources assessment included records searches at the San Bernardino County Museum and the Natural History Museum of Los Angeles County, literature search, and a field survey of the MDP Watershed in accordance with the guidelines of the Society of Vertebrate Paleontology. The resulting Paleontological Resources Assessment Report, which is included as Appendix D.2 to this Draft PEIR, contains a complete account of the methods, results, and the final conclusion of the study. (CRM-B, p. 1.)

A field survey of the MDP Watershed and alignments of the proposed MDP Facilities and proposed basin sites was conducted on October 27, November 1–3, and November 8, 2011. Because the proposed MDP Facility alignments are primarily confined within the heavily disturbed rights-of-way of various existing public roadways, most of the survey was conducted at a reconnaissance level by driving along the MDP Facility alignments and visually inspecting the surrounding ground surface for any indications of potential paleontological resources. (CRM-B, p. 6.)

For those MDP Facilities with alignments lying outside the existing roadway rights-of-way and at the proposed MDP basin sites, a more intensive survey was conducted on foot by walking parallel transects spaced 15 meter (approximately 50 feet) apart. In this way, the entire MDP Watershed was systematically and carefully examined to determine the soil types, to verify the geological formations, and to look for any indications of paleontological remains. Since much of the MDP Watershed lies under road pavement, visibility of the native ground surface was generally poor, but was excellent (95 percent) in areas of cleared and unpaved land. (CRM-B, p. 6.)

Cultural Resources Known within the Project Boundary

Historic Resources

Two (2) historic-period sites, designated 33-015796 and 33-016655, were found across or adjacent to the proposed MDP Facilities. Both of these sites are located near the intersection of State Route 60 and Redlands Boulevard. (CRM-A, p. 7.)

Site 33-015796, which encompasses approximately 70 acres on the west side of Redlands Boulevard, consisted of the remains of a pre-1929 residential complex, represented by abandoned structural foundations, and several irrigation features. However, none of the features recorded in association with Site 33-015796 remain in existence.

Site 33-016655, known as the Kerr Stock Farm (an abandoned horse ranch), was recorded as a potential historic district encompassing approximately 120 acres on the east side of Redlands Boulevard and the south side of State Route 60. The oldest structure at this site was a Craftsman-style residence dating to the 1920s. In 2005, Site 33-016655 was evaluated for historic significance and determined not to be eligible for listing in the California Register of Historical Resources (CRM-A, p. 7). Additionally, the former location of Site 36-016655 is now mostly occupied by a group of newly completed warehouses, and the rest of the site area has also been disturbed. None of the recorded buildings, structures, or features associated with Site 36-016655 remain in or near the Moreno MDP (CRM-A, p. 10).

A wagon road once crossed the southern portion of the Moreno MDP Watershed in a generally east-west direction by the mid-1850s, when the U.S. government conducted the earliest official land surveys in the present-day Moreno Valley area. Other than this wagon road, no other evidence of any human activities was found in the vicinity of the Moreno MDP at that time (CRM-A, p. 7).

With regards to the proposed Moreno MDP basins, no buildings or other notable features were discovered at any of these sites (CRM-A, p. 10). Additionally, the systematic field survey of the proposed MDP Facilities produced completely negative results for potential cultural resources. No potential cultural resources more than 50 years of age were encountered along the MDP Facilities alignments or in the area of the proposed basins (CRM-A, p. 10).

Archaeological Resources

There are 110 recorded prehistoric sites and isolates, the majority of which were described as bedrock milling features located within the one mile of the MDP Facilities (CRM-A, p. 7). However, no evidence of prehistoric, i.e., Native American, human activities was found during the field survey conducted as part of the *Phase I Archaeological Assessment* (CRM-A, p. 10).

Paleontological Resources

No known paleontological localities (or sites) were found within the MDP Watershed or within a one-mile radius of the Project boundary by either the Natural History Museum of Los Angeles County or the San Bernardino County Museum (CRM-B, p. 6). However, paleontological localities have been reported near the MDP Boundary from soil and rock deposits similar to those known to occur within the MDP Boundary. (CRM-B, p. 7.)

5.3.2 Related Regulations

Federal Regulations

National Historic Preservation Act

The National Historic Preservation Act of 1966 established the National Register of Historic Places (NRHP) as the official federal list of cultural resources that have been nominated by state offices for their historical significance at the local, state, or national level. Properties listed in the NRHP, or “determined eligible” for listing, must meet certain criteria for historical significance and possess integrity of form, location, and setting. Significance is determined by four aspects of American history or prehistory recognized by the NRHP Criteria (NPS):

- Association with events that have made a significant contribution to the broad pattern of our history; or
- Association with the lives of persons significant in our past; or
- Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possess high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction, or

- Has yielded, or has the potential to yield, information important to the prehistory or history.

Eligible properties must meet at least one of the above criteria and exhibit integrity. The integrity of a subject property is measured by the degree to which the resource retains its historical properties and conveys its historical character. Integrity also depends on the degree to which the original fabric has been retained, and the reversibility of any changes to the property.

Properties listed in the National Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture.

State Regulations

California Register of Historic Resources (Public Resources Code Section 5020, *et seq.*)

State law also protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources in CEQA documents. A cultural resource is an important historical resource if it meets any of the criteria found in Section 15064.5(a) of the State *CEQA Guidelines*. These criteria are nearly identical to those listed above for the NRHP. The California Register of Historic Resources (CRHR) is maintained by the State Historic Preservation Office (SHPO). Properties listed, or formally designated eligible for listing, on the NRHP are automatically listed on the CRHR, as are state Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

The CRHR includes historic resources of importance in accordance with the following designation criteria:

- Associated with events that have made a significant contribution to the broad pattern of local or regional history or the cultural heritage of California or the United States.
- Associated with the lives of people important to local, California or national history.
- Embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master or possess high artistic values.
- Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or nation.

California Health and Safety Code Sections 7050.5, 7051, and 7054

These sections collectively address the illegality of interference with human burial remains (except as allowed under applicable sections of the Public Resources Code), as well as the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, treatment of the remains prior to, during and after evaluation, and reburial procedures.

Entities responsible for the construction of the proposed MDP Facilities, i.e., the District, Moreno Valley, Riverside County, or private developers, are responsible for compliance with these sections of the

California Health and Safety Code, in the highly unlikely event human burial remains are encountered during the construction of MDP Facilities.

California Public Resources Code Section 5097.98

California Senate Bill 297 (1982), which is codified in Section 5097.98 of the Public Resources Code (PRC) addresses the disposition of Native American burials in archeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NAHC to resolve disputes regarding the disposition of such remains. It has been incorporated into Section 15064.5(e) of the State *CEQA Guidelines*.

Entities responsible for the construction of the proposed MDP Facilities, i.e., the District, Moreno Valley, Riverside County, or private developers, are responsible for compliance with this section of the California Public Resources Code, in the highly unlikely event Native American burials are encountered during the construction of MDP Facilities.

5.3.3 Significance Thresholds Criteria

The Initial Study Environmental Checklist form found in Appendix G of the CEQA Guidelines defines thresholds of significance for Cultural Resources. The Notice of Preparation for the PEIR included the Initial Study Environmental Checklist to show the areas being analyzed in the PEIR; refer to [Appendix A](#) of this PEIR. Accordingly and based on the IS, the Project may be considered to have a significant impact on Cultural Resources in the following areas if the Project would:

- (Threshold A) Create a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- (Threshold B) Create a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5, and/or
- (Threshold C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

5.3.4 Project Design Considerations

No specific designs were considered that would avoid or reduce potential impacts to cultural resources. The type, size, and locations of the proposed Moreno MDP Facilities are limited by the hydrologic constraints and existing development within the Moreno MDP. The proposed Project is intended to identify those facilities needed to provide flood protection to protect existing and future development as the MDP Watershed develops in accordance with the Moreno Valley land use policies.

5.3.5 Environmental Impacts before Mitigation

Threshold A: *Create a substantial adverse change in the significance of a historical resource as defined in Section 15064.5*

Significant effects upon historic structures or features are evaluated by determining the presence or absence of historic status with respect to the feature in question, and then determining the potential for Project implementation to affect the structure or feature, if it possesses historic status. Similarly, CEQA establishes that, substantial adverse change means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired (PRC §5020.1(q)).

As discussed previously under the subheading “Cultural Resources Known within the Project Boundary,” two historic-period sites, designated Site 33-015796 and Site 33-016655, were recorded near the intersection of State Route 60 and Redlands Boulevard in proximity to proposed MDP Facilities. However, none of the recorded facilities associated with Site 33-015796, were found to exist during the field survey. Site 33-016655 was evaluated in 2005, and determined not to be eligible for listing in the California Register of Historical Resources. Additionally, the field survey confirmed that the former location of Site 36-016655 is now mostly occupied by a group of newly completed warehouses, and the rest of the Site 36-016655 has been disturbed and none of the recorded buildings, structures, or features still remains in or near the MDP Boundary or any MDP Facility (CRM-A, pp. 7, 10). Further, none of the other previously recorded sites or isolates identified in the *Phase I Archaeological Assessment* was located in the immediate vicinity of the proposed MDP Facilities and no “historical resources,” as defined by CEQA are known to exist within the area proposed for MDP Facilities.

However, the location of the proposed Moreno MDP Facilities are conceptual at this time and the location and type of Facility may change as more detailed information becomes available during the final design process. For example, the locations of underground utilities, new development patterns, right-of-way availability, or the results of subsequent focused biological surveys may necessitate a shift in alignment or change in the location and type of facility identified in the Moreno MDP. Therefore, if the location or impact area of a specific MDP Facility changes from what is shown in **Figure 3.0-2 – Proposed Project**, implementation of mitigation measure **MM CR 1**, which requires a cultural resources investigation prior to construction of any MDP Facility not evaluated in the *Phase I Archaeological Assessment*. **Therefore, with implementation of mitigation measure MM CR 1, potential impacts to historical resources will be less than significant.**

Threshold B: *Create a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.*

As discussed previously under the subheading “Cultural Resources Known within the Project Boundary,” although there are 110 recorded prehistoric sites, consisting mainly of bedrock milling features, the field survey of the MDP Watershed produced completely negative results for these resources. Much of the area along the proposed MDP Facilities has been developed or redeveloped in recent years, resulting in extensive ground disturbances and, presumably, the loss of any archaeological remains on those properties. (CRM-A, p. 10)

The NAHC reported that the sacred lands record search identified no Native American cultural resources within the Project Boundary and suggested contacting 16 Native American representatives in the region to seek local Native American input regarding any potential cultural resources concerns in connection

with the Moreno MDP. In addition to the 16 Native American representatives on the NAHC referral list, the Cahuilla Band of Indians, Ramona Band of Cahuilla Indians, and the Santa Rosa Band of Cahuilla Indians were also contacted. As of November 2011, only the Pala Band of Mission Indians and Soboba Band of Luiseño Indians had responded. (CRM-A, p. 6)

In a letter dated November 7, 2011, the Pala Band of Mission Indians stated that the Project is located outside their Traditional Use Area; they have had no objection to the Project; and defer to tribes living closer to the MDP Watershed (CRM-A, Appendix 2).

In a letter dated November 10, 2011, the Soboba Band of Luiseño Indians stated that although the Project is outside their existing reservation it is within their tribal Traditional Use Areas. The letter further states the MDP Watershed is regarded as highly sensitive to the people of Soboba because of its close proximity to known Luiseño village sites and trade routes between the Luiseño and Cahuilla tribes. (CRM-A, Appendix 2) **Figure 5.3-1 – Soboba Band of Luiseño Indians Potentially Sensitive Areas, which is included at the end of this section, shows the location of the proposed MDP Facilities in regard to the potentially sensitive resources.**

On December 18, 2012, the District and the Pechanga Band of Luiseño Indians (Pechanga Tribe) entered into an agreement (the “Master Agreement”) that addresses the treatment of Native American human remains, grave goods, funerary objects, ceremonial and sacred items, and cultural resources and established procedures for tribal monitoring by the Pechanga Tribe. Any project that meets all of the following criteria is considered a “Covered Project” and is subject to the terms of the Master Agreement (Master Agreement, Section II):

- A. The District is the CEQA Lead Agency; and
- B. The Project is located within the Pechanga Tribe’s Traditional Land (as shown on Exhibit “A” of the Master Agreement) and not within the cities of Hemet, San Jacinto, and east Moreno Valley; and
- C. The project requires grading, groundbreaking, excavation, and ground-disturbing activities including, but not limited to construction, archaeological testing, studies, surveys, utility trenching, disking, grubbing, and staging activities.

Based on the above criteria, the only MDP Facility that is a Covered Project is the Ironwood Debris Basin, which is located within the unincorporated portion of the Riverside County (see Figure 1-2 Proposed Project and Figure 1-3 City/County Boundaries). All other MDP Facilities are located within east Moreno Valley and not subject to the terms of the Master Agreement.

Based on the results of the records searches and field surveys, no archaeological resources were identified within or adjacent to proposed MDP Facilities (CRM-A, p. 11). Further, due to the disturbed nature of the Project site from previous construction activities, impacts to archaeological resources are not anticipated (CRM-A, p. 10). Nevertheless, in the event of an accidental discovery of an archaeological resource, implementation of mitigation measure **MM CR 2**, which requires construction

in the vicinity of the find be halted until a determination as to the significance of the find is made and any find recorded and curated, will be implemented. Additionally, because the location of the proposed Moreno MDP Facilities are conceptual and may change, implementation of mitigation measure **MM CR 1** is required prior to construction of any MDP Facility not evaluated in the *Phase I Archaeological Assessment* or if the Facility is subsequently changed in location or size to an area outside the study area. Further, because the MDP Facilities are located within the Pechanga Tribe's Traditional Land and the Traditional Use Area of the Soboba Band of Luiseño Indians, if a Facility-specific assessment is required per mitigation measure **MM CR 1** and if construction of such Facility has the potential to impact archaeological and/or cultural resources, then mitigation measure **MM CR 3** requires the proponent for such Facility to notify the appropriate local Native American tribes prior to initiation of ground-disturbance activities, including further surveys. **Therefore, with implementation of mitigation measures MM CR 1 through MM CR 3, potential impacts to archaeological resources will be less than significant.**

Threshold C: *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.*

As discussed under the subheading "Paleontological Context," paleontological resources are defined as the remains or traces of prehistoric plant and animal life. The paleontological sensitivity for a geologic formation is determined by the potential for that formation to produce significant nonrenewable fossils. That is paleontological sensitivity for the proposed MDP Facilities is a function of the type and age of the geologic units within the Project boundary.

The Society of Vertebrate Paleontology issued a set of standard guidelines intended to assist paleontologists to assess and mitigate any adverse effects/impacts to nonrenewable paleontological resources in addition to defining three potential categories of potential paleontological sensitivity for geologic units that might be impacted by a project. These categories are high, low, and undetermined sensitivity (CRM-B, p. 4).

- **High sensitivity:** Geologic units assigned to this category are considered to have a high potential for significant nonrenewable vertebrate, invertebrate, marine, or plant fossils. Sedimentary rock units in this category contain a relatively high density of recorded fossil localities, have produced fossil remains in the vicinity, and are very likely to yield additional fossil remains.
- **Low sensitivity:** Geologic units are assigned to this category when they have produced no or few recorded fossil localities and are not likely to yield any significant nonrenewable fossil remains.
- **Undetermined sensitivity:** Geologic units are assigned to this category when there is limited exposure of the rock units in the area and/or the rock units have been poorly studied.

As discussed under the subheading "Cultural Resources Known within the MDP Boundary," there are no known paleontological localities within the MDP Watershed or within a one-mile radius of the MDP Boundary. However, paleontological localities have been reported nearby from sediment lithologies

similar to those known to occur within the MDP Boundaries. The field survey produced negative results for any indication of potential paleontological resources, and no surficial evidence of fossil remains was observed within or adjacent to the proposed MDP Facilities. Surface soils were found to consist of grayish-brown medium-grain sands and almost the entire area within the MDP Boundaries have been disturbed in the past by agricultural and construction activities. Decomposing granite was observed exposed near the hills and boulder outcrops. (CRM-B, pp. 8–9.)

The results of the paleontological resource assessment indicate that the surficial soils in the alignments of the proposed MDP Facilities consist of alluvium of Recent (Holocene) age and have a low potential for significant nonrenewable fossil remains. However, these younger alluvial sediments are of variable thickness and are known to rest directly on top of older Pleistocene-age sediments, which have a high potential to yield significant vertebrate fossil remains. Therefore, MDP Facility construction has a low potential to impact paleontological resources in the surficial alluvial sediments, but a high potential in the subsurface Pleistocene-age soils (CRM-B, pp. 8–9). Because of the past ground disturbances, it is expected that no intact fossil remains will be contained within the top three to five feet of sediments for MDP Facilities to be located along existing roadways nor within the top two to three feet of sediments in areas not adjacent to existing roadways (CRM-B, p. 9).

The thickness of the younger sediments may be determined from soil borings, should they be available at the onset of grading or trenching activities. However, if the age of the sediments cannot be determined, periodic monitoring will be necessary during excavations and other earth-moving activities reaching beyond three feet in depth and if buried Pleistocene-age sediments are encountered, continuous monitoring will be required Project (CRM-B, p. 9). Therefore, because construction of MDP Facilities will entail excavation and or earth-moving activities at depths greater than three feet and there is a high potential for subsurface Pleistocene-age soils in the MDP Boundary, mitigation measure **MM CR 4**, which requires a paleontological monitoring plan for earth-moving activities in Pleistocene age or older alluvium shall be implemented. In the event fossil specimens are present, mitigation measures **MM CR 5 through MM CR 7**, which relate to the disposition of specimens, shall be implemented. **With the incorporation of the aforementioned mitigation measures, potential impacts to paleontological resources will be less than significant.**

5.3.6 Proposed Mitigation Measures

An EIR is required to describe feasible mitigation measures which could minimize significant adverse impacts (State *CEQA Guidelines*, Section 15126.4). The technical studies completed for the Project determined that it was highly unlikely that the proposed MDP Facility alignments contain significant cultural resources. But because the locations and sizes of the MDP Facilities are conceptual, the following mitigation measures are required to prevent potential impacts to unknown and undiscovered cultural resources from becoming significant.

MM CR 1: Before At the project level, prior to the issuance of a grading permit or Notice to Proceed with construction of any MDP Facility, the applicable Lead Agency (the District, Riverside County, or City of Moreno Valley) shall evaluate each proposed MDP Facility for potential impacts to cultural resources.

~~for which there is a change in the location or size of disturbance area from what was evaluated in the~~
The Lead Agency shall consider applicable data and analyses, such as the Phase I Archaeological Assessment, Moreno Master Drainage Plan Revision, City of Moreno Valley, Riverside County, California (CRM TECH, January 31, 2012), Map of Soboba Band of Luiseño Indians Potentially Sensitive Areas dated September 10, 2014, the City of Moreno Valley General Plan, and other relevant record searches, technical studies, and evidence provided by local Tribes. If needed, the Lead Agency shall require additional CEQA analysis to evaluate potential impacts to cultural resources. The District, Riverside County, or Moreno Valley Public Works Department shall require the proponent of such MDP Facility to prepare or cause to be prepared a Facility specific assessment of the potential for archaeological and cultural resources in order to determine the presence or extent of any such resources and evaluate the significance of such resources (if present). This assessment shall include, at minimum a Native American Heritage Commission Sacred Lands File search, a records search at the Eastern Information Center at the University of California Riverside, a walkover survey, and preparation of a written report containing the results of the assessment. The archaeological evaluations shall be completed prior to the commencement of any ground disturbing activities.

MM CR 2: Should any cultural and/or archaeological resources be discovered during construction of any proposed MDP Facility, construction activities in the vicinity of the discovery shall immediately halt and construction shall be moved to other parts of the subject MDP Facility footprint. A qualified archaeologist shall be retained by the proponent (or designee) of such MDP Facility to determine the significance of the resource(s). If the find is determined to be a historical or unique archaeological resource, as defined in Section 15064.5 of the California Code of Regulations (State *CEQA Guidelines*), avoidance or other appropriate measures as recommended by the archaeologist shall be implemented. Site records or site record updates (as appropriate) shall be prepared and submitted to the Eastern Information Center as a permanent record of the discovery. Treatment and disposition of any discoveries will be determined on a case-by-case basis, in consultation with the Soboba Band of Luiseño Indians.

MM CR 3: If the Facility-specific assessment required by MM CR 1 determines there is a moderate to high potential for archaeological and/or cultural resources to occur along the alignment or area of disturbance, then prior to the issuance of a building grading permit, or Notice to Proceed with ~~or~~ construction of that proposed MDP Facility, the proponent for that Facility shall notify ~~local Native American tribes~~ the Soboba Band of Luiseño Indians to discuss if a monitor is needed to oversee excavation and/or ground disturbing construction activities. With written permission from the Lead Agency (i.e., District, City of Moreno Valley, or Riverside County), tribal monitors may be allowed to monitor, ~~at such tribe's sole cost and expense, all~~ grading, excavation, and ground disturbing activities associated with that MDP Facility, including further surveys. Any costs associated with the tribal monitoring shall be the responsibility of the monitoring Tribe, unless an executed agreement between the Tribe and project proponent provides other payment arrangements.

MM CR 4: Before the issuance of a Notice to Proceed with construction of any proposed MDP Facility, the proponent of the specific MDP Facility shall either:

- a) Establish to the satisfaction of the Lead Agency for the specific MDP Facility (i.e., the District, Moreno Valley, or Riverside County), that no excavation or earth-moving activities shall take place within soils that are identified as Pleistocene-age or older alluvium; or
- b) Retain the services of a qualified paleontologist to review construction and grading plans and develop a paleontological monitoring plan, if necessary. Any monitoring shall be restricted to undisturbed older alluvium, which might be present below the surface. To avoid construction delays, the monitor shall be prepared to quickly salvage fossils, as they are unearthed. The monitor shall remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor shall have the authority to temporarily halt or divert grading equipment to allow for the removal of abundant or large specimens. If the paleontologist determines that monitoring is not necessary, the paleontologist shall prepare a memo documenting such to the satisfaction of the Lead Agency.

MM CR 5: A qualified paleontologist shall be retained to evaluate any recovered paleontological specimens. If the qualified paleontologist deems recovered resources as rare, substantial, or otherwise, unique, the resources shall be prepared and stabilized for formal identification and permanent preservation.

MM CR 6: Identification and curation of recovered paleontological specimens into an established accredited museum repository with permanent retrievable paleontological storage shall be required for recovered resources identified by the qualified paleontologist (retained via **MM CR 5**) as rare, substantial, or otherwise, unique.

MM CR 7: Preparation of a report of findings with an appended itemized inventory of paleontological specimens shall be required. The submittal of the report to the applicable Lead Agency (i.e., District, Moreno Valley, Riverside County) and the curation of specimens identified by the qualified paleontologist (retained via **MM CR 5**) as rare, substantial, or otherwise, unique into an established, accredited museum repository would signify the completion of the mitigation program.

5.3.7 Environmental Effects after Mitigation Measures are Implemented

Impacts related to historic and archaeological resources were found to be less than significant within or adjacent to proposed MDP Facilities. However, because the locations of the proposed MDP Facilities are conceptual at this time and may change as more detailed information becomes available mitigation measure **MM CR 1** requires a Facility-specific assessment of potential historic and archaeological resources. No historic or significant archaeological resources are within the footprint of the proposed MDP Facilities; nonetheless, mitigation measure **MM CR 2** includes provisions for the accidental discovery of archaeological resources. Because the MDP Facilities are located within a tribal Traditional Use Area, mitigation measure **MM CR 3** requires the proponent for any specific proposed Moreno MDP Facility to notify local Native American tribes prior to ground-disturbing activities and may allow tribal monitors to be present (at the tribe's sole expense) during grading, excavation, and other ground-

disturbing activities if the Facility-specific assessment required by **MM CR 1** determines a potential for archaeological and/or cultural resources to occur along the alignment or area of disturbance.

No unique geologic feature is known to exist and no fossils have been documented within or adjacent to the proposed MDP Facilities. However, the Moreno MDP Boundary is underlain by deposits that could potentially have a high sensitivity for paleontological resources. Ground-disturbing activities resulting from construction of the proposed Project could damage or destroy previously undocumented unique fossils, if located within the footprint of proposed MDP Facilities. Mitigation measures **MM CR 4** through **MM CR 7**, outline specific measures that will be taken if certain soil types are present that support paleontological resources; and creates provisions for any rare, substantial, or otherwise, unique paleontological specimens that may be unearthed during construction activities.

Implementation of these mitigation measures will reduce potentially significant impacts upon historical, archaeological, and paleontological resources to a less than significant level.

5.3.8 Cumulative Environmental Effects after Mitigation Measures are Implemented

A cumulatively considerable impact will occur if the Project, in conjunction with other future projects, results in a significant impact to cultural resources. As this Project is analyzed at the programmatic level, cumulative impacts are assessed by the *Moreno Valley General Plan Final Program EIR* (MVGP FEIR). The *Moreno Valley General Plan* (MVGP) accounts for the long-term development of Moreno Valley and its Sphere of Influence, which includes the locations of the proposed MDP Facilities. The cumulative impacts analysis regarding cultural resources as part of the MVGP FEIR determined that the implementation of the MVGP will not be significant if projects are assessed individually for potential impacts and mitigated as appropriate. Thus, this Project's impacts will be mitigated to a less than significant level and other future projects will also be mitigated to a less than significant level, as necessary and according to CEQA. It is reasonably assumed, then, that the project-specific assessments and mitigation will satisfactorily avoid significant impacts, which will prevent cumulatively considerable impacts to cultural resources. **Therefore, cumulative impacts will be less than significant.**

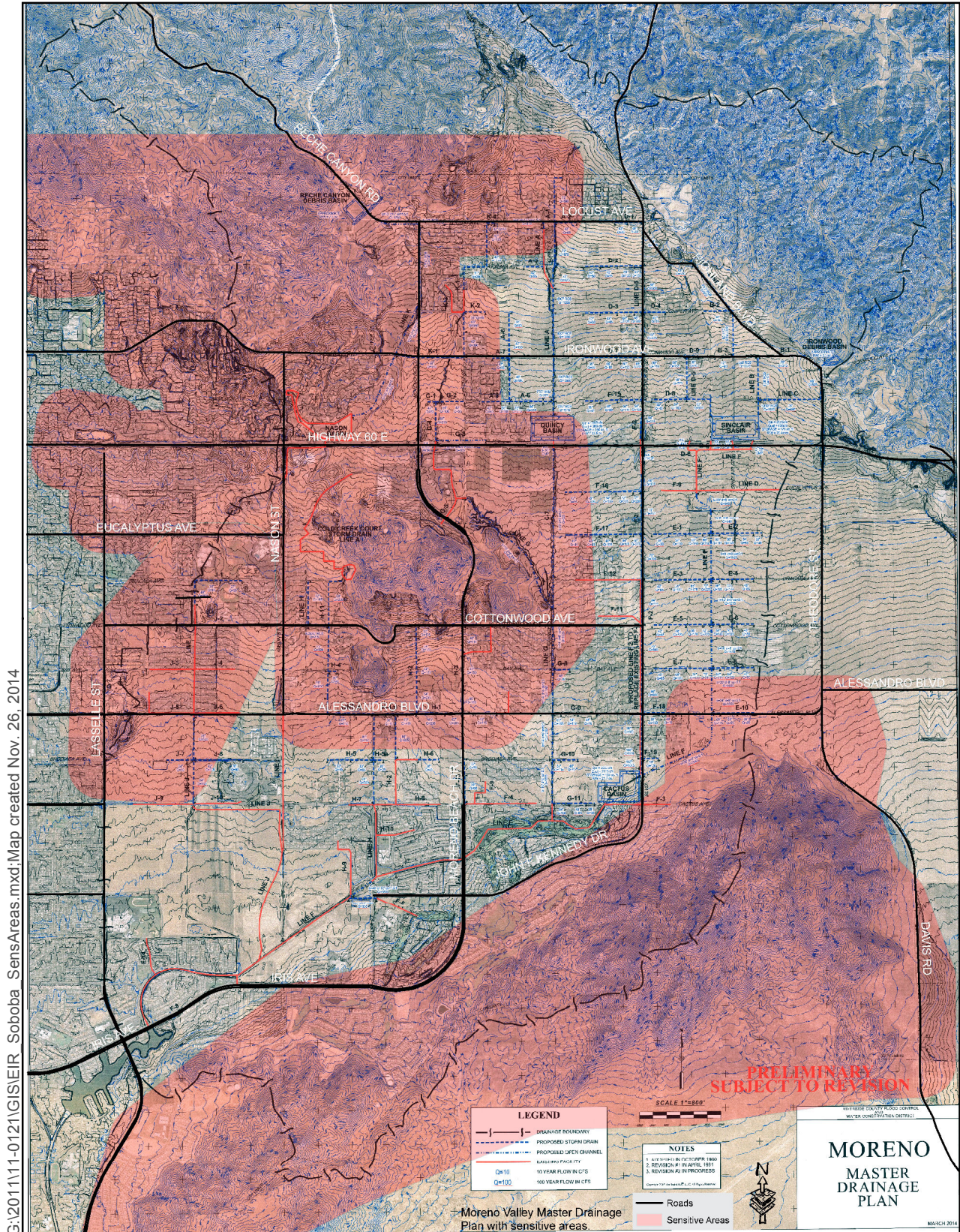
5.3.9 References

In addition to other documents, the following references were used in the preparation of this section of the Draft PEIR:

- CRM TECH, *Phase I Archaeological Assessment, Moreno Master Drainage Plan Revision, City of Moreno Valley, Riverside County, California*, January 31, 2012. (Appendix D.1) [Cited as CRM-A]
- CRM TECH, *Paleontological Resources Assessment Report, Moreno Master Drainage Plan Revision, City of Moreno Valley, Riverside County, California*, February 1, 2012. (Appendix D.2) [Cited as CRM-B]
- National Park Service, *National Register Bulletin, How to Apply the National Register Criteria for Evaluation*. (Available at http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm,

accessed April 5, 2012.) [Cited as NPS]

- Riverside County Flood Control and Water Conservation District, *Master Cultural Resources Treatment and Tribal Monitoring Agreement*, executed December 18, 2012. (Available at the Riverside County Flood Control and Water Conservation District offices.) [Cited as Master Agreement]



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Figure 5.3-1. Soboba Band of Luiseño Indians Potentially Sensitive Areas
 Moreno Master Drainage Plan Revision

5.4 Hydrology and Water Quality

Potential impacts related to:

- Substantially altering the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Creating or contributing runoff water, which would exceed the capacity of existing or planned storm water drainage systems;
- Placing housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Exposing people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or
- Exposing people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow;

were all found to be less than significant in the Initial Study/Notice of Preparation (IS/NOP) prepared for this Project (Appendix A). The following discussion addresses potential impacts related to:

- Violating any water quality standards or waste discharge requirements;
- Resulting in substantial discharges of typical storm water pollutants (e.g., sediment from construction activities, hydrocarbons, and metals from motor vehicles, nutrients and pesticides from landscape maintenance activities, metals of other pollutants from industrial operation) or substantial changes to surface water quality including, but not limited to, temperature, dissolved oxygen, pH, or turbidity;
- Substantially depleting groundwater supplies or interfering 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);
- Substantially altering the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increasing the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; and/or
- Placing structures or fill within a 100-year flood hazard area, which would impede or redirect flood flows.

As discussed below, the Project's potential hydrology and water quality impacts are considered to be less than significant.

5.4.1 Setting

The Moreno Watershed encompasses approximately 21 square miles in the generally flat valley floor from the southern base of the San Timoteo Badlands to the northern slope of Mount Russell. The major topographical feature in the watershed is a prominent hill south of State Route 60 and west of Moreno Beach Drive. Drainage in the watershed is primarily in the form of sheet flows from the north to south/southwest before ultimately flowing into the San Jacinto River (Reaches 1 to 3), Canyon Lake, Lake Elsinore, and the Santa Ana River (Reach 3). Past development and agricultural practices have removed most of the native vegetation from the Moreno Watershed, which is partially developed with residential, commercial, institutional, and industrial uses.

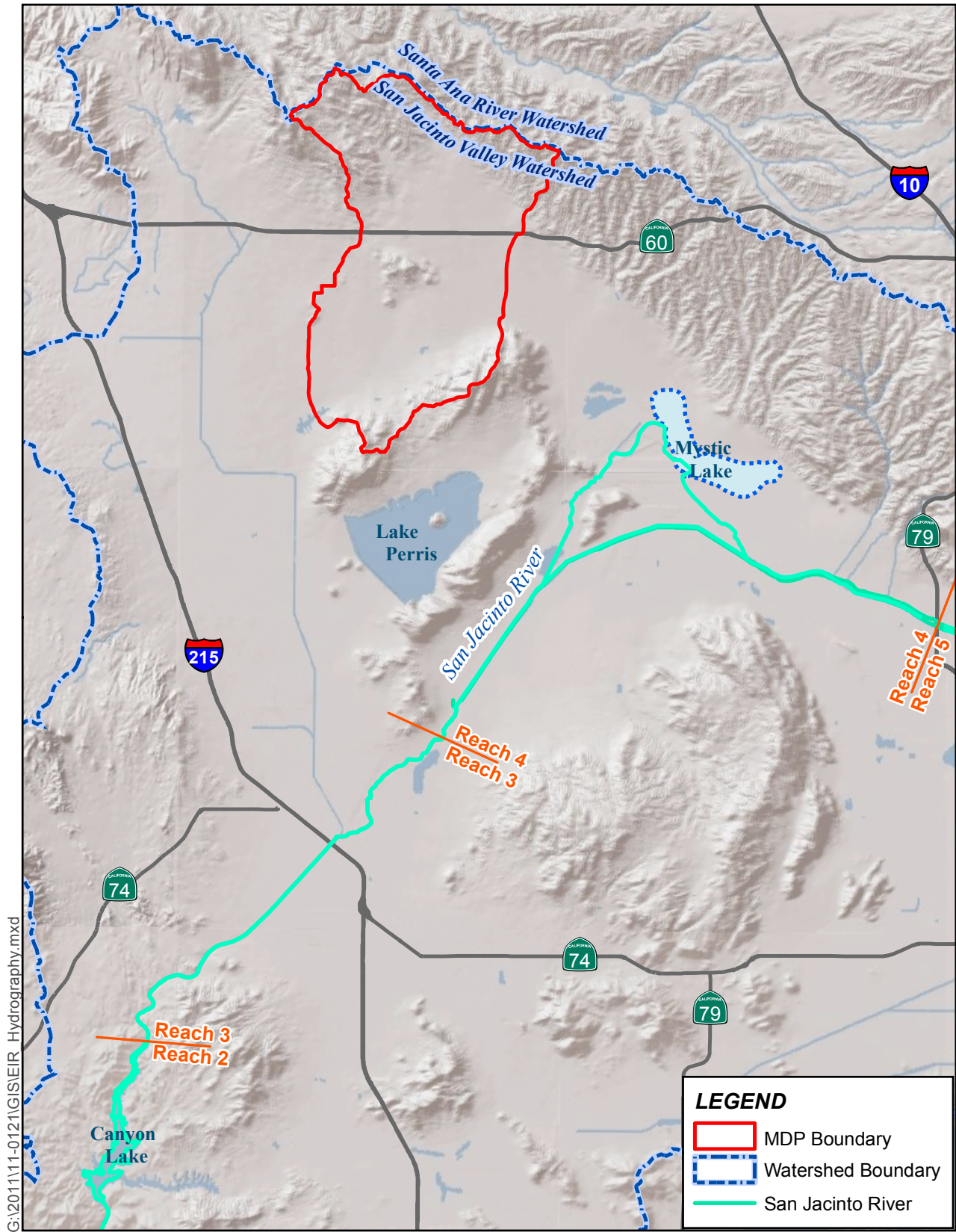
The following discussion describes the proximity of the Project to nearby water bodies, and provides background information on water quality issues related to surface water in the Project area, in order to thoroughly evaluate the impacts of the proposed Project to local hydrology and water quality.

Surface Waters

The Project area encompasses portions of the city of Moreno Valley and surrounding unincorporated areas, which is located within the San Jacinto River watershed, specifically within the Santa Ana River, Reach 3 watershed. The existing and proposed drainage system will collect local urban runoff and transport the flow through the developing community to an outlet at the upper terminus of the Kitching Street Channel located at Iris Avenue, just east of Lasselle Street. Kitching Street Channel drains to Perris Valley Storm Water Channel which then flows into the San Jacinto River. The San Jacinto River drains approximately 540 square miles to the Railroad Canyon Reservoir (Canyon Lake), and then into Lake Elsinore. Discharges from these two lakes are very rare (MVGFP FEIR, p. 5.7-1). Overflow from Lake Elsinore spills into Temescal Creek, and ultimately flows into the Santa Ana River Reach 3. **Figure 5.4-1 – Hydrology within the Proposed Project Area** shows the boundaries of the Moreno MDP and its proximity to various surface water bodies.

The San Jacinto River, Reach 3 is located approximately five miles southwest of the Moreno MDP Boundary, and generally flows southwest past the Project area (see **Figure 5.4-2 – Regional Surface Water Bodies**). Flows in the San Jacinto watershed are dominated by storm water, urban, and agricultural runoff. Only occasionally do flows from the upper San Jacinto River watershed reach Canyon Lake, and flows reaching Lake Elsinore are even rarer. There are several dairies located southeast of the Moreno MDP Watershed in the Lakeview and San Jacinto area. Run-off from these dairies, which are outside of the Moreno MDP Watershed, may ultimately enter the San Jacinto River.

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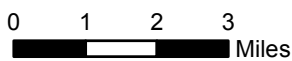


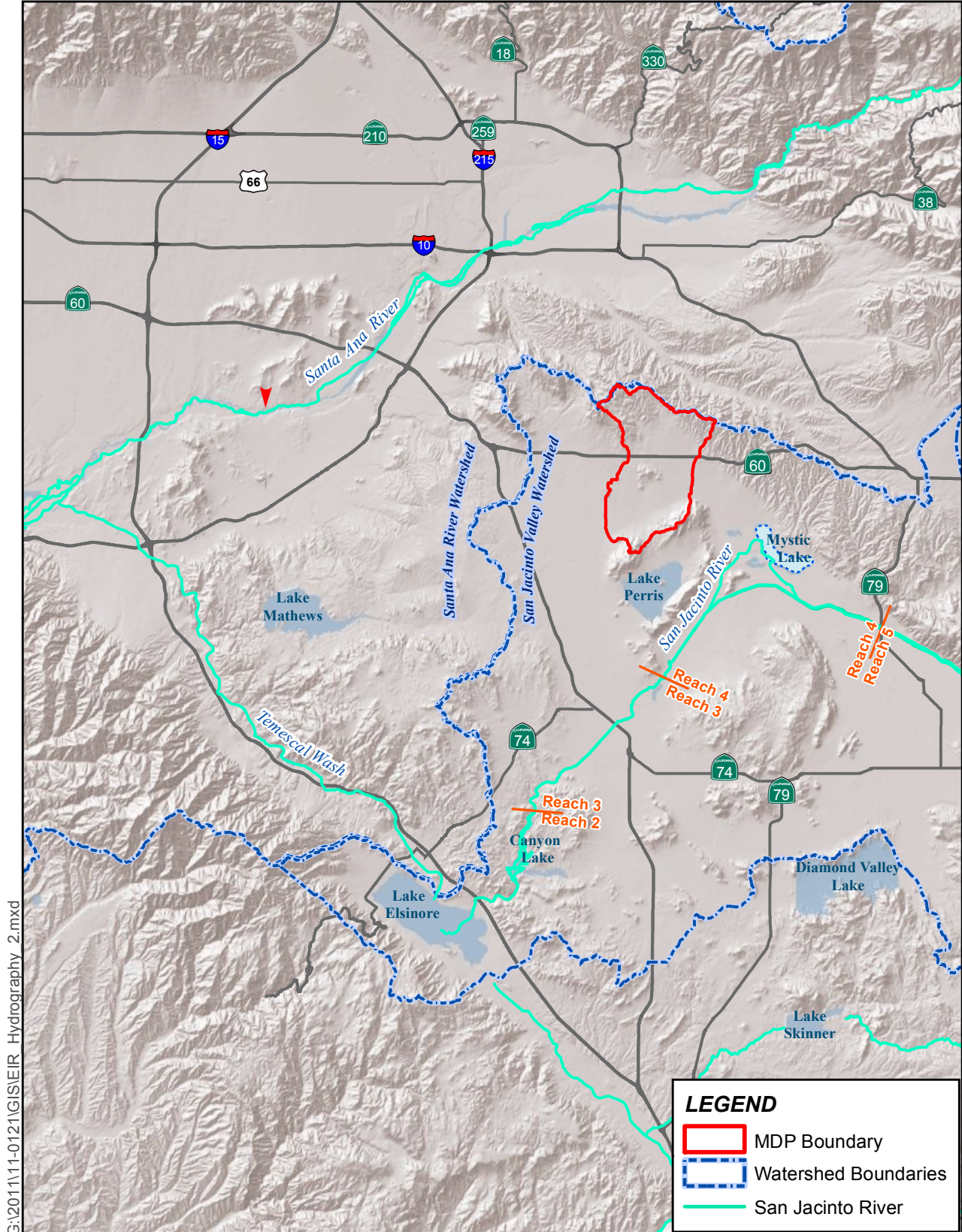
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Sources: County of Riverside GIS, 2012; ESRI.

Figure 5.4-1 - Hydrology Within the Proposed Project Area

Moreno Master Drainage Plan Revision





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Sources: County of Riverside GIS, 2012; USGS 10m DEM's, ESRI.

Figure 5.4-2 - Regional Surface Water Bodies

Moreno Master Drainage Plan Revision

0 1 2 3
Miles



There is a private manmade lake in the Moreno Valley Ranch, which is generally bounded by Rancho Del Lago on the west, Iris Avenue on the north, Avenida De Circo on the east, and Calle Agua on the south. The northeastern part of this private lake has a lined inlet north of Iris Avenue and east of Camino Flores (existing Line F) and a lined outlet in the southwestern part of the lake that converges with the existing Perris Valley Storm Drain. This lake is part of the Storm Drain/Flood Control Plan for the Moreno Valley Ranch. The lake eliminates flood hazards by conveying 100-year storm flows through trapezoidal channels (designed and constructed to the District's specifications) in addition to acting as a retention basin during high-flow episodes. (MVR SP/EIR, pp. 66-67)

Because the water level in the Moreno Valley Lake is maintained on a year-round basis, the lake was designed to meet all applicable standards and includes a circulation system to prevent water stagnation. (MVR SP/EIR, pp. 68-69) As the private lake is designed to only handle high-flow situations from the now-existing Line F inlet, low flows are diverted away from the lake using a low-flow drain system around the edges of the lake. Typical project area urban runoff is collected into the low-flow drain system so that nuisance and irrigation runoff from developed areas are not conveyed directly into the lake. Runoff from the Mount Russell foothills, along the southern portion of the Moreno Valley Ranch development, as well as storm flows through developed portions of the Moreno Valley Ranch, are conveyed to roadways where possible utilizing underground facilities. (MVR SP/EIR, pp. 257, 261)

Accordingly, the existing Line F connects with existing underground Line F-8 within Iris Avenue to convey low-flows, which do not discharge into the private lake. While the private lake may still operate as a retention basin in high-flow episodes, it is not anticipated by the MDP Facilities. The development of the proposed MDP Facilities will safely divert and better control storm flows with adequate capacity. Until the drainage system is fully constructed, there exists the potential for the private lake to maintain its ancillary function as a flood protection retention basin.

Water Quality

Water quality in this region is regulated under the jurisdiction of the Santa Ana Regional Water Quality Control Board (SARWQCB) Region 8. The SARWQCB Basin Plan (Basin Plan) establishes water quality standards for all the ground and surface waters of the region. The Santa Ana Region includes the upper and lower Santa Ana River watersheds, the San Jacinto River watershed, and several other small drainages.

SARWQCB has divided the San Jacinto River into seven reaches for regulatory purposes. The majority of storm water from the Moreno MDP Watershed enters Reach 3 of the San Jacinto River and proceeds to Canyon Lake, then Lake Elsinore, and then ultimately Reach 3 of the Santa Ana River, which flows to the Pacific Ocean. Except during large storm events, Canyon Lake and Lake Elsinore are, for all practical purposes, closed basins that have water quality characteristics reflecting the water quality of the flows entering them. Canyon Lake, Lake Elsinore, and Santa Ana River (Reach 3) have been identified by the State Water Resources Control Board (SWRCB) pursuant to Section 303(d) of the Clean Water Act (CWA) as having water quality impairments due to nutrients, pathogens, Polychlorinated biphenyls (PCBs), and unknown toxicity (Urban Runoff Management Program, p. 23).

Surface water quality may be impacted by both point source and non-point source (NPS) discharges of pollutants. Point source discharges are regulated through National Pollutant Discharge Elimination System (NPDES) permitting. Non-point source pollution is now considered to be the leading cause of water quality impairments in the state, as well as the entire nation. Non-point source pollution is not as readily quantifiable as pollution that is derived from point sources, since it occurs through numerous diffuse sources. Rainwater, snowmelt, or irrigation water can pick up and transport pollutants as it moves across land or paved surfaces, and these pollutants may ultimately be discharged into streams, lakes, the ocean, and groundwater. Urban areas and agriculture are both considered to substantially contribute to non-point source pollution in surface waters; pollutants associated with agricultural areas include fertilizers, pesticides, fecal coliform, salts, and sediments. Pollutants associated with urban areas include pathogens, organic compounds, sediment, oil and grease, metals, trash and debris, and nutrients.

Status of Surrounding Water Bodies

The SARWQCB sets water quality standards for all ground and surface waters within its region. Water quality standards are defined under the CWA to include the beneficial uses of specific water bodies, the levels of water quality that must be met and maintained to protect those uses (water quality objectives), and the state’s anti-degradation policy. Water quality standards for all ground and surface waters overseen by the SARWQCB are documented in the Basin Plan. Beneficial uses consist of all the various ways that water can be used for the benefit of people and/or wildlife. Nineteen beneficial uses are recognized within the Santa Ana Region. Nine beneficial uses have been designated for surface water bodies and groundwater in the vicinity of the Moreno MDP as summarized in **Table 5.4-A – Beneficial Uses for Receiving Waters in Proximity to the Moreno MDP.**

Table 5.4-A – Beneficial Uses for Receiving Waters in Proximity to the Moreno-MDP

Receiving Waters	303(d) List Impairments	Designated Beneficial Uses
San Jacinto River, Reach 1	None	MUN*, AGR*, GWR*, REC1*, REC2*, WARM*, WILD*
San Jacinto River, Reach 3	None	AGR*, GWR*, REC1*, REC2*, WARM*, WILD*
Canyon Lake (San Jacinto River, Reach 2)	Nutrients and Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD
Lake Elsinore	Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs, Sediment Toxicity, and Unknown Toxicity	REC1, REC2, WARM, WILD
Santa Ana River, Reach 3	Pathogens, copper (during the wet season only), and lead	AGR, GWR, REC1, REC2, WARM, WILD, RARE, SPWN

Definitions of Beneficial Uses	
MUN	Waters used for community, military, municipal or individual water supply systems. Uses may also include drinking water supply.
AGR	Waters are used for farming, horticulture, or ranching. Uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
GWR	Groundwater recharge waters, used for natural or artificial recharge of groundwater for purposes that may include future extraction, maintaining water quality, or halting saltwater intrusion in freshwater aquifers.
RARE	Rare, threatened, or endangered species waters support the habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened, or endangered.
REC1	Water contact recreation waters, used for recreational activities involving body contact with water where ingestion of water is reasonably possible. Uses may include swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.
REC2	Non-contact water recreation waters, used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include picnicking, sunbathing, hiking, beachcombing, and camping, boating, sightseeing, and aesthetic enjoyment in conjunction of the above activities.
SPWN	Spawning, reproduction and development waters support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.
WARM	Warm freshwater habitat waters support warm water ecosystems that may include preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
WILD	Wildlife habitat waters support wildlife habitats that may include the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
Notes: * Intermittent beneficial use Source: <i>National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, The County of Riverside, and the Incorporated Cities of Riverside County within the Santa Ana Region, Area-Wide Urban Runoff management Program, Order No. R8-2010-0033, NPDES No. CAS618033, January 29, 2010. Table 3b . (Available at http://www.swrcb.ca.gov/rwqcb8/board_decisions/adopted_orders/orders/2010/10_033_RC_MS4_Permit_01_29_10.pdf.)</i> 303d list: http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/docs/303d/2010_303d.pdf	

The San Jacinto River (Reaches 1 to 3), Canyon Lake, Lake Elsinore, and the Santa Ana River (Reach 3) are the receiving water bodies for the Moreno MDP Watershed. The San Jacinto River (Reaches 1 and 3) is not listed as impaired on the 303(d) list of impaired water bodies. However, Canyon Lake is listed as impaired for nutrients and pathogens; Lake Elsinore as impaired for nutrients, organic enrichment/low dissolved oxygen, PCBs, sediment toxicity, and unknown toxicity; and Santa Ana River (Reach 3) is impaired for pathogens copper (during the wet season only), and lead (303(d) List). Lake Elsinore and Canyon Lake are the terminal points for the San Jacinto River watershed (MVGP FEIR, p. 5.7-1). Storm water from the Moreno MDP Watershed ultimately discharges to these water bodies; thus any development or infrastructure projects within the Moreno MDP Watershed will be required to treat any

storm water leaving such project sites for the aforementioned Pollutants of Concern (POC)¹ in compliance with the appropriate watershed-based Best Management Practices (BMPs) set forth in the *Comprehensive Nutrient Reduction Plan for Lake Elsinore and Canyon Lake*.²

All listed water quality objectives governing water quality in inland surface waters are discussed in the Basin Plan; however, only those numeric and narrative water quality objectives that are most likely to be relevant to the proposed Moreno MDP are listed in **Table 5.4-B – Numeric Water Quality Objectives** and **Table 5.4-C – Applicable Narrative Water Quality Objectives**, respectively. Water quality standards are attained when designated beneficial uses are achieved and water quality objectives are being met. The regulatory program of the RWQCB is designed to minimize and control pollutant discharges to surface and ground waters within the region, largely through permitting, such that water quality standards are effectively attained.

Whether or not a water body has numeric water quality objectives, narrative objectives apply to all inland surface waters and ground waters within the region under jurisdiction of the RWQCB. Where more than one narrative objective is applicable, the RWQCB requires the most stringent application of the objective. **Table 5.4-C, Applicable Narrative Water Quality Objectives** lists all of the applicable narrative objectives for inland surface waters in proximity to the Project.

Table 5.4-B – Numeric Water Quality Objectives

Water Body	Water Quality Objectives (mg/L)						
	Total Dissolved Solids (TDS)	Hardness	Sodium (Na)	Chlorine (Cl)	Total Inorganic Nitrogen (TIN)	Sulfate (SO ₄)	Chemical Oxygen Demand (COD)
San Jacinto River, Reach 1 – Lake Elsinore to Canyon Lake	450	260	50	65	3	60	15
San Jacinto River, Reach 2 – Canyon Lake	700	325	100	90	8	290	-
San Jacinto River, Reach 3 – Canyon Lake to Nuevo Rd.	820	400	-	250	6	-	15
San Jacinto River, Reach 4 – Nuevo Rd. to North-South Mid-	500	220	75	125	5	65	-

¹ A Pollutant of Concern is a pollutant that is associated with a proposed project and is listed as impaired under CWA section 303(d). (Glossary, p. G-6) The POCs for the proposed Project are nutrients, pathogens, metalloids, PCBs, and unknown toxicity.

² The Moreno Valley Municipal Code implements the requirements of any existing or future National Pollutant Discharge Elimination (NPDES) Municipal Separate Storm Sewer System (MS4) Permit and the General Construction Permit in Chapter 8.10 Stormwater/Urban Runoff Management and Discharge Controls in Chapter 8.21 Grading Regulations.

Water Body	Water Quality Objectives (mg/L)						
	Total Dissolved Solids (TDS)	Hardness	Sodium (Na)	Chlorine (Cl)	Total Inorganic Nitrogen (TIN)	Sulfate (SO ₄)	Chemical Oxygen Demand (COD)
Section Line							
San Jacinto River, Reach 5 – North-south Mid-Section Line T4S/R1, to confluence w/ Poppet Creek	300	140	30	25	3	40	12
Lake Elsinore, HU# 802.31	2000	-	-	-	1.5	-	-
San Ana River, Reach 3	700	350	110	140	10*	150	30

Notes: * Total nitrogen, filtered sample
 Source: California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan Santa Ana River Basin*, February 2008 update. Table 4-1. (Available at www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/index.shtml.)

Table 5.4-C – Applicable Narrative Water Quality Objectives

<i>Ammonia, Un-ionized (NH₃ or UIA)</i>
Calculated numerical UIA objectives as well as corresponding total ammonia nitrogen concentration for various pH and temperature conditions are shown in Tables 4-2 and 4-3 of the Basin Plan. Santa Ana River, Reach 3 shall not cause the concentration of un-ionized ammonia (as nitrogen) to exceed 0.098 mg/L (NH ₃ -N) as a 4-day average.
<i>Bacteria, Coliform</i>
REC-1 Fecal coliform: log mean less than 200 organisms/100 mL based on five or more samples/30 day period, and not more than 10% of the samples exceed 400 organisms/100 mL for any 30-day period. REC-2 Fecal coliform: average less than 2000 organisms/100 mL and not more than 10% of the samples exceed 4000 organisms/100 mL for any 30-day period.
<i>Boron</i>
Boron concentrations shall not exceed 0.75 mg/L in inland surface waters of the region as a result of controllable water quality factors.
<i>Chlorine, Residual</i>
To protect aquatic life, the chlorine residual in wastewater discharged to inland surface waters shall not exceed 0.1 mg/L.
<i>Color</i>
Waste discharges shall not result in coloration of the receiving waters which causes a nuisance or adversely affect beneficial uses. The natural color of fish, shellfish or other inland surface water resources used for human consumption shall not be impaired.

Floatables	
Waste discharges shall not contain floating materials, including solids, liquids, foam or scum, which cause a nuisance or adversely affect beneficial uses.	
Fluoride	
Fluoride concentrations shall not exceed values specified in the table below in inland surface waters designated MUN as a result of controllable water quality factors.	
Annual Average of Maximum Optimum Fluoride Daily Air Temperature (°C)	Concentration (mg/L)
12.0 and below	1.2
12.1 to 14.6	1.1
14.7 to 17.6	1.0
17.7 to 21.4	0.9
21.5 to 26.2	0.8
26.3 to 32.5	0.7
Methylene Blue-Activated Substances (MBAS)	
MBAS concentrations shall not exceed 0.05mg/L I inland surface waters designated MUN as a result of controllable water quality factors.	
Nitrate	
Nitrate-nitrogen concentrations shall not exceed 45 mg/L as (NO ₃) or 10mg/L (as N) in inland surface waters designated MUN as a result of controllable water quality factors.	
Oil and Grease	
Waste discharges shall not result in deposition of oil, grease, wax or other materials in concentrations which result in a visible film or in coating objects in the water, or which cause a nuisance or adversely affect beneficial uses.	
Oxygen, Dissolved	
The dissolved oxygen content of surface waters shall not be depressed below 5mg/L for waters designated WARM.	
pH	
The pH of inland surface waters shall not be raised above 8.5 or depressed below 6.5 as a result of controllable water quality factors.	
Radioactivity	
Radioactivity materials shall not be present in the waters of the region in concentrations which are deleterious to human, plant, or animal life. Waters designated MUN shall meet the limits specified in the California Code of Regulations, Title 22.	
Solids, Suspended and Settleable	
Inland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors.	
Sulfides	
The dissolved sulfide content of inland surface waters shall not be increased as a result of controllable water quality factors.	

<i>Surfactants (surface-active agents)</i>
Waste discharges shall not contain concentrations of surfactants which result in foam in the course of flow or use of the receiving water, or which adversely affect aquatic life.
<i>Taste and Odor</i>
The inland surface waters of the region shall not contain, as a result of controllable water quality factors, taste- or odor-producing substances at concentrations which cause a nuisance or adversely affect beneficial uses. The natural taste and odor of fish, shellfish or other regional inland surface water resources used for human consumption shall not be impaired.
<i>Temperature</i>
The natural receiving water temperature of inland surface waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of waters designated WARM shall not be raised above 90°F June through October or above 78°F during the rest of the year as a result of controllable water quality factors. Lake temperatures shall not be raised more than 4°F above established normal values as a result of controllable water quality factors.
<i>Toxic Substances</i>
Toxic substances shall not be discharged at levels that will bioaccumulate in aquatic resources to levels which are harmful to human health.
<i>Turbidity</i>
All inland surface waters of the region shall be free of changes in turbidity which adversely affect beneficial uses.
Source: California Regional Water Quality Control Board, Santa Ana Region, <i>Water Quality Control Plan Santa Ana River Basin</i> , February 2008 update, Table 4. (Available at www.swrcb.ca.gov/rwgcb8/water_issues/programs/basin_plan/index.shtml .)

Storm Water Drainage

The area within the Moreno MDP Watershed has experienced significant urban development in recent years. In order to provide adequate flood protection to the Moreno Watershed, the Moreno MDP Revision proposes the following types of facilities: earthen bottom trapezoidal channels, concrete lined channels, reinforced concrete box culverts, reinforced concrete pipes, detention basins, and debris basins.

Existing and planned land uses within the boundaries of the Moreno MDP include Residential, Rural Residential, Hillside Residential, Residential/Office, Office, Commercial, Business Park/Light Industrial, Open Space, Floodplain, and Public Facilities land use designations (MVGP, Figure 2-2). **Table 5.4-D – Potential Pollutants Generated by Land Use Type**, identifies the pollutants that are associated with different land use types.

Table 5.4-D – Potential Pollutants Generated by Land Use Type

Types of Development (Land Use)	Sediment/Turbidity	Nutrients	Organic Compounds	Trash and Debris	Oxygen Demanding Substances	Bacteria & Viruses	Oil & Grease	Pesticides	Metals
Detached Residential Development	E	E	N	E	E	E	E	E	E
Attached Residential Development	E	E	N	E	p ⁽¹⁾	P	p ⁽²⁾	E	N
Commercial/Industrial Development	p ⁽¹⁾	p ⁽¹⁾	p ⁽⁵⁾	E	p ⁽¹⁾	p ⁽³⁾	E	p ⁽¹⁾	P
Automotive Repair Shops	N	N	E ^(4,5)	E	N	N	E	N	P
Restaurants	N	N	N	E	E	E	E	N	N
Hillside Development	E	E	N	E	E	E	E	E	N
Parking Lots	p ⁽¹⁾	p ⁽¹⁾	E ⁽⁴⁾	E	p ⁽¹⁾	p ⁽⁶⁾	E	p ⁽¹⁾	E
Streets, Highways & Freeways	E	p ⁽¹⁾	E ⁽⁴⁾	E	p ⁽¹⁾	p ⁽⁶⁾	E	p ⁽¹⁾	E
Abbreviations: E = Expected P = Potential N = Not expected Notes: (1) A potential pollutant if landscaping or open area exist on a project site. (2) A potential pollutant if a project includes uncovered parking areas. (3) A potential pollutant if a land use involves food or animal waste products. (4) Specifically petroleum hydrocarbons. (5) Specifically solvents. (6) Bacterial indicators are routinely detected in pavement runoff. Source: Riverside County Flood Control and Water Conservation District, <i>Stormwater Quality Best Management Practice Design Handbook</i> , July 21, 2006. Table 2. (Available at http://www.floodcontrol.co.riverside.ca.us/downloads/Planning/BMP%20Handbook%20%28draft%208%29.pdf . http://rcflood.org/downloads/NPDES/Documents/SA_SM_DAMP/WQMP_Exhibit_C-BMP_Design_Manual_SA.pdf)									

As shown in the above table, potential pollutants from existing and future land uses within the Project area include: sediment/turbidity; nutrients; organic compounds; trash and debris; oxygen demanding substances; bacteria and viruses; oil and grease; pesticides; and metals. Nutrients, bacteria and viruses (pathogens), organic compounds, sediment, pesticides, and metals are considered POCs for the proposed Project. POCs from future development and infrastructure projects within the Moreno MDP Watershed could reduce the water quality of receiving water bodies, which would violate the CWA; thus, treatment control BMPs, as well as site design and source control BMPs, will be used to reduce the pollutant load into receiving water bodies. BMP effectiveness is shown in **Table 5.4-E – Treatment Control BMPs and Effectiveness.**

Table 5.4-E – Treatment Control BMPs and Effectiveness

Pollutant of Concern	Biofilters ⁽¹⁾	Detention Basins ⁽²⁾	Infiltration BMPs ⁽³⁾	Wet Ponds or Wetlands ⁽⁴⁾	Filtration Systems ⁽⁵⁾	Water Quality Inlets	Hydrodynamic Separator Systems ⁽⁶⁾	Manufactured/Proprietary Devices ⁽⁷⁾
Sediment/Turbidity	H/M	M	H/M	H/M	H/M	L	H/M (L for turbidity)	U
Nutrients	L	M	H/M	H/M	L/M	L	L	U
Organic Compounds	U	U	U	U	H/M	L	L	U
Trash & Debris	L	M	U	U	H/M	M	H/M	U
Oxygen Demanding Substances	L	M	H/M	H/M	H/M	L	L	U
Bacteria & Viruses	U	U	H/M	U	H/M	L	L	U
Oils & Grease	H/M	M	U	U	H/M	M	L/M	U
Pesticides (non-soil bound)	U	U	U	U	U	L	L	U
Metals	H/M	M	H	H	H	L	L	U

Abbreviations: L: Low removal efficiency H/M: High or medium removal efficiency U: Unknown removal efficiency

Notes:

- (1) Includes grass swales, grass strips, wetland vegetation swales, and bioretention.
- (2) Includes extended/dry detention basins with grass lining and extended/dry detention basins with impervious lining. Effectiveness based upon minimum 36-48-hour drawdown time.
- (3) Includes infiltration basins, infiltration trenches, and porous pavements.
- (4) Includes permanent pool wet ponds and constructed wetlands.
- (5) Includes sand filters and media filters.
- (6) Also known as hydrodynamic devices baffle boxes, swirl concentrators, or cyclone separators.
- (7) Includes proprietary storm water treatment devices as listed in the CASQA Storm water Best Management Practices Handbooks, other storm water treatment BMPs, or newly developed/emerging storm water treatment technologies.

Source: Riverside County Flood Control and Water Conservation District, *Stormwater Quality Best Management Practice Design Handbook*, July 21, 2006. Table 3. (Available at <http://www.floodcontrol.co.riverside.ca.us/downloads/Planning/BMP%20Handbook%20%28draft%20%29.pdf>.)

5.4.2 Related Regulations

Federal Regulations

Clean Water Act (CWA)

The CWA was designed to restore and maintain the chemical, physical, and biological integrity of the waters in the United States. The CWA also directs states to establish water quality standards for all waters of the United States and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from nonpoint sources. The EPA has delegated responsibility for implementation of portions

of the CWA to the SWRCB and the RWQCBs, including water quality control planning and control programs, such as the NPDES program. The NPDES program is a set of permits designed to implement the CWA that apply to various activities that generate pollutants with potential to impact water quality.

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. Section 304(a) requires the EPA to publish water quality criteria that accurately reflect the later scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon bio-monitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Section 303(c)(2)(b) of the CWA requires states to adopt numerical water quality standards for toxic pollutants for which the EPA has published water quality criteria and which reasonably could be expected to interfere with designated uses of a water body.

Construction of the Moreno MDP will comply with the provisions of the CWA through the implementation of BMPs to reduce erosion and runoff from the construction sites. The Facilities proposed by the Moreno MDP Revision, specifically the detention and debris basins and the soft-bottomed channels, are in compliance with the *Comprehensive Nutrient Reduction Plan for Lake Elsinore and Canyon Lake (CNRP)*. The CNRP is a long range plan to achieve compliance with the wasteload allocations for Nutrient Total Maximum Daily Loads (Nutrient TDMLs) established for Lake Elsinore and Canyon Lake by the Municipal Separate Storm Sewer System (MS4) permit. The CNRP complies with the responsibility tasked to Regional Water Quality Control Boards by the CWA and implement the MS4 permit.

NPDES Permit Program – Phase I

In November 1990, under Phase I of the urban runoff management strategy, the EPA published NPDES permit application requirements for municipal, industrial, and construction storm water discharges. The application requirements for municipalities were directed at municipalities which own and operate separate storm drain systems serving populations of 100,000 or more, or which contribute significant pollutants to waters of the United States, and required agencies to obtain coverage under municipal storm water NPDES permits.

Municipalities were required to develop and implement an urban runoff management program to address activities to reduce pollutants in urban runoff and storm water discharges that were contributing a substantial pollutant load to their systems. Rather than establishing numeric effluent limits, the EPA established narrative effluent limits for urban runoff, including the requirements to implement appropriate BMPs.

The Phase I regulations were also directed at certain facilities that discharged storm water associated with industrial activity, and construction activities that disturbed five or more acres.

NPDES Permit Program – Phase II

The Phase II Final Rule, published in the Federal Register on December 8, 1999, requires NPDES permits for storm water discharges from:

- Certain regulated small Municipal Separate Storm Sewer Systems (MS4); and
- Construction activity disturbing between one and five acres of land (i.e., small construction activities).

In addition to expanding the NPDES Program, the Phase II Final Rule included minor revisions for certain industrial facilities. As with Phase I, the Phase II Program requires the development and implementation of storm water management plans to reduce pollutant discharges. As discussed below under the “State Regulations” heading, the NPDES permit program is administered in California by the SWRCB and its RWQCBs. The Project is located within the boundaries of the Santa Ana RWQCB.

National Flood Insurance Program

The National Flood Insurance Program was created in 1968 with the passage of the National Flood Insurance Act (1968 Act). In 1973 the Flood Disaster Protection Act amended the 1968 Act. The Flood Disaster Protection Act requires property owners located in special flood hazard areas to purchase flood insurance. In addition to the requirements to purchase flood insurance, the NFIP sets forth flood plain management criteria for communities seeking to obtain flood insurance eligibility (44 CFR Section 60.2) and flood plain management criteria for flood-prone areas (44 CFR, Section 60.3).

Chapter 8.12 Flood Damage Prevention and Implementation of National Flood Insurance Program (NFIP) of the Moreno Valley Municipal Code sets forth the process by which Moreno Valley implements the NFIP.

State Regulations

Porter-Cologne Water Quality Control Act and the Basin Plan

The Porter-Cologne Water Quality Control Act, Division 7 of the California Code, authorizes the SWRCB to adopt, review, and revise policies for all waters of the State (including both surface and groundwater), and directs the RWQCB to develop regional basin plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The *Water Quality Control Plan for the Santa Ana River Basin (Region 8)* is designed to preserve and enhance the quality of water resources in the Santa Ana Region for the benefit of present and future generations. The purpose of the Plan is to designate beneficial uses of the region’s surface and groundwaters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

The Basin Plan sets forth water quality objectives for constituents that could potentially cause an adverse effect or impact on the beneficial uses of water. Specifically, the Basin Plan is designed to accomplish the following:

- Designate beneficial uses for surface and groundwaters;

- Set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy;
- Describe implementation programs to protect the beneficial uses of all waters within the region; and
- Describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies.

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of Waste Discharge Requirements (WDRs) from the RWQCB. Land and groundwater related WDRs (i.e., non-NPDES WDRs) regulate discharges of process and wash-down wastewater and privately or publicly treated domestic wastewater. WDRs for discharges to surface waters also serve as NPDES permits.

The SWRCB administers the NPDES permit program regulating storm water from construction activities for projects greater than one acre in size. In order to obtain coverage under the General Construction Permit (Order No. 99-08-DWQ), a Waste Discharge Identification Number (WDID) must be obtained, and an effective site-specific Storm Water Pollution Prevention Plan (SWPPP) developed. The SWPPP must identify potential on-site pollutants, and identify and implement an effective combination of erosion control and sediment control measures to reduce or eliminate discharge of pollutants to surface water from storm water and non-storm water discharges.

Clean Water Act Section 401

Section 401 of the CWA requires that any person applying for a federal permit or license which may result in a discharge of pollutants into waters of the United States must obtain a state water quality certification that activity complies with all applicable water quality standards, limitations, and restrictions. No license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. CWA Section 404 permits and authorizations are subject to Section 401 certification by the RWQCB.

Implementation of NPDES Permit Program

In California, the SWRCB and its RWQCBs administers the NPDES permit program. The NPDES permits cover all construction and subsequent drainage improvements that disturb one acre or more, industrial activities, and MS4. Construction and industrial activities are typically regulated under statewide general permits that are issued by the SWRCB. The SWRCB also issues statewide general small MS4 storm water NPDES permits for public agencies that fall under the Phase II NPDES regulations.

Water Quality Management Plans (WQMPs) are required to address the quality of storm water or urban runoff that flows from a developed site after construction is completed and the facilities or structures are occupied and/or operational. A site-specific WQMP describes the BMPs that will be implemented and maintained throughout the life of a project and is used by property owners, facility operators,

tenants, facility employees, maintenance contractors, etc., to prevent and minimize water pollution that can be caused by storm water or urban runoff. A site-specific WQMP will be required as part of future facility-specific applications for discretionary approval. Final site-specific WQMPs must be approved prior to issuance of building and grading permits for future development.

The NPDES MS4 permit applicable within the Moreno MDP is Order No. R8-2010-0033, NPDES No. CAS 618033 adopted by the Santa Ana Regional Water Quality Control Board on January 29, 2010 for the Santa Ana River region. This MS4 Permit is the first to incorporate requirements directly addressing the WLAs for Lake Elsinore and Canyon Lake and required preparation of the CNRP. (CDM, p. 1-4) The District is the designated Principal Permittee; Moreno Valley, along with other cities in the watershed, is a Co-Permittee (Urban Runoff Management Program, p. 1). For purposes of implementing the MS4 permit, any future project that is considered a “new development and significant redevelopment project,” is required to comply with the provisions of the MS4 Permit (Urban Runoff Management Program, p. 29).

Construction Storm Water Permits

The SWRQCB administers the NPDES permit program regulating storm water from construction activities for projects greater than one acre in size. The main compliance requirement of the NPDES permits is the development and implementation of a SWPPP. The purpose of a SWPPP is to identify potential on-site pollutants and identify and implement appropriate storm water pollution prevention measures to reduce or eliminate discharge of pollutants to surface water from storm water and non-storm water discharges.

Storm water BMPs to be implemented during construction and grading will be outlined in the SWPPP prepared for each MDP Facility as well as future development or infrastructure projects approved within the Moreno MDP Boundary, and will be consistent with the District’s *Design Handbook for Low Impact Development Best Management Practices*. Examples include: detention basins for capture and containment of sediments, use of silt fencing, sandbags or straw bales to control runoff, and identification of emergency procedures in case of hazardous materials spills. All future development and infrastructure projects in the Moreno MDP Boundary will be required to obtain a construction NPDES permit prior to site disturbance.

On September 2, 2009, the California State Water Resources Control Board voted to adopt major revisions to the statewide *General Permit for Discharges of Storm water Associated with Construction Activities* (Construction General Permit). The permit took effect on July 1, 2010 and applies to projects that disturb one or more acres, or projects that disturb less than one acre but are part of a larger common plan of development that disturbs more than one acre in total (e.g., large linear utility projects). The revised permit requires that projects implement a SWPPP that contains specific BMPs and establishes numeric effluent limitations to meet water quality and technology-based standards. It also provides greater clarity so that the public can determine whether permittees are in compliance.

Regional and Local Plans and Regulations

Comprehensive Nutrient Reduction Plan for Lake Elsinore and Canyon Lake (CNRP)

The CNRP was prepared by CDM Smith and approved by the District on July 2, 2012. The CNRP is a long term plan designed to achieve compliance with wasteload allocations (WLAs) established in the Lake Elsinore and Canyon Lake Nutrient Total Maximum Daily Loads (“Nutrient TMDLs”). The CNRP fulfills the MS4 permit requirement. (CDM, p. 1-1)

Through its bi-annual water quality assessment process, the Regional Board determined that Lake Elsinore was not attaining its water quality standards due to excessive nitrogen and phosphorus. This finding led to the Regional Board placing Lake Elsinore on the 303(d) list in 1994 as a result of the impairment of the following uses: warm water aquatic habitat (WARM), and water contact and non-water contact recreation (REC1 and REC2). Similarly, a Regional Board water quality assessment of Canyon Lake identified excessive nutrients causing impairment of the lake. Accordingly, Canyon Lake was listed on the 303(d) list in 1998. The following uses were identified as impaired by nutrients: municipal water supply (MUN), warm water aquatic habitat (WARM), and water contact and non-water contact recreation (REC1 and REC2). (CDM, p. 1-2)

Regional Board staff prepared the Lake Elsinore Nutrient TMDL Problem Statement and the Canyon Lake Nutrient TMDL Problem Statement in October 2000 and October 2001, respectively. These reports documented the impairment caused by excessive nutrients and provided preliminary recommendations for numeric targets to ensure beneficial uses of both lakes would be protected. The Regional Board used the data developed from the above studies to develop the Nutrient TMDLs. (CDM, p. 1-2) The applicability of the CNRP is limited to the MS4 Permittees in the following jurisdictions: Riverside County and the cities of Beaumont, Canyon Lake, Hemet, Menifee, Moreno Valley, Murrieta, Perris, Riverside, San Jacinto, and Wildomar (CDM, p. 1-5).

The Riverside County MS4 Permittees have developed a CNRP that is designed to achieve compliance with the urban WLAs by the compliance date of December 31, 2020. Compliance with the urban WLAs can be measured using one of the two following methods:

1. Directly, using relevant monitoring data and/or approved modeling procedures to estimate actual nitrogen and phosphorus loads being discharged to the lakes; or
2. Indirectly, using water quality monitoring data and other biological metrics approved by the Regional Board, to show water quality standards are being consistently attained (as measured by the response targets identified in the Nutrient TMDLs). Compliance with the urban WLAs may also be accomplished through the trading of pollutant allocations among sources to the extent that such allocation tradeoffs optimize point and non-point source control strategies to achieve the compliance in an efficient manner. A Pollutant Trading Plan (PTP) is being prepared separately from the CNRP to provide a basis for pollutant trading. (CDM, p. 1-6)

Compliance with the urban WLAs will require implementation of nutrient mitigation activities in both the watershed and the lakes. The CNRP is built around a framework that includes both watershed-based BMPs and in-lake remediation activities. Coupled with this framework is a monitoring program to evaluate progress towards compliance with urban WLAs and an adaptive implementation program to provide opportunity to make adjustments to the CNRP, where deemed necessary to achieve the urban WLAs. Regarding watershed-based BMPs, the CNRP identifies the specific ordinance and BMPs that will be implemented by the MS4 Permittees in the watersheds that drain to Lake Elsinore or Canyon Lake. These activities focus on targeting and mitigating nutrients at their source, prior to discharge during wet weather events. (CDM, p. 1-6) These BMPs include both non-structural programmatic BMPs and post-construction BMPs associated with the implementation of WQMP requirements for new development and significant redevelopment activities. Watershed-based BMPs include the following activities (CDM, p. 2-2):

- Ordinance Development;
- Street Sweeping/Debris Removal;
- Low Impact Development and Land Use Conversion (WQMP Implementation);
- Septic System Management;
- Public Education and Outreach; and
- Inspections and Enforcement.

As Riverside County and Moreno Valley are MS4 Permittees, compliance with this CNRP is required, which will considerably contribute to water quality improvements in Lake Elsinore and Canyon Lake.

Moreno Valley Municipal Code

The Moreno Valley Municipal Code (MVMC) contains provisions regulating the management of flood plains, discharge of storm water, and changes in hydrology.

Chapter 3.50 National Pollutant Discharge Elimination System (NPDES) Regulatory Rate for New Residential, Common Interest, Commercial, Industrial, and Quasi-Public Use Developers

MVMC Chapter 3.50 sets forth the establishment and collection of the annual NPDES regulatory rate to fund requirements of the Regional Board regarding water pollution contained in storm water runoff to remain in compliance with federal mandates.

Chapter 8.10 Stormwater/Urban Runoff Management and Discharge Controls

MVMC Chapter 8.10 regulates discharges into the City's sewer and storm drain systems, and implements the City's requirements under the MS4 permit. Among other things, this Chapter prohibits discharges to the City's sewer and storm drain systems that contain pollutants or that would impair the operation of those systems. This Chapter gives the City of Moreno Valley enforcement authority to declare violations, apply penalties, and impose stop-work orders, monitoring requirements, and other enforcement mechanisms.

Chapter 8.12 Flood Damage Prevention and Implementation of National Flood Insurance Program (NFIP)
MVMC Chapter 8.12 sets forth the manner in which Moreno Valley administers the NFIP. This chapter designates the City Engineer as the floodplain administrator and authorizes the City Engineer to administer, implement, and enforce the NFIP by granting or denying development permits.

Chapter 8.21 Grading Regulations

MVMC Chapter 8.21 governs all grading activities in Moreno Valley. Per Section 8.21.170 of the MVMC, most grading exceeding one acre requires a NPDES permit. To obtain a grading permit from Moreno Valley, applicants must supply a grading plan, and if applicable, must demonstrate compliance with the *General Construction Storm water Permit* described above.

Moreno Valley General Plan (MVGP)

The Conservation Element of the MVGP set forth the following objective and policy with respect to hydrology and water quality (MVGP, p. 9-36 and 9-37):

Conservation Element:

- **Objective 7.1:** Minimize erosion problems resulting from development activities (MVGP, p. 9-36).
- **Policy 7.1.1:** Require that grading plans include appropriate and feasible measures to minimize erosion, sedimentation, wind erosion and fugitive dust (MVGP, p. 9-36).
- **Policy 7.1.2:** Circulation patterns within newly developing portions of Moreno Valley, particularly in hillside areas, should follow natural contours to minimize grading (MVGP, p. 9-36).
- **Objective 7.2:** Maintain surface water quality and the supply and quality of groundwater (MVGP, p. 9-36).
- **Policy 7.2.2:** The City shall comply with the provisions of its permit(s) issued by the Regional Water Quality Control Board for the protection of water quality pursuant to the National Pollutant Discharge Elimination System (MVGP, p. 9-36).
- **Policy 7.4.3:** Preserve natural drainage courses in their natural state and the natural hydrology, unless the protection of life and property necessitate improvement as concrete channels (MVGP, p. 9-37).

5.4.3 Significance Threshold Criteria

The Initial Study Environmental Checklist form (IS) found in Appendix G of the State *CEQA Guidelines* defines thresholds of significance for Hydrology and Water Quality. The Notice of Preparation for the Draft PEIR included the Initial Study Environmental Checklist to show the areas being analyzed in the Draft PEIR; refer to Appendix A of this Draft PEIR. Accordingly and based on the IS, the Project may be considered to have a significant impact on hydrology and water quality in the following areas if the Project would:

- (Threshold A) Violate any water quality standards or waste discharge requirements;

- (Threshold B) Result in substantial discharges of typical storm water pollutants (e.g., sediment from construction activities, hydrocarbons, and metals from motor vehicles, nutrients and pesticides from landscape maintenance activities, metals of other pollutants from industrial operation,) or substantial changes to surface water quality including, but not limited to, temperature, dissolved oxygen, pH, or turbidity;
- (Threshold C) 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);
- (Threshold D) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increasing the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; and/or
- (Threshold E) Place structures or fill within a 100-year flood hazard area, which would impede or redirect flood flows.

5.4.4 Project Design Considerations

The proposed Project consists of revisions to the 1991 Moreno MDP from mainly concrete open channels, to more environmentally friendly alternatives; such as soft bottom channels which allow infiltration and can trap pollutants better. Mainline facilities have been aligned to reduce diversions proposed in the 1991 Moreno MDP and better recreate existing drainage patterns. To account for the higher rainfall rate³ and increased land use density, Line F-2 will have to be reconstructed.

The proposed Project identifies conceptual locations for the future drainage needs of Moreno Valley and the surrounding area in response to the existing and planned land use within the Moreno MDP Boundary. The Moreno MDP Facilities along with street improvements will contain the 100-year flood discharge.

5.4.5 Environmental Impacts before Mitigation

Threshold A: *Violate any water quality standards or waste discharge requirements.*

Construction of the proposed Project may result in the discharge of sediment and other construction by-products. This will be minimized, however, by compliance with the NPDES general construction permit issued by the SWRCB. Coverage under the general construction permit requires that a SWPPP be prepared prior to construction activities for sites with a disturbance area of one acre or more. The

³ The rainfall data contained in the District Hydrology Manual is based on NOAA Atlas II rainfall. This underlying data (with some adjustments to match local gauge data available at the time) was used in the development of the 1991 Moreno MDP. However, the most current rainfall data available, NOAA Atlas 14 rainfall values are higher than the earlier NOAA Atlas II rainfall values and were used in development of the Moreno MDP Revision.

SWPPP will incorporate applicable BMPs to reduce loss of topsoil, substantial erosion, or discharge of polluted runoff associated with construction of the MDP Facilities.

Implementation of the proposed Project will not add significant amounts of impervious surfaces to the Project area, as the proposed MDP Facilities will be underground storm drain pipelines, earthen trapezoidal channels (except for two lined sections of channels), and earthen basins (detention and debris). The 1991 Moreno MDP previously established a comprehensive storm water drainage system in the Project area. The Moreno MDP Revision provides adequate drainage for the Moreno MDP Boundary area to protect life and property as the area is developed in accordance with land uses identified in the *Moreno Valley General Plan*. The proposed MDP Facilities will convey storm water emanating from residential, commercial, industrial, and construction areas. Although the proposed MDP Facilities will not create new sources of pollutants, there is potential for pollutants to be conveyed within the proposed MDP Facilities and discharged into the San Jacinto River, Canyon Lake, Lake Elsinore, and ultimately Santa Ana River.

As previously discussed in the subsections entitled “Status of Surrounding Water Bodies” and “State Regulations,” water quality standards are attained when designated beneficial uses are achieved and water quality objectives are being met. The regulatory program of the RWQCB is designed to minimize and control discharges to surface and groundwater within the region, largely through permitting, such that water quality standards are effectively attained.

MDP Facilities will either be constructed as part of a future development project, hereinafter referred to as “site-specific” or as a stand-alone Facility-specific project. Site-specific projects are future approved private developments that will also construct applicable Moreno MDP Facilities. Site-specific projects are considered “new development and significant redevelopment projects” and are required to comply with the provisions of the MS4 permit by preparing a site-specific SWPPP and WQMP (Urban Runoff Management Program, p. 29). However, because Facility-specific projects entail only the construction of Moreno MDP Facilities, only a Facility-specific SWPPP is required. A WQMP is not required for MDP Facilities constructed as Facility-specific projects. In the unlikely event that a Facility-specific project entails less than one acre of disturbance and does not require preparation of a Facility-specific SWPPP, mitigation measure **MM HYD 1** will be implemented, which requires the preparation of an erosion control plan to identify necessary erosion control BMPs.

Additionally, the Project also incorporates unlined reaches of channels and basins, which can serve to attenuate peak-flow rates and allow for infiltration of storm water. As discussed under **Threshold C**, below, the proposed Project includes the construction of three detention basins (Sinclair Basin, Cactus Basin, and Quincy Basin) and two debris basins (Reche Canyon Debris Basin and Ironwood Debris Basin) that together have the capability to infiltrate approximately 95 to 336 acre-feet per day. As shown in **Table 5.4-E – Treatment Control BMPs and Effectiveness**, detention basins have a medium efficiency for the removal of sediment/turbidity, nutrients, and metals, which are impairments for one or more of the Project’s receiving waters. Additional water quality control measures may be implemented at the time

of construction of the MDP Facilities and private development projects in order to comply with Total Maximum Daily Load (TMDL) requirements established by the RWQCB within the watershed.

The proposed Project (site-specific and/or Facility-specific projects) will comply with the various statutory requirements necessary to achieve regional water quality objectives and waste discharge requirements. **Therefore, the potential impacts related to water quality or waste discharge remain less than significant for projects greater than one acre in size and less than significant with mitigation for projects less than one acre in size.**

Threshold B: *Result in substantial discharges of typical storm water pollutants (e.g., sediment from construction activities, hydrocarbons, and metals from motor vehicles, nutrients and pesticides from landscape maintenance activities, metals of other pollutants from industrial operation) or substantial changes to surface water quality including, but not limited to, temperature, dissolved oxygen, pH, or turbidity.*

Pollutants of Concern from existing and planned land use designations within the Project area include: sediment/turbidity; nutrients; organic compounds; trash and debris; oxygen demanding substances; bacteria and viruses; oil and grease; pesticides; and metals (refer to **Table 5.4-D – Potential Pollutants Generated by Land Use Type**). Pollutants of Concern resulting from future development within the Moreno MDP could potentially reduce the quality of receiving water bodies, which would violate the CWA. However, because all future site-specific projects within the boundary of the Moreno MDP must comply with the provisions of the CWA, in addition to the requirements of the NPDES General Construction Permit, treatment control BMPs, as well as site design and source control BMPs, will be used to reduce the pollutant load into receiving water bodies. Additionally, BMP effectiveness gathered from the District's *Design Handbook for Low Impact Development Best Management Practices* will be implemented, as shown in **Table 5.4-E – Treatment Control BMPs and Effectiveness**.

As discussed in Threshold A, above, site-specific and Facility-specific SWPPPs, in accordance with the SWRCB General Permit for Construction Activities, will be required. Per the requirements of the General Permit, a SWPPP must identify an effective combination of erosion control and sediment control BMPs to minimize or eliminate the discharge of pollutants into receiving waters. In addition, BMPs for managing sources of non-storm water discharges and waste are required to be identified in the SWPPP. In the unlikely event that a Facility-specific project entails less than one acre of disturbance and does not require preparation of a Facility-specific SWPPP, mitigation measure **MM HYD 1** will be implemented, which requires the preparation of an erosion control plan to identify necessary erosion control BMPs.

Additionally, following construction of a private site-specific project, the preparation and approval of a site-specific WQMP will be required to identify BMPs that ensure water quality of downstream receiving waters are not degraded. It is imperative that site-specific WQMPs minimize changes to hydrology to ensure that post-development runoff rates and velocities from a site do not adversely impact downstream erosion, sedimentation, or stream habitat. The goals of site design techniques identified in a site-specific WQMP are to reduce the pollutant loads from developed areas; achieve post development runoff flow rates, volumes, velocities, and duration that prevent significant increase in

downstream erosion compared to the pre-development condition; and prevent significant adverse impacts to stream habitat during the 2-year and 10-year, 24-hour rainfall events.

Therefore, because the proposed Project (site-specific and/or Facility-specific projects) will comply with existing regulatory requirements to reduce storm water pollutants and achieve water quality requirements, the potential impacts related to storm water pollutants and water quality will remain less than significant for projects greater than one acre in size, and less than significant with mitigation for projects less than one acre in size.

Threshold C: *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).*

The proposed Moreno MDP identifies existing and proposed Facilities to convey storm water through the MDP Boundary. Implementation of the Moreno MDP does not involve the extraction of groundwater, nor will it create a substantial addition of impervious surfaces such that existing areas of groundwater recharge are altered.

The Moreno MDP proposes three detention basins: Sinclair Basin, Cactus Basin, and Quincy Basin and two debris basins: Reche Canyon Debris Basin and Ironwood Debris Basin, which will provide opportunity for additional regional groundwater recharge as storm water flows are conveyed through the MDP Facilities. **Table 5.4-F –Infiltration Projections for the Proposed Basins**, summarizes the approximate potential infiltration volumes for the MDP’s proposed basins. It is important to note that the infiltration rates presented below are projections based on the hydrological soil groups as classified by the Natural Resources Conservation Service (NRCS) and the basins are not specifically intended for recharge. Recharge and infiltration is an incidental benefit of the detention and debris basins.

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Table 5.4-F – Infiltration Projections for the Proposed Basins

Basin Name	Basin Footprint (acres) ¹	Portion of Basin in Soil Type "A" ²	Portion of Basin in Soil Type "B" ²	Projected Infiltration (acre-feet/day) ³
Sinclair Basin	25.0	18%	82%	30 to 116
Cactus Basin	21.7	0%	100%	22 to 43
Quincy Basin	22.5	0%	100%	23 to 45
Reche Canyon Debris Basin	10.0	55%	45%	16 to 100
Ironwood Debris Basin ⁴	3.1	62%	0%	4 to 32
Total All Basins	82.3	N/A	N/A	95 to 336

Notes:

¹ Basin Footprint per PEIR **Table 3-B – Moreno MDP Facilities Overview.**

² Soil Type refers to the hydrological soil group as classified by the Natural Resources Conservation Service. Soil Types "A" and "B" have the potentially high and moderate infiltration rates, respectively. Soil Types "C" and "D" have low and very low infiltration rates, respectively; therefore these Soil Types are not used in this projection.

³ Infiltration rate is determined by multiplying the acreage of each soil type by that soil's infiltration rate. Infiltration rate for Type "A" soil ranges from 2 to 16.7 feet/day. Infiltration rate for Type "B" soil ranges from 1 foot/day to 2 feet/day. Infiltration rates per the Ventura Countywide Stormwater Quality Management Program, *Land Development Guidelines, Appendix C Hydrologic Soil Groups* (Available at <http://www.vcstormwater.org/documents/workproducts/landuseguidelines/appC.pdf>.)

⁴ Approximately 38% of the Ironwood Debris Basin has Type "C" or "D" soils. The infiltration rate for these soils ranges from 0.34 feet/day to 0.54 feet/day for Type "C" soil and from 0.004 feet/day to 0.2 feet/day and is considered negligible, thus infiltration from these soils types are not shown in this table.

As shown in the table above, the total projected infiltration ranges from 95 to 336 acre-feet per day after construction of the proposed detention and debris basins. For comparative purposes, the existing Nason Basin has an approximate potential infiltration volume ranging from approximately 21 to 94 acre-feet per day.⁴

In addition to the three basins, the Moreno MDP Revision includes earthen bottom (unlined) channels in Line F, Line G, Line G-7, and Line K. These proposed unlined channels will contribute to regional groundwater recharge as storm water flows are conveyed through them. As shown in **Table 5.4-G – Infiltration Projections for the Proposed Unlined Channels**, collectively the bases of Line F, Line G, Line G-7, and Line K encompass approximately 11.4 acres⁵ and have a projected infiltration volume ranging from 12.4 to 43.9 acre-feet per day.

⁴ Based on a basin size of 20.05 acres of which 20% is in Soil Type "A" and 62% is in Soil Type "B." Infiltration rates for Soil Type "A" ranges from 2 feet/day to 8.3 feet/day. Infiltration rate for Soil Type "B" ranges from 1 foot/day to 2 feet/day. Low end of projected infiltration is calculated as follows: (20.05 acres*20%*2 feet/day) + (20.05 acres*62%*1 foot/day) = 20.9 acre-feet/day. High end of projected infiltration is calculated as follows: (20.05 acres*20%*16.6 feet/day) + (20.05 acres*62%*2 feet/day) = 93.5 acre-feet/day. Approximately 18% of the Nason Basin has Type "C" soil. The infiltration rate for this soil ranges from 0.34 feet/day to 0.54 feet/day and is considered negligible; thus it is not included in the infiltration projection.

⁵ Surface area of the base of the earthen channels was determined by multiplying the channel base by the facility length as shown in the PEIR **Table 3-B – Moreno MDP Update Facilities Overview.**

Table 5.4-G – Infiltration Projections for the Proposed Unlined Channels

Channel Name	Channel Footprint (acres) ¹	Portion of Channel in Soil Type "A" ²	Portion of Channel in Soil Type "B" ²	Projected Infiltration (acre-feet/day) ³
Line F	5.05	11.4%	88.6%	5.6 to 18.5
Line G ⁴	2.88	16.0%	75.2%	3.1 to 12.0
Line G-7	0.65	0.0%	100.0%	0.7 to 1.3
Line K ⁵	2.64	18.0%	79.0%	3.1 to 12.1
Total all Channels	11.22	N/A	N/A	12.4 to 43.9

Notes:

¹ Determined by multiplying the length of each channel by its width as shown in PEIR **Table 3-B – Moreno MDP Facilities Overview**.

² Soil Type refers to the hydrological soil group as classified by the Natural Resources Conservation Service. Soil Types "A" and "B" have the potentially high and moderate infiltration rates, respectively. Soil Types "C" and "D" have low and very low infiltration rates, respectively; therefore these Soil Types are not used in this projection.

³ Infiltration rate is determined by multiplying the acreage of each soil type by that soil's infiltration rate. Infiltration rate for Type "A" soil ranges from 2 to 16.7 feet/day. Infiltration rate for Type "B" soil ranges from 1 foot/day to 2 feet/day. Infiltration rates per the Ventura Countywide Stormwater Quality Management Program, *Land Development Guidelines, Appendix C Hydrologic Soil Groups* (Available at <http://www.vcstormwater.org/documents/workproducts/landuseguidelines/appC.pdf>.)

⁴ Approximately 8.8% of Line G has Type "D" soil. The infiltration rate for this soil ranges from 0.004 feet/day to 0.2 feet/day and is considered negligible, thus it is not shown in this table.

⁵ Approximately 3.0% of Line K has Type "C" soil. The infiltration rate for this soil ranges from 0.34 feet/day to 0.54 feet/day and is considered negligible, thus it is not shown in this table.

Based on the above analysis and the Project design features, projected infiltration from the proposed basins and unlined channels is greater than the existing Nason Basin and will not negatively alter groundwater, but instead will have a positive impact by increasing groundwater recharge. **Therefore, impacts related to substantially depleting groundwater supplies or interfering substantially with groundwater recharge such that there would be a net deficit in the aquifer volume or lowering the groundwater level, will be less than significant.**

Threshold D: *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.*

The proposed MDP Facilities were revised from the 1991 Moreno MDP to reduce significant diversions and better emulate the historic and natural drainage of the area. The general drainage pattern of the watershed for storm water discharge in the Moreno MDP Boundary begins at the canyon mouths of Reche Canyon and San Timoteo Badlands foothills, then sheet flows overland across natural and urban landscapes to the south toward the Mount Russell foothills due to the lack of natural watercourses and any substantial drainage facilities. Construction of the MDP Facilities, which are intended to provide flood protection for existing and proposed development set forth in the MVGP, will alter this existing drainage pattern by constructing a drainage system of open channels and underground storm drains that will divert, redirect, and concentrate storm flows and runoff into facilities with capacity to safely accommodate such flows, including storm water peak discharges. These storm flows will ultimately be conveyed downstream to Line F and towards the San Jacinto River. By conveying storm water runoff

through the MDP Watershed towards the San Jacinto River channel, the proposed MDP Facilities will eliminate the primary sources of flooding currently experienced during significant storm events in the Moreno MDP Watershed. When completed, the MDP Facilities along with street improvements will provide a comprehensive system to convey runoff through the Moreno MDP Watershed. (MDP Report, p. 15)

The inclusion of earthen bottom facilities proposed in the Moreno MDP Revision will allow for increased infiltration rates as compared to the concrete lined facilities identified in the 1991 Moreno MDP. The proposed detention basins will reduce the existing condition high inflow rates to substantially lower outflow rates, and this peak rate reduction allows the use of smaller and less costly downstream facilities for the Moreno MDP Project. The unlined channels will also slow storm flow

The proposed Line F will be the drainage system's most downstream location, and will likely receive the greatest quantity of storm flow. After the MDP Watershed has been built-out per the MVGP and the proposed MDP Facilities have been constructed along with street improvements, the District has determined that the estimated peak 100 year discharge at the confluence of Line F and Line G will be 3,755 cubic feet per second (cfs). The 1991 Moreno MDP estimated a 100-year peak discharge of 3,210 cfs at the confluence of Line F and Line G (1991 MDP, Exhibit 1). Although the total volume of runoff may somewhat increase as a result of development in the watershed, the peak discharge rate is decreased as a result of the proposed MDP Facilities by approximately 545 cfs,⁶ which takes into account the updated rainfall data. This is attributable to the detention basins, which are intended to reduce peak flows (MDP Report, p. 2). Therefore, the proposed Project will not increase the amount of storm water flow into the San Jacinto River or adversely impact the existing floodplain because the proposed MDP Facilities will reduce peak discharge and the amount of the debris and sediment that could be conveyed downstream. Impacts related to altering the existing drainage pattern of the site or increasing the rate or amount of surface runoff to result in flooding will be less than significant.

However, while the MDP Facilities themselves essentially function as mitigation measures for flooding within the MDP Boundary, the individual MDP Facilities will be constructed by either a public agency or private developer over time as development within the Moreno Watershed takes place. In addition, some of the MDP Facilities may never be realized. Thus, there exists the possibility the cohesion of the MDP Facilities' design may be fractured, and a MDP Facility will not operate as intended due to the lack of a connection with an adequate outlet, which may result in unforeseen flooding. For this reason, to ensure potential impacts remain less than significant, mitigation will be incorporated. **Mitigation measure MM HYD 2 will require the development of the each MDP Facility to ensure storm flows from that Facility will be conveyed to an adequate outlet, and potential impacts of flooding are avoided. Therefore, impacts will be less than significant with mitigation.**

⁶ This is the difference between the estimated peak discharge for the proposed MDP Revision (3,755 cfs) and the 1991 MDP (3,210).

Threshold E: *Place structures or fill within a 100-year flood hazard area, which would impede or redirect flood flows.*

Portions of the proposed Moreno MDP will be constructed within mapped 100-year flood hazard areas (see **Figure 5.4-3 – Flood Hazards Zone**). However, placement of these MDP Facilities within 100-year flood hazard areas is needed to contain the 100-year storm flows. The proposed MDP Facilities will re-direct sheet flows across the Moreno Watershed into basins, open channels, and underground storm drains; and convey these flows towards the San Jacinto River. When completed, the MDP Facilities along with street improvements will provide 100-year protection and eliminate the major flood hazards in the MDP Boundary. (MDP Report, p. 9) **Therefore, impacts with regards to placing structures or fill within a 100-year flood hazard area are less than significant and no mitigation measures are necessary.**

5.4.6 Proposed Mitigation Measures

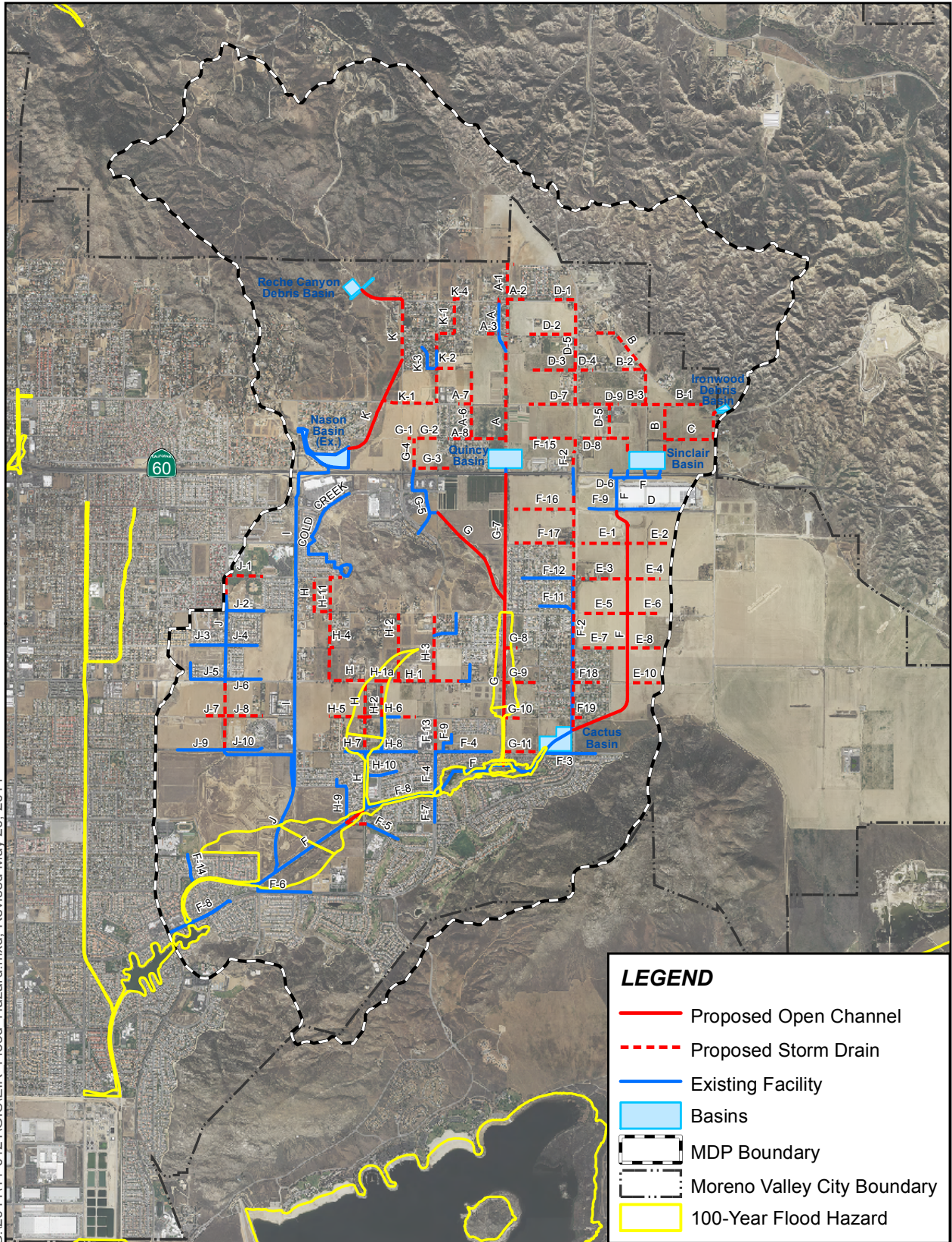
An EIR is required to describe feasible mitigation measures which could minimize significant adverse impacts (*CEQA Guidelines*, Section 15126.4). Mitigation measures were evaluated for their ability to eliminate the potential significant adverse impacts to water quality and waste discharge requirements, to below the level of significance.

MM HYD 1: Prior to the construction of any Moreno MDP Facility that does not require preparation of a site-specific SWPPP, an erosion control plan shall be prepared that identifies erosion control BMPs, such as soils binders, mulching, permanent seeding, sodding, or other BMPs which will provide adequate protection against wind and water erosion. The erosion control plan may be prepared by the Construction Contractor or designee. The erosion control plan shall be retained at the construction site and available for inspection upon request.

MM HYD 2: Prior to approval of any Moreno MDP Facility, the design and plans shall demonstrate storm flows and runoff from that specific Facility will be conveyed to an adequate outlet system to the satisfaction of the Riverside County Flood Control and Water Conservation District. As feasible, development of the MDP Facilities shall occur in appropriate phases as to ensure conveyance of storm flows and runoff will have adequate outlets.

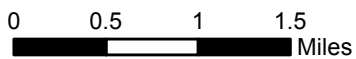
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Source: County of Riverside GIS, 2014; FEMA, 2010; RCFC&WCD 2014; Eagle Aerial, 2012.

Figure 5.4-3 - FEMA Mapped Flood Hazard Zones
Moreno Master Drainage Plan Revision



5.4.7 Environmental Effects after Mitigation Measures are Implemented

Construction of the MDP Facilities must comply with various statutory requirements necessary to achieve regional water quality objectives and protect groundwater and surface waters from polluted storm water runoff. Site-specific projects are considered “new development and significant redevelopment projects” and are required to comply with the provisions of the MS4 permit by preparing a site-specific SWPPP and WQMP including compliance with CNRP. However, because Facility-specific projects entail only the construction of Moreno MDP Facilities, only a Facility-specific SWPPP is required. A WQMP is not required for MDP Facilities constructed as Facility-specific projects. In the unlikely event that a Facility-specific project entails less than one acre of disturbance and does not require preparation of a Facility-specific SWPPP, mitigation measure **MM HYD 1** will be implemented, which requires the preparation of an erosion control plan to identify necessary erosion control BMPs. To make sure that each specific MDP Facility discharges into an adequate outlet system, mitigation measure **MM HYD 2**, which requires demonstration to the satisfaction of the District that the Facility will discharge to an adequate outlet system, will be implemented. Therefore, potentially significant impacts on hydrology and water quality will be **less than significant with mitigation**.

5.4.8 Cumulative Environmental Effects after Mitigation Measures are Implemented

A cumulatively considerable impact will occur if the Project, in conjunction with other future projects, results in a significant impact to hydrology and water quality. As this Project is analyzed at the programmatic level, cumulative impacts are assessed by the MVGP FEIR. The MVGP accounts for the long-term development of Moreno Valley and its Sphere of Influence, which includes the locations of the proposed MDP Facilities. The cumulative impacts analysis regarding hydrology and water quality as part of the MVGP FEIR determined that the implementation of measures related to the statutory requirements required as part of obtaining appropriate permits will mitigate impacts of future projects to a less than significant level (MVGP FEIR, pp. 7-4–7-5). Thus, this Project’s impacts will be mitigated to a less than significant level and other future projects will also be mitigated to a less than significant level, as necessary, in order to be approved and implemented. It is reasonably assumed, then, that the project-specific assessments and mitigation will satisfactorily avoid significant impacts, which will prevent cumulatively considerable impacts to hydrology and water quality. **Therefore, cumulative impacts will be less than significant.**

5.4.9 References

In addition to other documents, the following references were used in the preparation of this section of the Draft PEIR:

- California Regional Water Quality Control Board, Santa Ana Region, *Order No. R8-2010-0033, NPDES No. CAS 618033, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County Within the Santa Ana Region, Area-Wide Urban Runoff Management Program*, January 29, 2010. (Available at http://rcflood.org/downloads/NPDES/Documents/SA_SM_DAMP/)

App%20B%20Fourth-term%20Santa%20Ana%20Region%20MS4%20Permit.pdf, accessed March 27, 2012.) [Cited as Urban Runoff Management Program]

- California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan Santa Ana River Basin*, February 2008 update. (Available at www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/index.shtml, accessed March 27, 2012.) [Cited as Basin Plan]
- California State Water Resources Control Board, *2010 Santa Ana Region 303(d) List of Water Quality Limited Segments*, USEPA Final Approval October, 11, 2011. (Available at: http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/docs/303d/2010_303d.pdf, accessed May 8, 2014.) [Cited as 303(d) List]
- CDM Smith, *Comprehensive Nutrient Reduction Plan for Lake Elsinore and Canyon Lake*, July 2, 2012. (Available at http://waterboards.ca.gov/santaana/water_issues/programs/stormwater/riverside_permit_cnrp.shtml, accessed September 11, 2012.) [Cited as CDM]
- City of Moreno Valley, *City of Moreno Valley General Plan*, July 11, 2006. (Available at http://www.moreno-valley.ca.us/city_hall/general-plan/06gppfinal/gp/gp-tot.pdf, accessed March 27, 2012.) [Cited as MVGP]
- City of Moreno Valley, *Final Environmental Impact Report City of Moreno Valley General Plan, Volume 1, SCH# 20091075*, July 2006. (Available at http://www.moreno-valley.ca.us/city_hall/general-plan/06gppfinal/ieir/eir-tot.pdf, accessed March 27, 2012.) [Cited as MVGP FEIR]
- City of Moreno Valley, *Moreno Valley Municipal Code*, August 2011. (Available at <http://qcode.us/codes/morenovalley/>, accessed March 27, 2012.)
- Code of Federal Regulations, *Appendix E, NFIP Regulations*, (Available at http://www.fema.gov/pdf/floodplain/nfip_sg_appendix_e.pdf, accessed October 1, 2013.) [Cited as 44 CFR]
- Riverside County, *Moreno Valley Ranch Specific Plan/EIR* [SCH No: 1984050907] certified October 1985. (Available at Moreno Valley Planning Department) [Cited as MVR SP/EIR]
- Riverside County Flood Control and Water Conservation District, *Design Handbook for Low Impact Development Best Management Practices*, Revised September 2011. (Available at <http://rcflood.org/NPDES/LIDBMP.aspx>, accessed August 17, 2012.) [Cited as LIDBMP]
- Riverside County Flood Control and Water Conservation District, *Moreno Master Drainage Plan Figure*, April 1991. (Available at <http://rcflood.org/downloads/Master%20Drainage%20Plans/Moreno%20MDP%20%28pdf%29.pdf>, accessed March 27, 2012.) [Cited as 1991 Moreno MDP]
- Riverside County Flood Control and Water Conservation District, *Draft Moreno Master Drainage Plan, Zone 4*, Revision No. 2, April 2014. (Available at the Riverside County Flood Control and Water Conservation District) [Cited as MDP Report]

- Riverside County Flood Control and Water Conservation District, *Riverside County, Storm Water Quality Best Management Practice Design Handbook*, July 21, 2006. (Available at <http://www.floodcontrol.co.riverside.ca.us/downloads/Planning/BMP%20Handbook%20%28draft%208%29.pdf>, accessed March 27, 2012.)
- State Water Resources Control Board, Division of Water Quality, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002, September 2, 2009. (Available at http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2009/wqo/wqo2009_0009_dwq.pdf, accessed March 27, 2012.)
- Ventura Countywide Stormwater Quality Management Program, *Land Development Guidelines, Appendix C Hydrologic Soil Groups*, August 2001. (Available at <http://www.vcstormwater.org/documents/workproducts/landuseguidelines/appC.pdf>, accessed March 2012.)
- *Water Quality Management Plan for the Santa Ana Region of Riverside County, Appendix H Glossary*, approved by the Santa Ana Regional Water Quality Control Board, October 22, 2012. (Available at http://rcflood.org/downloads/NPDES/Documents/SA_WQMP/EXHIBIT%20H.pdf, accessed April 2014.) [Cited as Glossary]

5.5 Noise

Potential impacts related to:

- Causing a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Exposing people residing or working in the project area, for a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, to excessive noise levels; and/or
- Exposing people residing or working in the project area, for a project within the vicinity of a private airstrip, to excessive noise levels

were all found to be less than significant in the Initial Study/Notice of Preparation (IS/NOP) prepared for the Project (Appendix A), and will not be discussed further in the Draft PEIR.

The following discussion addresses potential impacts related to:

- Exposing 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;
- Exposing persons to or generation of excessive ground-borne vibration or ground-borne noise levels; and
- Causing a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

As discussed below, the Project's potential to expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; expose persons to or generation of excessive ground-borne vibration or ground-borne noise levels, and result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project, is considered to be less than significant with mitigation.

5.5.1 Setting

This section presents a discussion of noise fundamentals applicable to the Project, together with an assessment of existing ambient noise levels and noise sources in the Project vicinity.

Characteristics of Sound

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perceptibility is subjective and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound in subjective terms such as "noisy" or "loud." To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect our ability to hear. The analysis of a project's noise impact defines

the noise environment of that project area in terms of sound intensity and its effect on adjacent land uses and receivers.

Quantification of Sound

Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which defines the level of sound in decibels (dB). Because human hearing is not equally sensitive to sound at all frequencies, the A-weighting system is used to adjust quantified or measured sound levels to approximate this frequency-dependent response; A-weighted sound is expressed as dBA. As a source of reference, common indoor and outdoor noise sources, presented in terms of dBA, are shown in relation to the approximate corresponding noise level in **Table 5.5-A – Representative Environmental Noise Levels**.

Table 5.5-A – Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	rock band
jet fly-over at 1,000 feet	105	
	100	
gas lawnmower at 3 feet	95	
	90	
diesel truck, 50 mph at 50 feet	85	food blender at 3 feet
	80	garbage disposal at 3 feet
noisy urban area during daytime	75	
gas lawnmower at 100 feet	70	vacuum cleaner at 10 feet
commercial area	65	normal speech at 3 feet
heavy traffic at 300 feet	60	
	55	large business office
quiet urban area during daytime	50	dishwasher in next room
	45	
quiet urban area during nighttime	40	theater, large conference room (background)
quiet suburban area during nighttime	35	
	30	library
quiet rural area during nighttime	25	bedroom at night, concert hall (background)
	20	
	15	broadcast/recording studio
	10	
	5	
lowest threshold of human hearing	0	lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement*, 2009, Table 2-5, p. 2-21

Noise consists of pitch, loudness, and duration; therefore, it is difficult to describe noise with a single unit of measure. Federal and state agencies have established noise and land use compatibility guidelines that use averaging methods to noise measurement. Two measurement scales commonly used in

California are the Community Noise Equivalent Level (CNEL) and the day-night level (DNL or L_{dn}). To account for increased human sensitivity at night, CNEL adds a 5 dB weighting to the L_{dn} for noise that occurs between 7:00 p.m. and to 10:00 p.m., and a 10 dB weighting to the L_{dn} for noise that occurs between 10:00 p.m. and 7:00 a.m. (MVGP FEIR, p. 5.4-1). Typically, for a given 24-hour period, CNEL is typically within one dBA of the L_{dn} and are normally interchangeable. (Caltrans, p. 2-53)

Other noise rating scales of importance when assessing the annoyance factor includes the peak or maximum noise level (L_{max}) and the equivalent noise level (L_{eq}). L_{max} is the highest exponential, time-averaged sound level that occurs during a stated period and reflects acoustical peaks and the annoying aspects of intermittent noise. L_{eq} is a measurement of the sound energy level averaged over a specified time period (usually one hour) and represents the average amount variable sound energy received by a receiver over a time interval in a single numerical value. Short-term noise impacts in the Draft PEIR are specified in terms of both L_{max} and L_{eq} .

Noise can be particularly problematic when noise-sensitive land uses are affected. Noise-sensitive land uses are defined as uses where one would typically find activities that are interrupted by noise, such as residential uses, schools, hospitals, churches, performing arts facilities, and hotels and motels.

Ground-borne Vibration

Ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operating heavy earth-moving equipment.

Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement and acceleration is the rate of change of the speed.

Although displacement is easier to understand than velocity or acceleration, it is rarely used for describing ground-borne vibration. Most transducers used for measuring ground-borne vibration use either velocity or acceleration. Furthermore, the response of humans, buildings, and equipment to vibration is more accurately described using velocity or acceleration. The effects of ground-borne vibration include “feelable” movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. The rumble is the noise radiated from the motion of the room surfaces. In essence, the room surfaces act like a giant loudspeaker causing what is called ground-borne noise. In extreme cases, the vibration can cause damage to buildings.

There are several different methods used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is typically measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body.

The RMS amplitude is defined as the squared amplitude of the signal. The PPV and RMS velocity are normally described in inches per second in the United States and meters per second in the rest of the world. Although it is not universally accepted, decibel notation VdB is in common use for vibration.

Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore, usually confined to short distances (i.e., 500 feet or less) from the source. Sensitive receptors for vibration include structures (especially older masonry structures); people (especially residents, the elderly, and the sick) and vibration sensitive equipment.

Existing Site and Surrounding Conditions

The proposed Project is generally bounded by Nason Street on the west and Theodore Street on the east. The mountain range to the north and the Mount Russell area foothills to the south, define the northern and southern boundaries of the drainage area within the city of Moreno Valley (Moreno Valley) and unincorporated Riverside County.

The construction of MDP Facilities will affect properties in portions of Moreno Valley and unincorporated Riverside County. Land use designations within the portion of the MDP Boundary located within Moreno Valley are: Residential (R1, R2, R3, R5, R10, R15, R20, and R5/15), Rural Residential, Hillside Residential, Residential/Office, Office, Commercial, Business Park/Light Industrial, Open Space, Floodplain, and Public Facilities. The portions of the MDP Boundary located within unincorporated Riverside County are designated as Rural Residential, Rural Mountainous, Rural Community-Very Low Density Residential, Conservation Habitat, Open Space Rural, and Open Space Recreation.

Existing Noise Levels

The predominant noise characterizing the Project site and the surrounding area is vehicular noise from area roadways, which include local streets and a state highway. Transportation noise is concentrated along the transportation corridors and can vary with the volume of traffic, the vehicular speed, the truck mix and the road cross-section. High traffic volumes and speeds along State Route 60 and arterial roadways contribute to high noise levels (MVGP FEIR).

5.5.2 Related Regulations

Federal

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; and
- Promoting noise education and research.

The federal Office of Noise Abatement and Control was initially tasked with implementing the Noise Control Act. However, the Office of Noise Abatement and Control 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 United States Department of Transportation assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration and 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.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by transportation sources, the local agencies, in this instance Moreno Valley and Riverside County are restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

The proposed Project will comply with the appropriate OSHA regulations relative to worker exposure to noise during Project construction and operation.

State

California Government Code

California Government Code Section 65302 mandates 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 Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. The MVGP contains a noise-related goals and policies within its Safety Element that ranks land use compatibility as required by the California Government Code. The MVGP Safety Element is discussed in Section 5.5.4.3, below.

Local

Moreno Valley General Plan (MVGP)

The MVGP Safety Element contains the following policy regarding noise that is applicable to the Moreno MDP Revision.

Safety Element:

- **Policy 6.5.2:** Construction activities shall be operated in a manner that limits noise impacts on surrounding uses. (MVGP, p. 9-32)

Construction of MDP Facilities will be consistent with Policy 6.5.2. Long-term operation and maintenance of the MDP Facilities are not anticipated to be noise generators.

Moreno Valley Municipal Code

Moreno Valley’s Noise Ordinance (Title 11, Chapter 11.80 of the Moreno Valley Municipal Code) adopted to secure and promote the public health, safety, welfare, and quality of life within the city. (MVMC, Section 11.80.010.C) and identifies the maximum permitted sound levels as summarized in **Table 5.5-B – Maximum Continuous and Impulsive Sound Levels.**

Table 5.5-B – Maximum Continuous and Impulsive Sound Levels (dBA)^a

Continuous Sound		Impulsive Sound ^b	
Duration per Day Continuous Hours	Sound Level in dBA	Number of Repetitions per 24-Hour Period	Sound Level in dBA
8	90	1	145
6	92	10	135
4	95	100	125
3	97		
2	100		
1.5	102		
1	105		
0.5	110		
0.25	115		
Notes: ^a Source: Moreno Valley Municipal Code, Tables 11.80.030-1 and 11.80.030-1A ^b Section 11.80.020 of the Moreno Valley Municipal Code defines Impulsive Sound as sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and discharge of firearms.			

In addition to the maximum continuous and impulsive sound level thresholds identified in **Table 5.5-B**, above, Section 11.80.030.C of the Moreno Valley Municipal Code establishes maximum sound levels for daytime and nighttime hours for residential and commercial land uses as shown in the following table.

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Table 5.5-C – Maximum Sound Levels for Source Land Uses (dBA)^{a, b}

Residential ^c		Commercial ^d	
Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
60	55	65	60
Notes:			
^a Source: Moreno Valley Municipal Code, Table 11.80.030-2.			
^b For sound originating on public –right-of-way, public pace, or other publicly owned property, sound is measured from a distance of 200 feet from the source. (MVMC, Section 11.080.030.C.)			
^c Residential means all land uses primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly. (MVMC, Section 11.80.020)			
^d Commercial means all land uses not classified as Residential per Section 11.80.020 of the Moreno Valley Municipal Code.			

The Moreno Valley Noise Ordinance does not include any exemptions for construction noise and establishes the following standards addressing construction activities and construction noise:

- **Construction and Demolition.** No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee. (MVMC, Section 11.80.030(D)(7))

Moreno Valley has not established quantified vibration thresholds. However, the following standard provides general guidance:

- **Vibration.** No vibration shall be permitted which can be felt at or beyond the property line. (MVMC, Section 9.10.170)

Moreover, as Moreno Valley has no vibration threshold and in order to provide a conservative analysis, the *Transportation and Construction Induced Vibration Guidance Manual* prepared for California Department of Transportation was used to provide methods with which to estimate construction induced ground-borne vibration, and establish potential criteria for acceptable levels of ground-borne vibration for human perception and damage to buildings. This information is summarized **Table 5.5-D – Potential Vibration Damage Threshold Criteria for Human Response** and **Table 5.5-E – Potential Vibration Damage Threshold Criteria for Structures**.

Table 5.5-D – Potential Vibration Damage Threshold Criteria for Human Response

Human Response	Maximum PPV ^a (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible/Threshold of Perception	0.035	0.006-0.19
Distinctly Perceptible/ Readily Perceptible	0.24	0.08
Strongly Perceptible/Begins to Annoy	0.90	0.10
Severe/Unpleasant	2.00	0.4-0.6
Notes: ^a Peak Particle Velocity Source: Adapted from <i>California Department of Transportation: Transportation and Construction Induced Vibration Guidance Manual</i> –Table 5: Human Response to Continuous Vibration from Traffic & Table 6: Human Response to Transient Vibration		

Table 5.5-E – Potential Vibration Damage Threshold Criteria for Structures

Structure and Condition	Maximum PPV ^a (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50
Notes: ^a Peak Particle Velocity Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Source: Adapted from <i>California Department of Transportation: Transportation and Construction Induced Vibration Guidance Manual</i> - Table 19: Guideline Vibration Damage Potential Threshold Criteria		

The Moreno Valley Municipal Code restricts grading equipment and activity as conditions of issuance of a grading permit. “Grading” is defined by the Moreno Valley Municipal Code to mean any excavation or filling or combination thereof, and the grading permit is an official document or certificate issued by the city engineer authorizing grading activity as specified by approved plans and specifications (MVMC Section 8.21.040). Moreno Valley Municipal Code Section 8.21.050(O) restricts the hours of grading to only be completed between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday, and from 8:00 a.m. to 4:00 p.m. on weekends on holidays. The Moreno Valley city engineer may, permit grading or equipment operations before or after these hours of operation if it is determined that such operations are not detrimental to the health, safety, or welfare of residents or the general public.

5.5.3 Significance Threshold Criteria

The Initial Study Environmental Checklist form (IS) found in Appendix G of the State *CEQA Guidelines* defines thresholds of significance for Noise. The Notice of Preparation for the Draft PEIR included the Initial Study Environmental Checklist to show the areas being analyzed in the Draft PEIR; refer to Appendix A of this Draft PEIR. Accordingly and based on the IS, the Project may be considered to have a significant impact on noise in the following areas if the Project would result in:

- (Threshold A) 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;
- (Threshold B) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels; and/or
- (Threshold C) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

5.5.4 Project Design Considerations

At the request of Moreno Valley, the Quincy Basin, and Sinclair Basin are located adjacent to the State Route 60 to minimize the need for sound walls that would otherwise hide businesses along the freeway. In addition to providing noise attenuation for future development, construction noise for these basins will be somewhat masked by noise from freeway traffic. Moreover, when feasible, proposed MDP Facilities have been located so as to avoid traversing through developed areas.

5.5.5 Environmental Impacts before Mitigation

Note to Reader: The following two noise thresholds evaluated in this Draft PEIR have been combined to avoid repetitive discussion:

Threshold A: *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.*

Threshold C: *Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.*

There are two types of noise impacts associated with implementation of the Moreno MDP, noise resulting from construction of the MDP Facilities and noise resulting from the operation and maintenance of the MDP Facilities.

Impacts Resulting from Project Construction

Construction noise levels vary according to the type(s) of equipment utilized and size of the active construction zone. Construction of MDP Facilities will entail the use of heavy equipment such as backhoes, excavators, dozers, scrapers, water trucks, wheeled loaders, and dump trucks. As shown in **Table 5.5-F – Typical Construction Equipment Noise Levels**, maximum noise levels for this type of equipment can range from approximately 64 dBA to 75 dBA L_{max} at 200 feet with the L_{eq} ranging from

approximately 60 dBA to 69 dBA at 200 feet from the equipment assuming no shielding. Noise shielding is anything that breaks or partially breaks the line of sight between the receiver and the noise source.

Table 5.5-F – Typical Construction Equipment Noise Levels

Construction Equipment	Impact Device?	L _{max} at 200 Feet (dBA)	L _{eq} at 200 Feet (dBA)
Backhoe	No	65.5	61.5
Dozer	No	69.6	65.6
Dump Trucks	No	64.4	60.4
Excavator	No	68.7	64.7
Front End Loader	No	67.1	63.1
Grader	No	73.0	69.0
Scraper	No	71.5	67.6
Tractor	No	72.0	68.0
Notes: L _{eq} calculated using the Federal Highway Administration Construction Noise Model (FHWA-HEP-05-054) also known as the Roadway Construction Noise Model (RCNM) Source: U.S. Department of Transportation, Federal Highway Administration, <i>FHWA Roadway Construction Noise Model Users Guide</i> , January 2006. (Available at http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook , accessed April 10, 2011.)			

As indicated in the above table, noise associated with the equipment anticipated to be used to construct the proposed MDP Facilities will not exceed the continuous sound level maximums shown above in **Table 5.5-B**. Further, assuming all pieces of construction equipment are operating simultaneously in the same location, the total L_{eq} at 200 feet without shielding is estimated to be approximately 75 dBA, which is also below the maximum sound levels in **Table 5.5-B**. Moreover, impacts from impulsive noise are not anticipated as impact devices are not necessary for construction of the Facilities.

As indicated in the **Table 5.5-F**, noise associated with the equipment anticipated to be used to construct MDP Facilities may exceed the maximum noise levels for residential and commercial land uses shown in **Table 5.5-C**. However, it is important to note that the noise levels reported in **Table 5.5-F** assumes no shielding or noise attenuation. Because residential structures offer substantial amounts of attenuation from exterior noise sources, it is industry practice to utilize a very conservative residential structure noise attenuation assumption that a 12 dBA noise reduction is afforded to a residential structure’s interior spaces if the windows are open and a 20 dBA noise reduction is afforded to a residential structure’s interior spaces if the windows are closed. If these attenuation factors are applied, construction noise inside a residential structure 200 feet away from the noise source will range from 52 dBA to 63 dBA L_{max} and from 52 dBA to 57 dBA L_{eq} with the windows open and from 44 dBA to 55 dBA L_{max} and from 40 dBA to 49 dBA L_{eq} with windows closed. In both the windows closed and open scenarios, the L_{eq} assuming all construction equipment is operating simultaneously is less than the

maximum noise levels shown in **Table 5.5-C**. Additionally, the proposed storm drains and channels are linear Facilities, that is, the noise source will move along the alignment as construction of these Facilities occurs.

Limiting exposure of persons to construction-related noise impacts will be primarily achieved via time constraints as established by the Moreno Valley Municipal Code, which limits construction activities on weekdays from 6:00 a.m. to 8:00 p.m., and from 7:00 a.m. to 8:00 p.m. on weekends and holidays (MVMC, Section 11.80.030.D.8); and which limits grading activities on weekdays from 7:00 a.m. to 6:00 p.m., and from 8:00 a.m. to 4:00 p.m. on weekends and holidays (MVMC 8.21.050.O); times when many people are not at home (mitigation measure **MM NOI 1**). Additional mitigation is achieved by maintaining construction equipment in good working order, informing sensitive receptors of pending construction, using electricity from power poles when feasible as required by mitigation measures **MM NOI 2** through **MM NOI 4**. Moreover, mitigation measure **MM Air 2**, discussed previously in Section 5.1 – Air Quality and Greenhouse Gas Emissions, will also reduce construction noise by restricting engine idling times to five minutes.

Given the temporary nature of construction noise impacts in conjunction with the implementation of mitigation measures MM NOI 1 through MM NOI 3 as well as MM Air 2, potential impacts regarding the 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 will be less than significant with mitigation.

Impacts Resulting from Project Operation

Operation and maintenance of the MDP Facilities will generate noise, but at a much smaller scale than construction. Operation and maintenance will occur as needed, typically less than once a year for each Facility. In addition, maintenance activities are very short in duration, typically less than one day, and would also take place during daytime hours, pursuant to the MVMC. Therefore, impacts in that regard will be less than significant.

Threshold B: *Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels*

Ground vibration can be annoying to people and the degree to which a person is annoyed depends on the activity in which they are participating at the time of the disturbance. For example, someone sleeping or reading will be more sensitive than someone who is running on a treadmill. Reoccurring primary and secondary vibration effects often lead people to believe that the vibration is damaging their home, although vibration levels may well be below minimum thresholds for damage potential. (Vibration Guidance, p. 13)

Vibration generated by construction activity also has the potential to damage structures. This damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or walls, or cosmetic architectural damage, such as cracked plaster, stucco, or tile. (Vibration Guidance, p. 13)

Although construction of the proposed MDP Facilities is not anticipated to require the use of impact devices (**Table 5.5-F**), excavators and scrapers are expected to be used. The effects of these types of equipment are anticipated to be similar to those of a large bulldozer. **Table 5.5-G – Potential Construction Induced Vibration**, presents the peak particle velocity—that is the amount of vibration—associated with the types of construction equipment anticipated to be used to construct the proposed Moreno MDP Facilities.

Table 5.5-G – Potential Construction Induced Vibration^a

Construction Equipment	PPV ^b at 25 ft. (in/sec)	PPV at 50 ft. (in/sec) ^c
Large Bulldozer	0.089	0.042
Loaded Trucks	0.076	0.035
Small Bulldozer	0.003	0.001
Notes: ^a Source: Adapted from <i>California Department of Transportation: Transportation and Construction Induced Vibration Guidance Manual</i> - Table 18: Vibration Source Amplitudes for Construction Equipment ^b Peak Particle Velocity ^c Where $PPV_{Equipment} = PPV_{Ref} (25/D)^n$ (in/sec) and PPV_{Ref} = reference PPV at 25 ft, "D" = distance from equipment to the receiver in ft. and "n" = 1.1 (the value related to the attenuation rate through the ground).		

In comparing the estimated vibration shown in **Table 5.5-G**, with the threshold criteria presented in **Table 5.5-D** and **Table 5.5-E**, at a distance of 50 feet estimated vibration is expected to be “Barely Perceptible” to humans and significantly below the vibration damage threshold for older residential structures. At a distance of 25 feet, the estimated vibration is expected to be “Distinctly Perceptible” to humans; however, it is still below the significantly below the vibration damage threshold for older residential structures.

Since the estimated vibration is expected to be within levels perceived as barely perceptible at 50 feet, potential impacts regarding vibration are less than significant at that distance and mitigation regarding construction-related vibration impacts is not required. However, at distances of less than 50-feet, vibration from construction equipment is above the threshold of perception and has the potential to be “Distinctly Perceptible” to humans although it is not anticipated to achieve the level of “Strongly Perceptible/Begins to Annoy.” The Project will implement mitigation measure **MM NOI 1**, which limits construction hours, which will limit sensitive receptor’s exposure to construction-related vibration.

Impacts associated with ground-borne vibration resulting from the construction of proposed MDP Facilities will be less than significant with mitigation.

5.5.6 Proposed Mitigation Measures

An Environmental Impact Report is required to describe feasible mitigation measures which could minimize significant adverse impacts (State *CEQA Guidelines*, Section 15126.4).

Construction and Maintenance

To assure construction and maintenance-related noise impacts resulting from Project implementation are not substantial and results in a less than significant impact, the following mitigation measures shall be implemented:

MM NOI 1: To minimize the construction noise exposure and prevent construction-related noise from disturbing sensitive receivers within proximity to the Project, construction of the MDP Facilities shall be in compliance with (a) Moreno Valley Municipal Code Section 8.21.050(O), which limits grading activities to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, and from 8:00 a.m. to 4:00 p.m. on weekends and holidays and Moreno Valley Municipal Code Section 11.80.030(D)(7), which limits other construction activities, as well as operational and maintenance activities, to the hours of ~~6~~7:00 a.m. to 8:00 p.m. on weekdays and 7:00 a.m. to 8:00 p.m. on weekends and holidays. These time limits do not apply to emergency maintenance.

MM NOI 2: To minimize noise impacts resulting from poorly tuned or improperly modified vehicles and construction equipment, all vehicles and construction equipment shall maintain equipment engines in good condition and in proper tune per manufacturer's specifications to the satisfaction of the District or Moreno Valley, as appropriate. Equipment maintenance records and equipment design specification data sheets shall be available for review upon request.

MM NOI 3: To inform potential sensitive receivers of the pending construction of an MDP Facility or Facilities, the proponent of any MDP Facility that is not constructed as part of a private development project, shall give written notification to all property addresses, as shown on the latest Riverside County Assessors' roll within 200 feet of the construction footprint no less than 7 days prior to the start of construction. The written notification shall include a tentative construction schedule and contact information for use by the public if specific noise issues arise.

5.5.7 Environmental Effects after Mitigation Measures are Implemented

Depending on the final location and construction footprint, portions of the following proposed storm drains and channels may entail construction within 200-feet of residential units: ¹ Lines A, A-1, A-2, A-3, A-6, A-7, A-8, D-1, D-2, D-3, D-4, D-7, E-3, E-7, F-2, F-11, F-12, F-17, F-18, F-19, G, G-7, G-9, G-11, G-12, H, H-3, H-5, H-11, J (north portion), K-1, K-2, and K-4. Although construction activities will produce noise that will be perceptible by these receivers, this impact will be short-term and will cease upon completion of construction. The temporary nature of this impact in conjunction with mitigation measures **MM NOI 1** through **MM NOI 3** as well as **MM Air 2** will reduce potential noise impacts to **less than significant**.

¹ The MDP identifies the conceptual location of its proposed storm drains and channels. Because the precise alignment of the storm drains and channels is not known, the construction footprint of the Facilities may be greater than 200-feet away from an occupied residence.

Mitigation measures **MM NOI 1**, **MM NOI 2**, and **MM Air 2** are qualitative measures in that there are no quantifiable reductions associated with them. **MM NOI 1** limits the times during which construction may occur to the daytime hours during which humans are less sensitive. **MM NOI 2** requires that all utilized construction equipment has properly working factory-installed noise reduction device. This will serve to ensure that the projected noise levels, based on manufacturer specifications and monitored levels of properly operating equipment, will not be exceeded. **MM Air 2** prohibits idling of vehicles and construction equipment in excess of five minutes, which will reduce the amount of noise generated by vehicles and equipment when not in use.

MM NOI 3 does not provide a specific noise reduction value but will provide a mechanism for people to report potential exceedances in noise levels so that they can be properly handled.

Operation and maintenance of the MDP Facilities are not expected to result in substantial noise; construction of the proposed MDP Facilities. Therefore, with implementation of the mitigation measures identified above, Project-related noise impacts are **less than significant**.

5.5.8 Cumulative Noise Effects after Mitigation Measures are Implemented

The Project will not contribute cumulatively to significant sources of noise in the Project site vicinity. The operational or long-term noise associated with the Project is nominal, and Facility construction noise will be temporary and will cease once construction is completed. Furthermore, the MDP Facilities will be constructed intermittently over a span of many years, and each Facility will mitigate noise impacts as required. Therefore, the cumulative impact will be less than significant.

5.5.9 References

In addition to other documents, the following references were used in the preparation of this section of the Draft PEIR:

- California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013. (Available at http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf, accessed March 27, 2014) [Cited as Caltrans]
- California Department of Transportation, *Transportation and Construction Induced Vibration Guidance Manual*, September 2013. (Available at http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf, accessed March 27, 2014.) [Cited as Vibration Guidance]
- City of Moreno Valley, *City of Moreno Valley General Plan*, Adopted July 11, 2006. (Available at City of Moreno Valley and at http://www.moreno-valley.ca.us/city_hall/general_plan.shtml, accessed March 28, 2012.) [Cited as MVGP]
- P&D Consultants, *Final Environmental Impact Report City of Moreno Valley General Plan, City of Moreno Valley*, July 2006. (Available at the City of Moreno Valley and at http://www.moreno-valley.ca.us/city_hall/general_plan.shtml, accessed March 28, 2012.) [Cited as MVGP FEIR]

- City of Moreno Valley, *Municipal Code*, August 2011. (Available at <http://qcode.us/codes/morenovalley/>, accessed January 12, 2012.) [Cited as MVMC]

Section 6 – Other CEQA Topics

The State *CEQA Guidelines* set forth several general content requirements for an EIR, including certain potential impacts which must be addressed. Those impact areas applicable to this Project include the potential for the Project to cause cumulative impacts (Section 15130); unavoidable adverse impacts (Section 15126(b)); growth inducing impacts (Section 15126(d)); or significant irreversible changes caused by a project (Section 15126.2(c)). Section 15125(d) of the State *CEQA Guidelines* also requires an EIR to discuss any inconsistencies between the proposed Project and applicable general and regional plans. This section addresses each of these general requirements.

6.1 Cumulative Impact Analysis

6.1.1 Introduction

CEQA requires that an EIR examine the cumulative impacts associated with a project, in addition to project-specific impacts. The discussion of cumulative impacts must reflect the severity of the impacts and the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to a project alone (State *CEQA Guidelines* Section 15130(b)).

As stated in State *CEQA Guidelines* Section 15130(a), an EIR “shall discuss cumulative impacts of a project when the project’s incremental effect is cumulatively considerable.” “Cumulatively considerable” means that “the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects as defined in Section 15130.” State *CEQA Guidelines* Section 15355 states that “cumulative impacts” occur from “...the change in the environment which results from the incremental impact of a project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”

The EIR must examine “reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project” (State *CEQA Guidelines* Sections 15130(a)(3) and 15130(b)(5)). A cumulative impact is not considered significant if the impact can be mitigated to below the level of significance through mitigation, including providing improvements and/or contributing funds through mitigation fee payment programs.

6.1.2 Cumulative Analysis Setting

This Draft PEIR utilizes the “summary of projections” approach in the cumulative analysis. State *CEQA Guidelines* Section 15130(d) states that, “Previously approved land use documents such as general plans, specific plans, and local coastal plans may be used in cumulative impact analysis. A pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference pursuant to the provisions for tiering and program EIRs. No further cumulative impact analysis is required when a project is consistent with a general, specific, master, or comparable programmatic plan where the lead agency determines that the regional or area-wide cumulative impacts of the

proposed project have been adequately addressed, as defined in Section 15152(f), in a certified EIR for that plan.” Additionally, if a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact. (State *CEQA Guidelines* Section 15130(e))

The geographic scope (or cumulative impact area) for each environmental issue can generally vary depending on the potential area of effect. For the following environmental issues, however, the geographic scope consists of the MDP Boundary and the greater Moreno Valley area. While the MDP Boundary includes a relatively small amount of abutting, unincorporated land within Riverside County’s jurisdiction, of the proposed MDP Facilities, only the Ironwood Debris Basin is located within that area. This unincorporated land within the MDP Boundary consists of a hilly topography and is designated by the Riverside County General Plan as Open Space – Rural, Conservation – Habitat, Rural Mountainous, and Very Low Density Residential. The Ironwood Debris Basin is proposed to be located just beyond Moreno Valley’s existing city limits at the northeastern intersection of Ironwood Avenue and Theodore Street, and is within Moreno Valley’s Sphere of Influence. As such, the long-term development of the area containing the proposed Ironwood Debris Basin is articulated in the Moreno Valley General Plan. For this reason, the cumulative impact analysis for the proposed Project is based on information contained in the certified Moreno Valley General Plan Final Program EIR, SCH# 20091075 (MVGP FEIR). This document is utilized because the geographic scope addressed in this document encompasses the Moreno Watershed (the MDP Boundary) and where MDP Facilities are most likely to be sited, and all portions of the surrounding area that could be potentially impacted by the proposed Project’s contribution to cumulative impacts. The Moreno Valley General Plan and MVGP FEIR are hereby incorporated by reference and are available for review at the location cited for these documents in Section 6.6 – References.

6.1.3 Assessment of Cumulative Impacts

Air Quality and Greenhouse Gas Emissions

Criteria Pollutants

Due to the defining geographic and meteorological characteristics of the South Coast Air Basin (Basin), the cumulative area for air quality impacts is the Basin itself. As previously stated in Section 5.1.2 - Related Regulations, under the subheading “Criteria Air Pollutants,” the portion of the Basin within which the Moreno MDP is located is designated as a non-attainment area for NO₂ under state standards, and for ozone, PM-10 and PM-2.5 under both state and federal standards.

Emissions within the context of SCAQMD’s regional emissions thresholds provide an indicator of potential cumulative impacts within the Basin. Cumulative localized impacts for pollutants are also considered, and reflect air pollutant emissions in the context of ambient conditions in the Moreno MDP vicinity.

As discussed in Section 5.1.5 – Environmental Impacts before Mitigation, Section 5.1.7 –Environmental Effects after Mitigation Measures are Implemented, and Appendix B (the Project’s AQIA), the Moreno MDP’s short-term emissions are above regional thresholds before and after mitigation during construction. The proposed Moreno MDP is in conformance with the AQMP and the short-term emissions are directly related to short-term construction impacts that are by their very nature temporary. **However, because the Moreno MDP’s short-term emissions exceed SCAQMD thresholds after implementation of mitigation, the incremental contribution to criteria pollutant emissions is considered to contribute to a cumulatively considerable impact to air quality.**

GHG Emissions

Greenhouse gases (GHG) are those gases that will contribute to global climate change; therefore, the cumulative impact area for GHG emissions is the earth’s atmosphere. Implementation of the proposed Moreno MDP along with the cumulative development projects will contribute GHG emissions to the atmosphere.

The Moreno MDP’s annual GHG emissions from the representative project are below the draft GHG screening threshold developed by South Coast Air Quality Management District (SCAQMD) for commercial projects, and do not generate a significant amount of GHG emissions. **Considering the Moreno MDP’s small contribution to GHG emissions, the Moreno MDP does not incrementally contribute to a cumulatively significant effect and cumulative impacts related to GHG emissions are considered less than significant.**

Biological Resources

The environmental impact analysis contained in Section 5.2 – Biological Resources, determined that potential impacts to biological resources will be less than significant with mitigation. Because biological resources are evaluated in this Draft PEIR at a programmatic level, mitigation measure **MM BIO 1**, requires a Facility-specific biological resources assessment that includes recommendations for subsequent surveys and mitigation measures, if needed, and a MSHCP Consistency Analysis and Findings pursuant to Sections 6.1.2, 6.1.3, 6.1.4, and 6.3.2 of the MSHCP for any proposed MDP Facility that is not being constructed as part of a private development project for which a general biological resources assessment has been conducted. The MDP Boundary does not occur within the NEPSSA and/or CAPSSA, and thus, focused plant surveys will not be required pursuant to the MSHCP for individual projects.

Special-status wildlife species that may be affected by the Project include burrowing owl, least Bell’s vireo, listed fairy shrimp, Los Angeles pocket mouse, Stephens’ kangaroo rat, and raptor foraging habitat. Mitigation for these species is provided by mitigation measures **MM BIO 2** through **MM BIO 7**. Specifically, **MM BIO 2** will require individual burrowing owl habitat assessments for individual MDP Facilities, including focused burrow surveys if needed; **MM BIO 3** will require Facility-specific pre-construction surveys prior to ground disturbance and avoid take of active nests; **MM BIO 4** will require Facility-specific riparian/ riverine surveys; **MM BIO 5** will require individual Facilities within areas of suitable riparian habitat to conduct protocol presence/absence surveys for the least Bell’s vireo and require additional measures for positive surveys and **MM BIO 6** will require a qualified biologist to

conduct presence/absence surveys for listed fairy shrimp for Facilities within potentially suitable habitat and require additional measures for positive surveys; and **MM BIO 7** will require individual projects located within the MSHCP Los Angeles pocket mouse survey area to conduct a habitat assessment and require additional measures for positive surveys. Moreover, regarding riparian and sensitive habitat, **MM BIO 4** will also address potential impacts related to adversely affecting riparian habitat, and **MM BIO 8** will require Facility-specific jurisdictional delineations to determine whether biological features will be subject to the jurisdictions of the ACOE, RWQCB, and CDFG. Further, regarding native or migratory fish or wildlife species, **MM BIO 9** will require seasonal avoidance of vegetation removal and/or nesting bird surveys to ensure that migratory birds (and their nests) will not be directly harmed. Lastly, the Project will comply with MSHCP and SKR HCP and thus the goals and policies of the District, Moreno Valley, and Riverside County.

Summary of Cumulative Environmental Effects from the Moreno Valley General Plan

The geographic scope for cumulative biological impacts is the Western Riverside County MSHCP Area. Development within the MDP Watershed per the Moreno Valley General Plan has the potential to impact biological resources. However, the Moreno Valley General Plan is consistent with and will facilitate implementation of the applicable policies and programs identified in the MSHCP, which is designed to protect and establish a 500,000-acre Reserve in Western Riverside County in exchange for biological impacts that may happen outside that Reserve Area. As discussed under the subheading “Related Regulations, Regional” of Section 5.2, the District, Moreno Valley, and Riverside County are Permittees under the MSHCP and are legally obligated to comply with its provisions. Additionally, the Moreno Valley General Plan includes policies and programs designed to reduce impacts to biological resources over the long term. **Therefore, implementation of these policies and programs and mitigation described in the Moreno Valley General Plan FEIR will reduce cumulative impacts to biological resources within the MDP Watershed to less than significant.**

Proposed Mitigation Measures

Mitigation measures addressing construction and maintenance have been incorporated into the Project to reduce Project-level biological impacts. The proposed Project must also comply with the MSHCP, and each individual Facility is expected to mitigate at the project level. To address the potential impacts associated with the cumulative loss of habitat for special status wildlife the proposed project and each individual Facility shall comply with all pertinent MSHCP requirements. Please refer to Section 5.2 – Biological Resources of this Draft PEIR.

Cumulative Environmental Effects after Mitigation Measures are Implemented

Through compliance with the MSHCP, the Project will not result in or contribute to a cumulative adverse effect, either directly or through habitat modifications, on any of the Covered Species listed in the MSHCP as implementation of the MSHCP benefits Covered Species by preserving their habitat in order to address their life cycle needs. Thus, through compliance with the MSHCP and based on the features of the MSHCP itself, impacts to Covered Species are mitigated below a level of significance. (MSHCP EIR/EIS, p. 5.1-7)

As described in the MSHCP EIR/EIS, implementation of the MSHCP will result in cumulatively significant impacts on the Non-Covered Species because the issuance of incidental take permits will remove an impediment to development outside of the MSHCP Conservation Area. Non-Covered Species would receive little or no protection outside the reserves under existing ordinances and regulations. However, within the MDP Boundary, there are no threatened or endangered species known or likely to be on site, which are not on the 146-species list covered by the MSHCP. **Therefore, cumulative impacts to Non-Covered MSHCP species are less than significant.**

The Project will not cause adverse cumulative effects related to the reduction of sensitive vegetation communities; as the MDP Watershed is located within the MSHCP Plan Area and the MSHCP itself is designed to preserve sufficient acreage of the sensitive vegetation communities present in western Riverside County. Similarly, build out of the MDP Watershed in compliance with the Moreno Valley General Plan will not cause adverse cumulative effects related to interference with the movement of any native resident or migratory fish or wildlife species or obstruction of genetic flow for the identified Planning Species. Part of the purpose and goals of the MSHCP is to use regional planning efforts to assemble a reserve that will preserve contiguous blocks of habitat in large enough areas to ensure that the reserve will allow movement of species and flow of genetic information. (MSHCP EIR/EIS, pp. 5.1-7 - 5.1-8)

The proposed Project will not cause adverse cumulative impacts by conflicting with the provisions of any adopted Habitat Conservation Plan, Natural Communities Conservation Plan or other approved local, regional, or state habitat conservation plan either within or outside of the MSHCP boundary.

The MSHCP has been designed specifically to complement existing HCPs, such as the Stephens' kangaroo rat long-term HCP. Through compliance with the MSHCP and existing HCPs, local, regional, and state plans, cumulative impacts are considered less than significant. (MSHCP EIR/EIS, p. 5.1-8)

Cumulative effects associated with the proposed MSHCP take authorization would involve direct loss of habitat and species associated with ground disturbance in take authorized areas as development occurs in accordance with growth per the Moreno Valley General Plan. Cumulative indirect effects would occur to species and habitats within the MSHCP Conservation Area and would be associated with development of proposed land uses and activities in take authorized areas in proximity to the MSHCP Conservation Area. Indirect effects primarily result from adverse "edge effects" and may be short-term indirect effects related to construction or long-term indirect effects associated with development or land use practices in proximity to conserved habitat areas. (MSHCP EIR/EIS, p. 5.1-8)

Cumulative indirect impacts resulting from construction activities include dust, noise, and general human presence that may temporarily disrupt species and habitat vitality and construction-related soil erosion and runoff. Edge effects at the boundary between natural lands and human-occupied lands ("urban edge effects") arise due to human-related intrusions such as lighting, noise, invasive species, exotic predators (e.g., dogs and cats), hunting, trapping, off-road activities, dumping, and other forms of recreation and disturbance. Human-induced edge effects are generally unfavorable to native species and are considered cumulative as edge increases throughout the landscape. (MSHCP EIR/EIS, p. 5.1-8)

Cumulative significant indirect impacts associated with edge effects and increased development outside the conservation areas established by the proposed MSHCP are addressed in the provisions of Section 6.1.4 of the MSHCP. Edge effects will result as development occurs in proximity to habitat; however, the MSHCP contains provisions that will reduce the adverse impacts associated with edge effects. The MSHCP provides take authorization for Covered Species. The MSHCP would not directly cause edge effects, but it would dictate where such effects could occur through the reserve assembly process. **Thus, cumulative indirect impacts associated with edge effects are considered less than significant.** (MSHCP EIR/EIS, p. 5.1-8)

Cultural Resources

The environmental impact analysis contained in Section 5.3 – Cultural Resources, determined that potential impacts to cultural resources will be less than significant with mitigation. Impacts related to historic and archaeological resources were found to be less than significant within or adjacent to proposed MDP Facilities. However, the locations of the proposed MDP Facilities are conceptual at this time and may change as more detailed information becomes available during the final design process. Subsequent CEQA documentation in the form of a Notice of Exemption, Addendum to this PEIR, Mitigated Negative Declaration, Negative Declaration, Subsequent EIR, or Supplemental EIR may be required if the final location of an MDP Facility were to change from the locations evaluated in the *Phase I Archaeological Assessment* (included as Appendix D.1) or the *Paleontological Resources Report* (included as Appendix D.2). Mitigation measure **MM CR 1** requires the proponent for any specific proposed MDP Facility for which there is a change in the location or size of disturbance area from what was evaluated in the Draft PEIR, to prepare a Facility-specific archaeological assessment. Mitigation measures **MM CR 2**, includes provisions for the accidental discovery of archaeological resources. Mitigation measure **MM CR 3**, requires the proponent of each MDP Facility to notify local Native American tribes prior to ground-disturbing activities and may allow tribal monitors to be present during grading, excavation, and other ground-disturbing activities if the Facility-specific assessment required by **MM CR 1** identifies the potential for archaeological and/or cultural resources to occur along the alignment or area of disturbance.

No unique geologic feature is known to exist and no fossils have been documented within or adjacent to the proposed MDP Facilities. However, the Project footprint is underlain by deposits that could potentially have a high sensitivity for paleontological resources. Ground-disturbing activities resulting from construction of the proposed Project could damage or destroy previously undocumented unique fossils, if located within the footprint of proposed MDP Facilities. Mitigation measures **MM CR 4** through **MM CR 7**, outline specific measures that will be taken if certain soil types or any artifacts deemed to be rare, substantial, or otherwise, unique are unearthed during construction activities.

The Project's Initial Study determined that the potential impact regarding human remains will be less than significant. The Project's likelihood of discovering human remains is low, and if in the unlikely event human remains were discovered, the Project would adhere to California Health & Safety Code Section 7050.5, California Resources Protection Code Section 5097.98, and the terms of the District's Master Agreement with the Pechanga Tribe should human remains be discovered during construction of the

Ironwood Debris Basin. The other future projects would assess their potential to unearth human remains on a project-by-project basis and would also be subject to the identified state codes regarding accidental discovery.

Summary of Cumulative Environmental Effects from the Moreno Valley General Plan

The geographic scope for cumulative impacts to cultural resources is the city of Moreno Valley and its Sphere of Influence. Historical, archaeological, and paleontological resources in the MDP Watershed could be cumulatively impacted by future development per the Moreno Valley General Plan. **However, implementation of programs and mitigation described in the Moreno Valley General Plan EIR will reduce cumulative impacts to cultural resources within the MDP Watershed to less than significant.**

Proposed Mitigation Measures

Mitigation measures have been incorporated into the Project to reduce Project-level impacts. Please refer to Section 5.4 – Cultural Resources of this Draft PEIR. Additional mitigation measures addressing potential cumulative impacts are unnecessary.

Cumulative Environmental Effects after Mitigation Measures are Implemented

Development within the MDP Watershed per the Moreno Valley General Plan will not result in cumulative impacts to cultural resources because such impacts will be reduced to a less than significant level by either retaining historic (structures), archaeological, and paleontological resources or mitigating the impact. Mitigation will occur at the development project-level or MDP Facility-level by implementing Moreno Valley's and Riverside County's cultural resource protection policies and, where needed, implementing development-specific mitigation measures. **Therefore, with implementation of mitigation measures MM CR 1 through MM CR 7, potential cumulative impacts to cultural resources will be reduced to less than significant.**

Hydrology and Water Quality

The environmental impact analysis contained in Section 5.4 – Hydrology and Water Quality, determined impacts to hydrology and water quality will be less than significant with mitigation. Construction of the proposed MDP Facilities will address specific structural and non-structural BMPs as part of the existing NPDES and MS4 permitting requirements as well as various statutory requirements necessary to achieve regional water quality objectives and protect surface waters from polluted storm water runoff. The Project will also not negatively alter groundwater as total infiltration volumes from the proposed basins are greater than the existing Nason Basin and the detention basins are expected to facilitate groundwater recharge. Erosion and siltation will be prevented by the design of the MDP Facilities, which includes two debris basins. Moreover, the implementation of the Moreno MDP Revision combined with street improvements will provide protection from 100-year flood hazards in the MDP Watershed. Because not all MDP Facilities will require preparation of a SWPPP, mitigation measure **MM HYD 1** requires preparation and approval of an erosion-control plan for any MDP Facility for which a SWPPP is not prepared. Since phasing and construction of the MDP Facilities will be in response to development within the MDP Watershed, mitigation measure **MM HYD 2**, which requires demonstration that storm flows and runoff associated with each specific MDP Facility will be conveyed to downstream facilities

with adequate capacity. The Project's Initial Study determined a number of potential hydrology and water quality impacts will be less than significant, specifically regarding the alteration of an existing drainage pattern resulting in substantial erosion or siltation on or off site; creating or contributing to runoff water exceeding the capacity of an existing or planned storm water drainage system; siting housing in a 100-year flood hazard area; exposing people or structures to an increased risk of flooding, including flooding from levee or dam failure; and/or exposing people or structures to an increased risk of loss, injury, or death from inundation by seiche, tsunami, or mudflow.

Summary of Cumulative Environmental Effects from the Moreno Valley General Plan

The geographic scope for cumulative impacts to hydrology and water quality is the San Jacinto River watershed, specifically within the Santa Ana River Reach 3 watershed. As development proceeds in the San Jacinto River watershed, the amount of pollutants in runoff will increase, this in turn may impact surface and groundwater quality. The amount of impervious surfaces will increase as development proceeds and erosion and sedimentation impacts on surface water will occur during grading and construction activities. However, Moreno Valley will implement mitigation described in its General Plan EIR that requires: all components of its storm drain system to conform to the District's master drainage plans and FEMA requirements, and compliance with the provisions of NPDES permits to protect water quality issued by the Regional Water Quality Control Board. (MVGP FEIR p. 5.7-13).

Proposed Mitigation Measures

Mitigation measures will be incorporated into the Project to reduce Project-related impacts to hydrology and water quality. Please refer to Section 5.4 – Hydrology and Water Quality. Additional mitigation measures addressing potential cumulative impacts are unnecessary.

Cumulative Environmental Effects after Mitigation Measures are Implemented

The MDP Facilities will be designed and constructed to capture stormwater runoff from existing and future development in the Moreno MDP Watershed. Construction of the MDP Facilities and all development projects within Moreno Valley will be required to comply with the current NPDES permits, which includes specific requirements to substantially reduce the problem. Flood control and infrastructure maintenance needs can be met by the application of standard engineering practices.

Therefore, through implementation of proposed mitigation measures and regulatory compliance, potential cumulative impacts to water quality will be less than significant.

Noise

As discussed in Section 5.5 – Noise, operation and maintenance of the MDP Facilities will not result in significant permanent noise. Construction of the MDP Facilities, which will entail the use of heavy equipment such as backhoes, excavators, dozers, scrapers, water trucks, wheeled loaders, and dump trucks, will generate short-term noise that will cease when construction is complete. Noise from the construction equipment is anticipated to range from 65.5 dBA L_{max} to 73.0 dBA L_{max} 200-feet¹ from the construction site. This is less than the maximum continuous and impulsive sound level limits and greater

¹Per Section 11.080.030.C of the Moreno Valley Municipal Code, sound originating on public-right-of-way, public space, or other publicly-owned property is measured from a distance of 200-feet from the source.

than the maximum sound levels for source land uses established in the Moreno Valley Municipal Code. However, by limiting the hours of construction (mitigation measure **MM NOI 1**), requiring construction equipment to be properly tuned and muffled (mitigation measure **MM NOI 2**), providing notice to nearby properties (mitigation measure **MM NOI 3**), and limits to idling required by the SCAQMD (mitigation measure **MM AIR 2**), **short-term noise impacts will be less than significant with mitigation, and long-term noise impacts would be less than significant due to the infrequent nature of facility maintenance.** Construction of the MDP Facilities is not expected to require the use of impact devices; thus, no perceptible impacts are anticipated in regards to impulsive noise or vibration.

The Project's Initial Study determined that noise impacts would be less than significant for the following thresholds: substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project; being located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; for a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels, will be less than significant. The MDP Boundary is not within a two-mile vicinity of a public airport or private airstrip. And, a substantial permanent ambient noise increase is not anticipated due to the temporary nature of construction noise impacts and the infrequent nature of facility maintenance.

Summary of Cumulative Environmental Effects from the Moreno Valley General Plan

The geographic scope for cumulative noise impacts is Moreno Valley and surrounding area. Development per the Moreno Valley General Plan will increase traffic volumes and associated noise levels in the region. High noise levels already occur along many of the region's transportation corridors and implementation of the Moreno Valley General Plan will generate additional vehicular traffic that will result in an incremental increase in noise levels along these corridors. However, the incremental noise impact of build-out per the Moreno Valley General Plan is so small it will make only a negligible contribution to the cumulative noise impact within the region. Therefore, implementation of the Moreno Valley General Plan will not contribute to a significant cumulative noise impact in the region. (MVGP FEIR, pp. 7-3-7-4)

Proposed Mitigation Measures

Mitigation measures will be incorporated into the Project to reduce Project-related construction noise impacts. Please refer to Section 5.5 – Noise. Additional mitigation measures addressing potential cumulative impacts are unnecessary.

Cumulative Environmental Effects after Mitigation Measures are Implemented

Construction of the proposed Facilities identified in the Moreno MDP Revision will result in less than significant noise impacts due to the temporary nature of the noise source and implementation of mitigation measures. **Because the Project is not contributing to any permanent increase in ambient noise and cumulative noise impacts resulting from development per the Moreno Valley General Plan**

is less than significant, no potentially significant cumulative effects related to noise will result from implementation of the Moreno MDP Revision.

6.2 Significant Unavoidable Adverse Impacts

This topic is intended to address any significant impacts that cannot be mitigated to below a level of significance (State *CEQA Guidelines* Section 15126.2). As discussed in detail throughout Section 5 – Potentially Significant Environmental Effects of this Draft PEIR, implementation of the Moreno MDP Revision will not result in any Project-specific or cumulatively significant unavoidable adverse impacts related to greenhouse gas emissions, biological resources, cultural resources, hydrology/water quality, or noise. Additionally, the Project’s Initial Study (included as Appendix A) determined that no significant impacts will occur to the following issue areas: aesthetics, agriculture and forest resources, geology and soils, hazards and hazardous materials, land use and planning, mineral resources, population and housing, public services, recreation, transportation and traffic, and utilities and service systems.

Impacts to air quality are considered significant if the proposed Moreno MDP will violate any air quality standards or contribute substantially to an existing or projected air quality violation. Depending on the specific MDP Facility or combination of Facilities constructed at any given time, SCAQMD regional significance thresholds for VOC (if more than one activity occurs at the same time) and NO_x would be exceeded during construction after implementation of mitigation. **Although these are direct, short-term impacts that will cease once construction is complete, they remain unavoidable and are unmitigable due to NO_x emissions.**

6.3 Growth Inducing Impacts

According to State *CEQA Guidelines* Section 15126.2(d), a project may foster economic or population growth, or additional housing, either indirectly or directly, in a geographical area if it meets any one of the following criteria:

- A project would remove obstacles to population growth;
- Increases in the population may tax existing community service facilities, causing significant environmental effects; or
- A project would encourage and facilitate other activities that could significantly affect the environment.

As discussed in Section 3 – Project Description of this Draft PEIR, the Project will revise the existing Moreno MDP to readdress current and future drainage needs of the eastern Moreno Valley area in response to growth planned for by the *Moreno Valley General Plan*. The Moreno Valley area has, in large part, been developing at a faster rate than anticipated in the 1991 Moreno MDP (which was last revised in 1991). The Moreno MDP Revision includes open channels, detention basins, debris basins, and subterranean storm drains, and is designed to function in conjunction with street improvements to contain the 100-year flood discharge. Full implementation of the Moreno MDP Revision will occur over time. It should also be noted that locations of the MDP Facilities are conceptual, and some of the MDP Facilities may not be realized.

The MDP Boundary is generally located in an area that is quickly urbanizing with residential, commercial, and light industrial uses. The Project in and of itself, will not generate an increased demand on infrastructure or utilities, but instead, is a revision of planned flood control infrastructure that will be integrated with future development and build out of the MVGP. For this reason, implementation of the Moreno MDP Revision will not directly or indirectly induce population growth or remove obstacles to population growth; it is in response to existing and projected population growth.

Operation of the Moreno MDP Revision will not generate new employment opportunities as it is expected existing District personnel will address maintenance issues as they arise over the lifespan of the MDP Facilities. At most, construction of each MDP Facility may result in temporary construction employment opportunities. However, given the nature of the work and the availability of labor in Riverside County, it is reasonable to assume that the construction of a new MDP Facility will be completed by companies already in business and doing business in the area and will not result in an indirect population growth. Thus, implementation of the Moreno MDP Revision will not result in any significant growth inducing impacts.

6.4 Significant Irreversible Environmental Changes from the Project

The intent of this section of the Draft PEIR is to discuss primary and secondary impacts of the Project that result in significant irreversible changes to the environment. State *CEQA Guidelines* Section 15126.2(c) identifies examples such as use of nonrenewable natural resources, irreversible changes in land use, and irreversible damage to the environment resulting from environmental accidents associated with a project.

Nonrenewable resources, such as fossil fuels, will be consumed during construction of the proposed MDP Facilities. These resources are used for vehicles traveling to and from the Project site and used to construct each Facility. However, once in operation, these nonrenewable resources will no longer be consumed except by vehicles addressing maintenance issues as they may arise. As such, the operation of the Moreno MDP Revision is not considered a long-term obligation or investment of fossil fuels due to the infrequency of the visits and continually improving fuel technology, which is anticipated to significantly lessen consumption of fossil fuels in the future, especially in vehicles. Therefore, as the long-term effect of implementation of the Moreno MDP Revision will not change the development intensity within the MDP Watershed, but instead follow with it, and the Moreno MDP Revision does not involve a significant long-term investment of nonrenewable resources, the construction, operation, and maintenance of MDP Facilities will not result in significant irreversible environmental changes.

6.5 Consistency with Regional Plans

Section 15125(d) of the State *CEQA Guidelines* also requires an EIR to “to discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans.” The regional plans applicable to the proposed Project that are discussed in the environmental impact analysis are the *Moreno Valley General Plan*, the MSHCP, SKR HCP, and the AQMP. The following table identifies the location in which each of these plans is discussed in the Draft PEIR.

Table 6-A – Location in the Draft PEIR in which Consistency with Regional Plans is Discussed

Plan	Location of Discussion
Moreno Valley General Plan	Environmental impact analysis section for each environmental issue under the heading “Related Regulations”
MSHCP	Section 5.2.2 Biological Resources, Related Regulations, Regional, Western Riverside County Multiple Species Habitat Conservation Plan
SKR HCP	Section 5.2.2 Biological Resources, Related Regulations, Regional, Stephens’ Kangaroo Rat Habitat Conservation Plan
AQMP	Section 5.1.2 Air Quality, Related Regulations, Criteria Air Pollutants
SCAG Regional Transportation Plan	Section 6.5.1 Other CEQA Topics, Consistency with Regional Plans, Southern California Association of Governments’ Regional Transportation Plan and Compass Growth Visioning
SCAG Compass growth Visioning Principles	Section 6.5.1 Other CEQA Topics, Consistency with Regional Plans, Southern California Association of Governments’ Regional Transportation Plan and Compass Growth Visioning

Implementation of the Moreno MDP Revision will not generate traffic; thus, no discussion on the Riverside County Congestion Management Plan or Transportation Uniform Mitigation Fee (TUMF) is required. Additionally, because implementation of the Moreno MDP Revision does not entail the construction of new housing or the need for replacement housing, no discussion of any housing plan is required.

6.5.1 Southern California Association of Governments’ Regional Transportation Plan and Compass Growth Visioning

The Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization for Ventura, Los Angeles, Orange, Riverside, San Bernardino, and Imperial counties and is charged by the federal government to research and prepare plans for transportation, growth management, hazardous waste management, and air quality. The following tables discuss the proposed Project’s consistency with goals and principles of SCAG’s Regional Transportation Plan (RTP) and Compass Growth Visioning (CGV) on **Table 6-B – Proposed Project Consistency with the Regional Transportation Plan Goals** and **Table 6-C – Proposed Project Consistency with the Compass Growth Visioning Principles**, respectively. As shown on the following tables, the Project will be consistent with the goals and principles of the SCAG plans.

Table 6-B – Proposed Project Consistency with the Regional Transportation Plan Goals ^a

Goal Number	Policy Text	Statement of Consistency, Non-Consistency, or Not Applicable
RTP G1	Maximize mobility and accessibility for all people and goods in the region.	<p>Not Applicable: The Project constitutes a revision to a master drainage plan intended to provide for the drainage needs of existing and anticipated future development through the construction of channels, storm drains, levees, basins, dams, or any other conveyance capable of feasibly relieving flooding problems within the MDP Boundary. This Project does not involve people or goods mobility, or transportation.</p>
RTP G2	Ensure travel safety and reliability for all people and goods in the region.	
RTP G3	Preserve and ensure a sustainable regional transportation system.	
RTP G4	Maximize the productivity of our transportation system.	
RTP G7	Maximize the security of our transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies	
RTP G5	Protect the environment, improve air quality and promote energy efficiency.	<p>Consistent: The impact on the environment as a result of Project implementation has been analyzed in this Draft PEIR pursuant to CEQA. Mitigation measures, as appropriate, have been identified to reduce air quality impacts to the maximum extent practicable, with the limited available construction details at this programmatic level. As determined by this Draft PEIR, some individual MDP facilities may cause short-term construction impacts. However, the District practices strict adherence to the SCAQMD Rules and BMPs, and expects that when it comes to actually constructing the MDP Facilities, most air quality impacts can be mitigated at the project level. Regarding energy efficiency, the nature of this Project generally does not require a long-term commitment of resources. The energy required for construction is not anticipated to be substantial and mitigation measures intended to reduce air quality, GHG emissions, and noise will also contribute to energy efficiency.</p>
RTP G6	Encourage land use and growth patterns that complement our transportation investments and improves the cost-effectiveness of expenditures.	<p>Not Applicable: The Project will address drainage issues for current and anticipated future development to a greater degree than the currently adopted 1991 MDP Revision, and is not intended to encourage land use and growth patterns in and of itself.</p>

Goal Number	Policy Text	Statement of Consistency, Non-Consistency, or Not Applicable
^a Source of applicable policies: Southern California Association of Governments, <i>RE: SCAG Comments on the Notice of Preparation of a Draft Programmatic Environmental Impact Report for the Moreno Master Drainage Plan Revision [I20120067]</i> , prepared by Jacob Lieb, Manager of Environmental and Assessment Services, April 30, 2012. (Appendix A.)		

Table 6-C – Proposed Project Consistency with the Compass Growth Visioning Principles ^a

Principle Number	Policy Text	Statement of Consistency, Non-Consistency, or Not Applicable
Principle 1: Improve mobility for all residents		
GV P1.1	Encourage transportation investments and land use decisions that are mutually supportive.	Not Applicable: The Project will address drainage issues for current and anticipated future development to a greater degree than the currently adopted 1991 MDP Revision through the construction of channels, storm drains, levees, basins, dams, or any other conveyance capable of feasibly relieving flooding problems within the MDP Boundary. This Project does not involve people or goods mobility, or transportation. Further, the Project is not intended to encourage land use and growth patterns.
GV P1.2	Locate new housing near existing jobs and new jobs near existing housing.	
GV P1.3	Encourage transit-oriented development.	
GV P1.4	Promote a variety of travel choices.	
Principle 2: Foster livability in all communities		
GV P2.1	Promote infill development and redevelopment to revitalize existing communities.	Not Applicable: The Project will address drainage issues for current and anticipated future development to a greater degree than the currently adopted 1991 MDP Revision through the construction of channels, storm drains, levees, basins, dams, or any other conveyance capable of feasibly relieving flooding problems within the MDP Boundary. This Project does not involve people or goods mobility, or transportation. Further, the Project is not intended to encourage land use and growth patterns.
GV P2.2	Promote developments that provide a mix of uses.	
GV P2.3	Promote “people scaled,” pedestrian-friendly (walkable) communities.	
GV P2.4	Support the preservation of stable, single-family neighborhoods.	
Principle 3: Enable prosperity for all people		
GV P3.1	Provide, in each community, a variety of housing types in	Not Applicable: The Project will address drainage issues for current and anticipated future development to a greater degree than the

Principle Number	Policy Text	Statement of Consistency, Non-Consistency, or Not Applicable
	each community to meet the housing needs of all income levels.	currently adopted 1991 MDP Revision through the construction of channels, storm drains, levees, basins, dams, or any other conveyance capable of feasibly relieving flooding problems within the MDP Boundary. This Project does not involve people or goods mobility, or transportation. Further, the Project is not intended to encourage land use and growth patterns.
GV P3.2	Support educational opportunities that promote balanced growth.	
GV P3.3	Ensure environmental justice regardless of race, ethnicity or income class.	
GV P3.4	Support local and state fiscal policies that encourage balanced growth.	
GV P3.5	Encourage civic engagement.	
Principle 4: Promote sustainability for future generations		
GV P4.1	Preserve rural, agricultural, recreational and environmentally sensitive areas.	Consistent: The Project is intended to correspond with the anticipated future development within the MDP Boundary, which is also an area that is quickly urbanizing with residential, commercial, and light industrial uses. However, there is land currently designated for agricultural uses, but full implementation of the Project will impact a relatively small footprint. It should be recognized that the Project will comply with the objectives of MVGP, and thereby, with Moreno Valley’s preferred long-term direction. Environmentally sensitive areas with a potential to be affected by this Project include wetland/riparian/riverine habitats. Prior to the construction of specific Facilities, a subsequent, Facility-specific analysis will be conducted to assess the potential for such habitats and adequate mitigation, if necessary, will be incorporated into that specific project and implemented as to ensure impacts are not significant.
GV P4.2	Focus development in urban centers and existing cities.	Not Applicable: The proposed Project is a MDP, which would inherently not be applicable to this policy.
GV P4.3	Develop strategies to accommodate growth that uses resources efficiently, eliminate pollution and significantly reduce waste.	Consistent: The Project’s design will achieve regional water quality and waste discharge requirements of the Regional Water Quality Control Board, which will reduce storm water pollutants and allow infiltration/groundwater recharge.
GV P4.4	Utilize “green” development techniques.	Consistent: The Project will revise the currently-adopted 1991 Moreno MDP from mainly concrete open channels to more environmentally friendly alternatives, such as soft bottoms channels

Principle Number	Policy Text	Statement of Consistency, Non-Consistency, or Not Applicable
		which allow infiltration and can trap pollutants better. The Project will also not add significant amounts of impervious surfaces within the MDP Boundary as the Facilities will be underground stormdrain pipelines, earthen trapezoidal channels (except for two lined sections of channels), and earthen basins (detention and debris). Further, the Project will be designed to minimize and control discharges to surface and groundwater within the region.
^a Source of applicable principles: Southern California Association of Governments, <i>RE: SCAG Comments on the Notice of Preparation of a Draft Programmatic Environmental Impact Report for the Moreno Master Drainage Plan Revision [I20120067]</i> , prepared by Jacob Lieb, Manager of Environmental and Assessment Services, April 30, 2012. (Appendix A.)		

6.6 References

In addition to other documents, the following references were used in the preparation of this section of the Draft PEIR:

- City of Moreno Valley, *City of Moreno Valley General Plan*, Adopted July 11, 2006. (Available at http://www.moreno-valley.ca.us/city_hall/general-plan/06gpfinal/gp/gp-tot.pdf, accessed August 20, 2013.) [Cited as MVGP]
- City of Moreno Valley, *Final Environmental Impact Report City of Moreno Valley General Plan (SCH# 200091075)*, Certified July 2006. (Available at http://www.moreno-valley.ca.us/city_hall/general-plan/06gpfinal/ieir/eir-tot.pdf, accessed August 20, 2013.) [Cited as MVGP FEIR]
- County of Riverside Transportation and Land Management Agency and United States Fish and Wildlife Service, *Western Riverside County Multiple Species Habitat Conservation Plan Final Environmental Impact Report/Environmental Impact Statement*, June 17, 2003. (Available at http://www.wrc-rca.org/Permit_Docs/mshcp_vol4.html, accessed August 26, 2013.) [Cited as MSHCP EIR/EIS]
- Southern California Association of Governments, *RE: SCAG Comments on the Notice of Preparation of a Draft Programmatic Environmental Impact Report for the Moreno Master Drainage Plan Revision [I20120067]*, prepared by Jacob Lieb, Manager of Environmental and Assessment Services, April 30, 2012. (Appendix A.)

Section 7 – Alternatives to the Proposed Project

The following discussion considers alternatives to implementation of the Project. The discussion examines the potential environmental impacts resulting from each alternative. Through comparisons of these alternatives to the Project, the relative advantage(s) of each can be weighed and analyzed.

State *CEQA Guidelines* Section 15126.6 identifies the parameters within which consideration and discussion of alternatives to the proposed Project should occur. As stated in this section of the guidelines, alternatives must focus on those that are potentially feasible and which attain most of the basic objectives of the Project.

7.1 Project Objectives

As stated previously in Section 3.4 of the Draft PEIR, the objectives of the proposed Moreno MDP are as follows:

1. Revise the Moreno MDP to provide a drainage plan which supports the existing and proposed land use as set forth in the “Riverside County General Plan” updated in 2008, “City of Moreno Valley General Plan” updated in July 2006, and any proposed amendments thereto.
2. The fully implemented plan should, in conjunction with ultimate street improvements for the area within the boundaries of the Moreno MDP, contain the 100-year frequency flows and alleviate the primary sources of flooding.
3. Identify preferred facility alignments, sizing, and right-of-way required for the future construction of MDP facilities to protect existing and future development.
4. Identify the most economical combination of facilities considering right-of-way acquisition, construction, and maintenance costs.
5. Develop a plan which, when implemented, will result in the elimination of FEMA designated Special Flood Hazard Areas within the boundaries of the Moreno MDP.
6. Revise the Moreno MDP to minimize major diversions and perpetuate the natural drainage pattern of the area to the maximum extent practicable.
7. Where feasible, incorporate facilities which encourage infiltration.
8. Minimize environmental impacts to the maximum extent practicable.

7.2 Significant Unavoidable Impacts

As determined in Section 5.1 – Air Quality and Greenhouse Gas Emissions, the projected short-term emissions from construction of the MDP Facilities will be above South Coast Air Quality Management District’s regional thresholds for NO_x, and If basin grading and channel grading of proposed MDP Facilities occurs at the same time, VOC emissions would also exceed the SCAQMD threshold and thus, even with mitigation measures, impacts from construction will be significant and unavoidable.

Therefore, a Statement of Overriding Considerations will be required prior to Moreno MDP approval. It should be noted that the referenced section analyzes both impacts to air quality and greenhouse gas

emissions, and only significant short-term construction-related impacts to air quality were determined to result.

7.3 Less Than Significant Impacts

The Project's potential impacts to the following environmental topics considered in the Draft PEIR will be less than significant with mitigation incorporated: biological resources, cultural resources, hydrology and water quality, and noise. It should also be noted that impacts related specifically to greenhouse gas emissions were determined to be less than significant without mitigation. The Initial Study determined that the impacts to aesthetics, agriculture and forest resources, geology and soils, hazards and hazardous materials, mineral resources, population and housing, public services, transportation and traffic, and utilities and service systems, would be less than significant and therefore no mitigation is required for these impact areas.

7.4 Rationale for Alternative Selection

State *CEQA Guidelines* Section 15126.6(a) requires that an EIR "...describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." According to this section of the State *CEQA Guidelines*, "...an EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation." An EIR is not required to consider alternatives which are infeasible. The Riverside County Flood Control and Water Conservation District (District), as lead agency, is responsible for selecting a range of project alternatives for examination, and there is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the "rule of reason" (State *CEQA Guidelines*, Section 15126.6 (a)). Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to an alternative. (State *CEQA Guidelines*, Section 15126.6 (f)(1))

With respect to the selection of alternatives to be considered in an EIR, State *CEQA Guidelines* Section 15126.6(b) states "...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." That is, each alternative must be capable of avoiding or substantially lessening any significant effects of the proposed Project. As mentioned, construction impacts to air quality will be significant and unavoidable and impacts to greenhouse gas emissions will be less than significant without mitigation. As such, a Statement of Overriding Considerations for short-term construction air quality impacts will be required prior to Project approval.

The rationale for selecting the alternatives to be evaluated, and a discussion of the “no project” alternative are also required (State *CEQA Guidelines*, Section 15126.6(e)). In addition to the “no project,” this Draft PEIR evaluates four other alternatives: “Alternative 1,” “Alternative 2A,” “Alternative 2B,” and “Alternative 3.”

7.5 Alternatives Rejected from Consideration

Section 15126.6(c) of the State *CEQA Guidelines* specify that an EIR should identify alternatives that were considered by the lead agency, but were rejected during the scoping process and identify the reasons for eliminating the alternatives from further consideration. Section 15126.6(c) further indicates that a lead agency may eliminate an alternative from detailed consideration in an EIR if it fails to meet the basic project objectives, is infeasible, or does not avoid significant environmental impacts. None of the alternatives that were considered and rejected would result in fewer environmental impacts than the proposed Project.

Storm Drains

A number of other alternatives involving minor realignments and underground facilities versus open channel facilities were studied and eventually disregarded as either being too costly or not providing adequate protection.

Basins

Basins are required in the proposed Project due to revised hydrology and updated land-use which produces higher flow-rates than what was used in the 1991 Moreno MDP.

The following alternate locations for the Cactus Basin were suggested by a commenter:¹

- (i) an existing basin at the northeast corner of Alessandro Boulevard and Merwin Street;
- (ii) an area south of Alessandro Boulevard and north of Brodiaea Avenue;
- (iii) an area bounded on the east by Redlands Boulevard, on the west by Wilmot Street, on the south by Cactus Avenue, and on the north by Brodiaea Avenue; and
- (iv) an area on the east side of Merwin Street at Brodiaea Avenue.

Existing Line F downstream of Cactus Avenue does not have adequate capacity for the flow-rates used for the proposed Project, thus attenuation of flows must be provided upstream of existing Line F. That is the main purpose and function of the Cactus Basin.

Commenter-suggested location (i) *the existing basin at the northeast corner of Alessandro Boulevard and Merwin Street* is infeasible because there is no basin at this location. This location only contains a couple of berms to direct storm-flows.

¹ Comment letter received from Devlin Engineering, March 21, 2103. A copy of this letter is included in Appendix A.

Commenter-suggested location *(ii) an area south of Alessandro Boulevard and north of Brodiaea* is infeasible because a portion of this site property is part of an entitled subdivision. In addition constructing a basin at this site would require substantial grading along the southern portions of this area due to a hillside. Additionally, this proposed basin site would also involve substantially greater cost when compared to the location identified in the Project.

Commenter-suggested location *(iii) an area bounded on the east by Redlands Boulevard, on the west by Wilmot Street, on the south by Cactus Avenue, and on the north by Brodiaea Avenue* and *(iv) an area on the east side of Merwin Street at Brodiaea Avenue* are infeasible alternatives because these locations will only attenuate flows from the Line F system and not the Line F-2 system. A basin at either of these locations would need to be sized to over-mitigate for the Line F-2 system, which would result in a larger, more costly basin. Additionally the Moreno Valley Planning Department commented that the property to the east of Merwin (Commenter-suggested location (iv)) is no longer within the World Logistics project site and a tentative tract map is currently under review for this location.

The location of the proposed Cactus Basin is more efficient and practicable than the four Commenter-suggested locations because it is upstream of the existing undersized Line F and will collect storm-flows from both the Line F and Line F-2 systems. Portions of the Project's proposed location of the Cactus Basin are currently designated as Open Space and Public Facilities in the Moreno Valley General Plan and the site is currently vacant with no development entitlements. The MDP Revision proposed basin location is also preferred by Moreno Valley (owner of a portion of the proposed basin site), because Moreno Valley wants the option of using the Cactus Basin for a future park. Use of this basin as a park is not a part of the proposed Project; therefore, subsequent CEQA review will be required prior to Moreno Valley approving and developing a park at this location.

7.6 Description and Evaluation of Alternatives

This section of the Draft PEIR presents the analysis of four alternatives in comparison to the potential environmental effects associated with the proposed Project. In accordance with State *CEQA Guidelines*, Section 15126.6(d), the discussion of the environmental effects of the alternatives may be less detailed than the discussion of the impacts of the proposed Project.

In preparing the proposed Moreno MDP Revision, a number of alternatives were developed and studied for their hydraulic and economic feasibility. However, due to the limited project boundary; the constraints of existing development; and the necessity of connecting to an existing flood control system, it is reasonable that the range of alternatives considered is relatively narrow. This proposed MDP revision focuses on areas tributary to Line F north of Cactus Avenue; areas tributary to Quincy Channel (Line G); and those areas north of State Route 60 not tributary to the Nason Basin. New hydrology was developed for this portion of the Moreno Watershed based on updated rainfall data.² New hydrology studies of the other portions of the watershed were not deemed necessary because many of the

² NOAA Atlas 14, version 4 rainfall values were used in the new hydrology calculations for the Project.

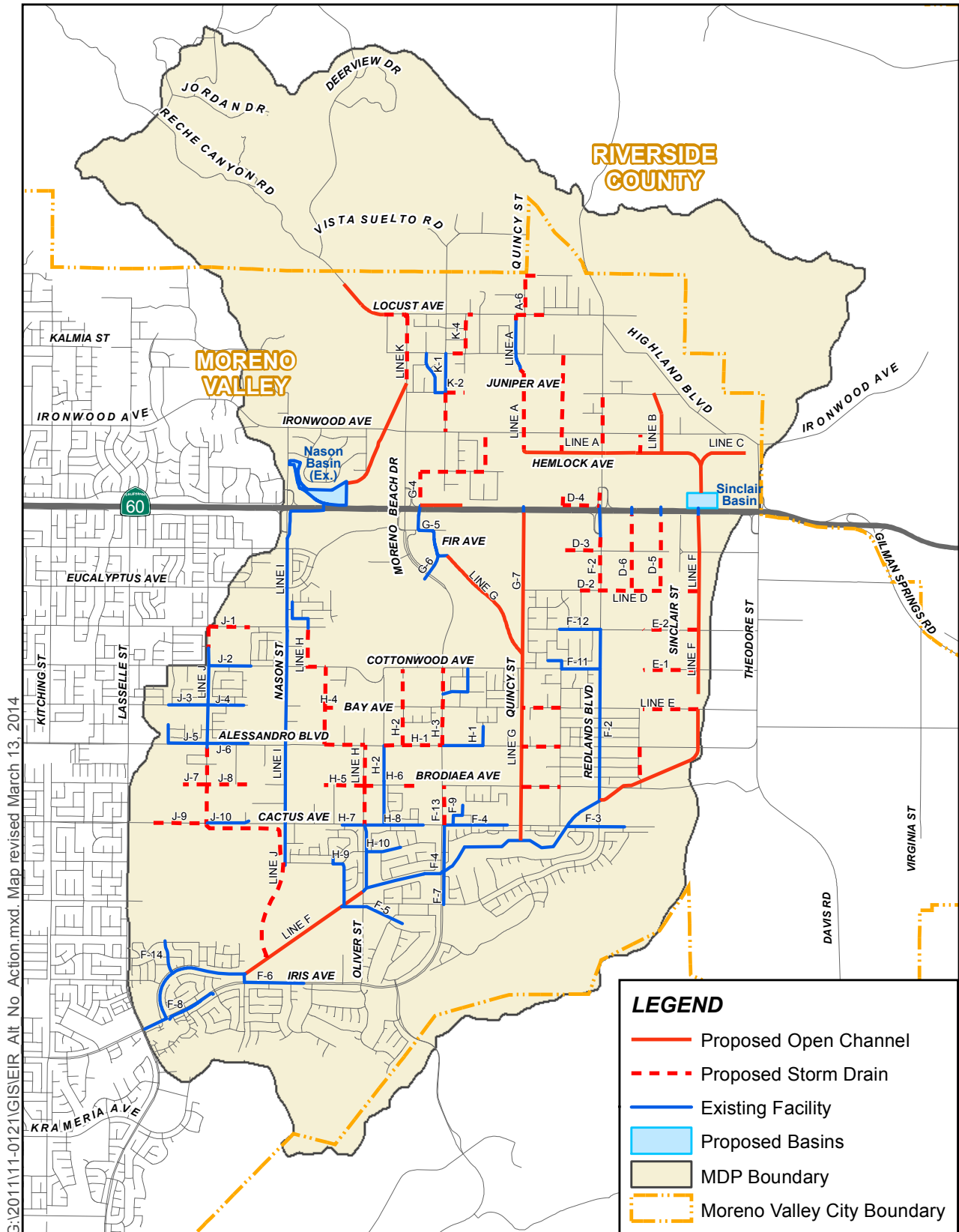
facilities have already been constructed and were designed based on 1991 MDP flow rates and alignments (MDP Report, p. 3)

The Project proposes facilities based on updated land use patterns, updated rainfall data, and expected debris flow in the northern parts of the Moreno Watershed. This plan revision also focused on providing opportunities for infiltration by incorporating earthen channels (with rock-lined side slopes) in the various plan alternatives; perpetuating the natural drainage pattern within the watershed; and minimizing the need for right of way acquisition by proposing most facilities as underground systems within existing and future street rights of way, where feasible. In addition, the updated hydrology identified higher flow rates that require several detention basins within the watershed to attenuate peak flows to match the hydraulic capacity of the exiting Line F system downstream of Cactus Avenue. The increase in storm runoff was mainly attributed to an increase in point precipitation for the 100-year storm event, and also the change in land use reflected in the 2006 Moreno Valley General Plan. Finally, in developing the alternatives, the District and Moreno Valley mutually agreed that the existing Line F-2 Storm Drain, which is currently sized for 10-year storm events, should be reconstructed to provide 100-year flood capacity (MDP Report, p. 13). The alternatives are described in the following paragraphs and a comparison of alternatives matrix is presented in Section 7.7.

7.6.1 No Project Alternative

Pursuant to State *CEQA Guidelines*, Section 15126.6(e)(3)(A), when a project is the revision of an existing land use or regulatory plan, the “no project” alternative will be the continuation of the existing plan, policy or operation into the future. Pursuant to State *CEQA Guidelines*, Section 15126.6(e)(3)(C), the impacts of the No Project Alternative should also be evaluated by projecting what would reasonably be expected to occur in the foreseeable future if the proposed Project were not approved based on current plans.

Accordingly, the No Project Alternative is analyzed herein as the continued implementation of the originally adopted 1980 and revised 1991 Moreno MDP (see **Figure 7-1 – No Project Alternative**). If no revision was made to the existing MDP, the proposed Project benefits would not be realized, such as those that would result in the eastern portion and western portion of the Moreno MDP. Furthermore, the updated MVGP, approved zone changes, updated rainfall data, expected debris production, and the significant increase in growth within the area, would not be reflected with the continued implementation of the 1991 Moreno MDP, and the area would be underserved relative to flood protection. In addition, the proposed concrete open channels from the previously adopted Moreno MDP would not be revised to more environmentally friendly alternatives such as soft bottom channels, which allow infiltration and are better in trapping pollutants. Since much of the land in the western portion of the Moreno MDP Boundary has been mostly developed and accounted for, it would be the eastern portion that would be mainly affected by the continued implementation of the 1991 Moreno MDP. With the continued growth in the eastern portion of the Moreno MDP Boundary, a 100-year flood discharge cannot be contained at the level the Project proposes in its design. Therefore, flooding would occur and opportunities for infiltration could not be realized with the continued implementation of the 1991 Moreno MDP.



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Source: County of Riverside GIS, 2014; RCFC&WCD, 2012.

Figure 7-1. No Project Alternative
Moreno Master Drainage Plan Revision

0 0.5 1 1.5 Miles



7.6.2 Alternative 1

Alternative 1 consists of the same types of facilities (i.e., storm drains and channels) and alignments as the 1991 Moreno MDP (see **Figure 7-2 – Alternative 1**). In addition, Alternative 1 includes three basins encompassing approximately 75.3 acres. Two detention basins are proposed along the Line F channel alignment, the Sinclair Basin, located north of State Route 60, and the Bay Basin, located on the north side of Bay Avenue. In addition to the detention basins, Alternative 1 includes the Reche Canyon Debris Basin, which is intended to capture debris upstream of Line K. Under Alternative 1 all channels will be concrete lined and the existing highway drainage culverts located under State Route 60 will be used.

As shown in the below table, the infiltration volume for the Alternative 1 Basins is projected to range from 96 to 460 acre-feet per day.

Table 7-A –Infiltration Projections for Alternative 1 Basins

Basin Name	Basin Footprint (acres) ¹	Portion of Basin in Soil Type "A" ²	Portion of Basin in Soil Type "B" ²	Projected Infiltration (acre-feet/day) ³
Sinclair Basin	28.5	55%	45%	44 to 286
Bay Basin	36.8	0%	100%	37 to 74
Reche Canyon Debris Basin	10.0	55%	45%	16 to 100
Total All Basins	75.3	N/A	N/A	97 to 460

Notes:

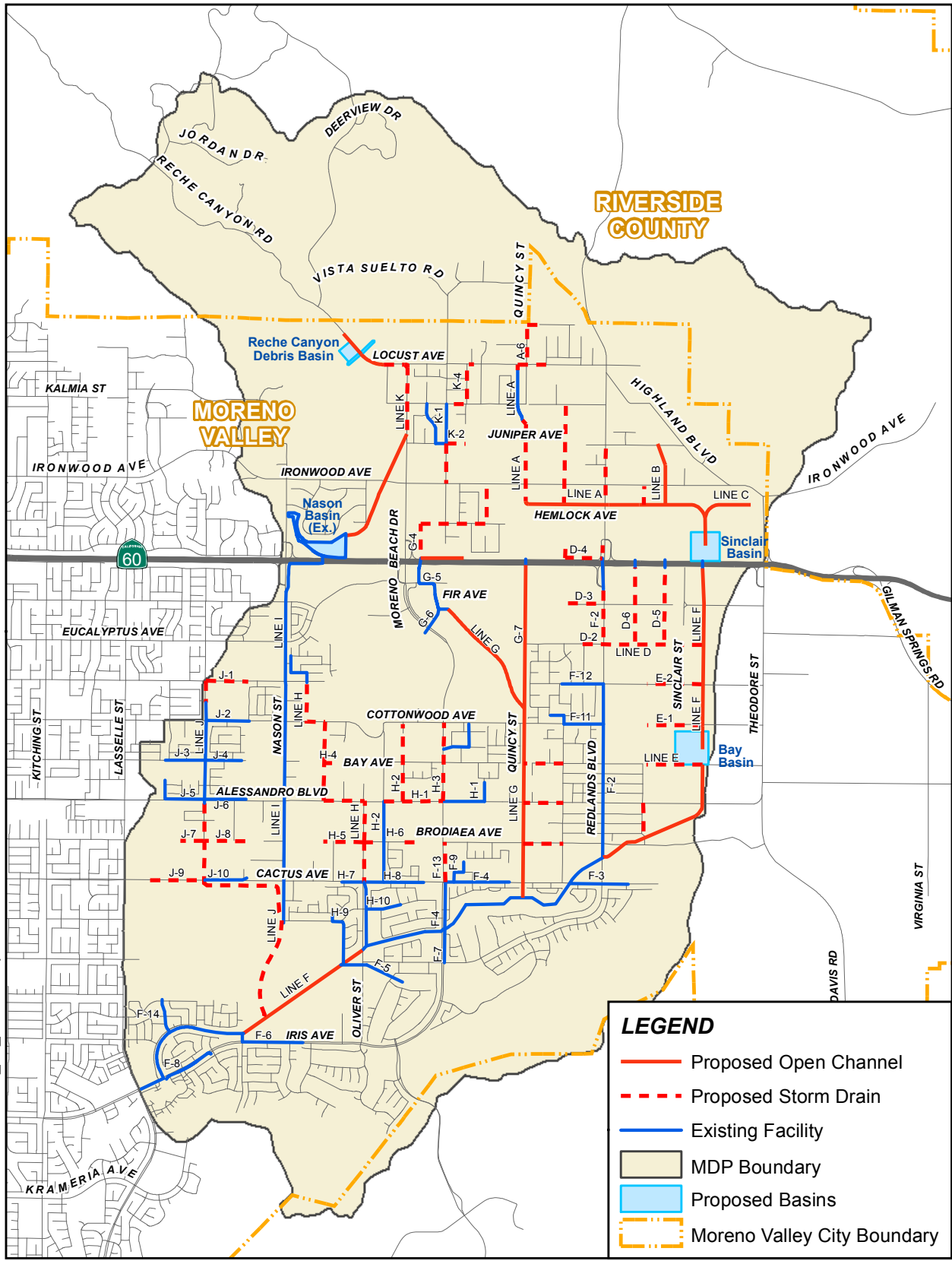
¹ Basin Footprint per MDP Report, Table 4, p. 21.

² Soil Type refers to the hydrological soil group as classified by the Natural Resources Conservation Service. Soil Types "A" and "B" have the potentially high and moderate infiltration rates, respectively. Soil Types "C" and "D" have low and very low infiltration rates, respectively; therefore these Soil Types are not used in this projection.

³ Infiltration rate is determined by multiplying the acreage of each soil type by that soil's infiltration rate. Infiltration rate for Type "A" soil ranges from 2 to 16.7 feet/day. Infiltration rate for Type "B" soil ranges from 1 foot/day to 2 feet/day. Infiltration rates per the Ventura Countywide Stormwater Quality Management Program, *Land Development Guidelines, Appendix C Hydrologic Soil Groups* (Available at <http://www.vcstormwater.org/documents/workproducts/landuseguidelines/appC.pdf>).

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Source: County of Riverside GIS, 2014; RCFC&WCD, 2013.

Figure 7-2. Project Alternative 1
Moreno Master Drainage Plan Revision



7.6.3 Alternative 2A and Alternative 2B

Alternative 2 consists of the realignment of proposed facilities upstream of State Route 60 in an effort to maintain the natural drainage patterns within the upper watershed. This alternative would eliminate the Line A diversion proposed in the 1991 Moreno MDP, such that the mainline facilities would be aligned north to south, and would drain directly to the existing culverts at State Route 60, instead of draining to the proposed Sinclair Basin. Both Alternative 2A and Alternative 2B propose Line F, Line G and Line K as earthen channels with rock-lined side slopes and also include the Reche Canyon Debris Basin to capture debris upstream of Line K. The primary difference between Alternative 2A and Alternative 2B are the size, number, and location of the proposed detention basins (see **Figure 7-3 – Alternative 2A** and **Figure 7-4 – Alternative 2B**, which follow the tables).

Alternative 2A proposes a total of six basins (five detention basins and the Reche Canyon Debris Basin) encompassing a total of 71.9 acres with a potential infiltration volume of 96 to 490 acre-feet per day (see **Table 7-B – Infiltration Projections for Alternative 2A Basins**). Alternative 2B proposes a total of five basins (four detention basins and the Reche Canyon Debris Basin) encompassing a total of 74.9 acres with a potential infiltration volume of 91 to 388 acre-feet per day (see **Table 7-C – Infiltration Projections for Alternative 2B Basins**), which follows the figures.

Table 7-B –Infiltration Projections for Alternative 2A Basins

Basin Name	Basin Footprint (acres) ¹	Portion of Basin in Soil Type "A" ²	Portion of Basin in Soil Type "B" ²	Projected Infiltration (acre-feet/day) ³
Sinclair Basin	14.0	69%	31%	24 to 169
Bay Basin	17.4	0%	100%	17 to 35
Redlands Basin	6.0	0%	100%	6 to 12
Quincy Basin	13.2	1%	99%	13 to 28
Brodiaea Basin	11.3	75%	25%	20 to 146
Reche Canyon Debris Basin	10.0	55%	45%	16 to 100
Total All Basins	71.9	N/A	N/A	96 to 490

Notes:
¹ Basin Footprint per MDP Report, Table 4, p. 21.
² Soil Type refers to the hydrological soil group as classified by the Natural Resources Conservation Service. Soil Types "A" and "B" have the potentially high and moderate infiltration rates, respectively. Soil Types "C" and "D" have low and very low infiltration rates, respectively; therefore these Soil Types are not used in this projection.
³ Infiltration rate is determined by multiplying the acreage of each soil type by that soil's infiltration rate. Infiltration rate for Type "A" soil ranges from 2 to 16.7 feet/day. Infiltration rate for Type "B" soil ranges from 1 foot/day to 2 feet/day. Infiltration rates per the Ventura Countywide Stormwater Quality Management Program, *Land Development Guidelines, Appendix C Hydrologic Soil Groups* (Available at <http://www.vcstormwater.org/documents/workproducts/landuseguidelines/appC.pdf>).

Table 7-C –Infiltration Projections for Alternative 2B Basins

Basin Name	Basin Footprint (acres) ¹	Portion of Basin in Soil Type "A" ²	Portion of Basin in Soil Type "B" ²	Projected Infiltration (acre-feet/day) ³
Highland Basin	14.4	75%	25%	25 to 187
Bay Basin	30.5	0%	100%	31 to 61
Ironwood Basin	13.6	0%	100%	14 to 27
Eucalyptus Basin	6.4	99%	1%	6 to 13
Reche Canyon Debris Basin	10.0	55%	45%	16 to 100
Total All Basins	74.9	N/A	N/A	92 to 388

Notes:
¹ Basin Footprint per MDP Report, Table 4, p. 21.
² Soil Type refers to the hydrological soil group as classified by the Natural Resources Conservation Service. Soil Types "A" and "B" have the potentially high and moderate infiltration rates, respectively. Soil Types "C" and "D" have low and very low infiltration rates, respectively; therefore these Soil Types are not used in this projection.
³ Infiltration rate is determined by multiplying the acreage of each soil type by that soil's infiltration rate. Infiltration rate for Type "A" soil ranges from 2 to 16.7 feet/day. Infiltration rate for Type "B" soil ranges from 1 foot/day to 2 feet/day. Infiltration rates per the Ventura Countywide Stormwater Quality Management Program, *Land Development Guidelines, Appendix C Hydrologic Soil Groups* (Available at <http://www.vcstormwater.org/documents/workproducts/landuseguidelines/appC.pdf>).

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