4.2 Hydrology/Water Quality

4.2.1 Thresholds of Significance

A significant hydrology/water quality impact would occur if the Proposed Project would:

1. Substantially alter the existing drainage patterns 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.

2. Substantially alter the existing drainage patterns 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.

3. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems.

4. Place structures within a 100-year flood hazard area which would impede or redirect flows.

5. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of groundwater accumulation in quarry-related excavations.

6. Potentially degrade the water quality of any impaired water course or water body, as listed on the CWA Section 303(d) list and contribute additional pollutants for which the receiving water body is already listed.

7. Not conform to applicable Federal, State or local statutes and regulations related to surface or groundwater quality including but not limited to: the IBWC, CWA/NPDES, and California Porter-Cologne Water Quality Control Act.

Guideline Nos. 1 through 7 are based on: (1) criteria provided in Appendix G of the State CEQA Guidelines; (2) applicable Federal and State regulatory standards; and (3) the County Guidelines for Determining Significance for Hydrology (2007c), Surface Water Quality (2007d). These Guidelines are intended to ensure conformance with existing regulatory standards, as well as to protect public health/safety and private property from hydrology and water quality related hazards.

4.2.2 Proposed Project

4.2.2.1 *Analysis of Project Effects and Determination as to Significance*

Potential Impacts Associated with Drainage Alteration and Related Erosion/Siltation Hazards (Guideline No. 1)

The overall existing surface drainage patterns and flow directions described in Subchapter 3.2 would not be altered in the ultimate (post-Project) condition, although several small, ephemeral on-site drainages would be affected during Project operations. Specifically, during extraction and related operations, surface flows in the central and southern portions of the impact footprint that enter the pit would be retained (including existing flows that discharge at Points B through E) and

would either infiltrate or evaporate. The associated effects to drainage patterns in these areas would be minor, however, due to the small size and ephemeral nature of the subject drainages, as well as the limited amount of associated runoff (refer to Table 4.2-1, *Summary of Existing and Post-Development Condition 100-year Flows*). Beginning in Phase 1 (Site Preparation), flows in the northwestern portion of the site would be slightly rerouted and detained onsite to address a small (less than three percent) Project-related increase of runoff to the outlet in this area (Discharge Point A), although existing drainage patterns would be largely maintained and associated flows would continue off-site to the west from existing Discharge Point A (with additional information on proposed detention provided below under the discussion of Runoff Volumes/Velocities).

After completion of Project extraction and backfill operations, flows within the impact footprint would drain to four of the five existing outlet points (Points A, C, D and E) and reenter existing off-site drainage courses or facilities (the same as existing conditions) moving west and/or south (including the noted central and southern areas where flows would be retained during quarrying operations). Flows that currently discharge at Point B would be rerouted to existing Discharge Points A and C, while the two existing drainages in the southern area would be rerouted internally but would be discharged at the current associated discharge points (D and E, with the associated flows continuing south-southwest and merging off-site as described for existing conditions, refer to the Existing and Proposed Conditions maps in the Hydrology Report included in Appendix D). Accordingly, the overall drainage patterns associated with the Project impact footprint and related up- and downstream areas (i.e., flows moving generally west and south through and from the site) would be maintained after Project completion, with drainage alteration occurring during and after Project operations to be minor in nature and extent. In addition, as described below for Guideline Nos. 2 and 4, the Proposed Project would result in a minor (approximately 4.4 percent) net reduction of 100-year storm flows from (leaving) the Project impact footprint both during and after Project implementation. Based on the described conditions, the Proposed Project would not substantially alter existing drainage patterns/ directions or result in substantial downstream erosion/siltation. Potential impacts would be less than significant.

Potential Impacts Associated with Runoff Volumes/Velocities and Related Flooding or Floodplain Hazards (Guideline Nos. 2 and 4)

Implementation of the Proposed Project would not result in the addition of substantial areas of impervious surfaces such as pavement and structures that would reduce existing infiltration and result in increased runoff volumes and velocities. Specifically, proposed operations would involve mineral resource extraction, with reductions to on-site infiltration limited to minor (and temporary) areas associated with material processing facilities (e.g., crushers, etc.), administration structures (e.g., the on-site office trailer), and compaction of unpaved vehicle-equipment access and parking areas. The Proposed Project design does not include a substantial storm drain system, based on the described lack of permanent structures such as paved roads and buildings that require extensive storm drain facilities. Proposed drainage structures include a series of unlined swales, brow ditches and/or berms to collect and convey runoff into appropriate areas including a proposed detention basin, drainage outlets, and water quality features (e.g., riprap energy dissipaters) required for NPDES Industrial Permit and other storm water standard conformance requirements (refer to the discussion of Guideline Nos. 6 and 7 for additional information on water quality issues). Calculated 100-year storm flows from (leaving) the Project impact footprint would decrease from the existing level of 819 cfs to a post-development level of 783 cfs, a reduction of 36 cfs or

approximately 4.4 percent (refer to Table 4.2-1 and the Hydrology Report in Appendix D for a discussion of flow volumes in individual on-site drainage basins). As previously noted, temporary borrow areas would be created during Proposed Project operations (extraction) and would act as detention basins, with a corresponding minor reduction in off-site discharge (Chang 2016). Operational flows are not calculated in the Project Hydrology Report or included in Table 4.2-1, as these flows would change continuously during the ongoing extraction operations (Chang 2016). The anticipated 4.4 percent reduction in post-development 100-year storm flows noted above is based on several factors including: (1) the Proposed Project would result in only minor additional impervious surfaces and associated reduction of infiltration capacity, as previously noted; (2) the Project would create several large, level pads that tend to increase the on-site time of concentration and decrease surface runoff; and (3) the Project design includes a detention basin and a number of unlined drainage facilities (swales) as noted above, with these facilities providing flow regulation and/or minor infiltration capacity. Based on the described conditions and the calculated 4.4 percent reduction of overall post-development 100-year storm runoff from the Project impact footprint, potential impacts related to runoff volumes/velocities and associated flooding/ floodplain hazards from implementation of the Proposed Project would be less than significant.

Per the above discussion, Project implementation would also not generate adverse effects related to hydromodification. Specifically, because the Proposed Project would result in an overall net reduction of flows from the impact footprint (including net flow reductions at Discharge Points C through E) and would regulate flows from the northwestern outlet (Discharge Point A) to pre-development levels, no adverse effects related to increased stream flows, associated sediment transport, or morphological changes in channels receiving the runoff are anticipated. Accordingly, no impacts related to hydromodification would result from implementation of the Proposed Project.

As described in Subsection 3.2.2.2, *Flood Hazards*, the Project impact footprint and vicinity are outside of mapped 100-year floodplains, with the closest mapped 100-year floodplain located approximately one mile to the west (FEMA 2012a, 2012b, 2012c). Based on these conditions, the Proposed Project would not be subject to any impacts related to flooding/floodplain hazards or the related impediment or redirection of flood waters.

Potential Impacts Associated with the Capacity of Existing or Planned Storm Drain Systems (Guideline No. 3)

As described for Guideline Nos. 1, 2 and 4, implementation of the Proposed Project would result in a net reduction of flows from the impact footprint, including reduced flows from the western and southern outlets (Discharge Points C through E), and maintenance of pre-development flows (through detention) at the northwestern outlet (Discharge Point A, with flows from existing Discharge Point B to be rerouted internally as described above under Guideline No. 1). Accordingly, Project implementation would not result in any associated adverse effects to existing or planned downstream storm drain systems. The Project would also not involve extensive development such as structures or pavement. Proposed storm drain facilities would consist of a series of swales, brow ditches, and/or berms to collect and convey runoff into appropriate areas, as well as a proposed detention basin at the northwest outlet. All of these facilities would be designed to accommodate 100-year storm flows per applicable regulatory standards. Based on the

described conditions, potential impacts related to the capacity of existing or planned storm drain systems from implementation of the Proposed Project would be less than significant.

Potential Impacts Associated with Flooding as a Result of Groundwater Accumulation in Quarry-related Excavations (Guideline No. 5)

As described in Subsection 3.2.2.3, *Groundwater*, a well drilled near the northern impact footprint boundary in 2005 intersected groundwater at depths of between approximately 335 and 600 feet, with an associated yield of approximately 0.5 gallon per minute (Earth Tech 2007). Based on these data and additional analysis, the Project Groundwater Investigation estimated that the static water level is approximately 300 feet below the ground surface at the well site (AECOM 2012). Accordingly, proposed excavation to a depth of approximately 525 feet below the ground surface could potentially encounter groundwater. Depending on the occurrence of local groundwater as described and the amount of associated inflow to the pit, significant impacts could potentially result in association with groundwater accumulation (flooding) and related hazards to people or structures. These potential impacts would be avoided, however, through Proposed Project design measures. Specifically, as described in Subchapter 2.3.1.2, *Project Description*, the Proposed Project excavation would not extend more than a short distance (i.e. several feet) below standing water. Accordingly, if groundwater is encountered at 300 feet (or other depths) as noted, and substantial inflow occurs such that more than minor accumulation results, Project excavation would be terminated at (or slightly below) that level. As a result of these considerations, the Groundwater Investigation concludes that the Project "[w]ould not excavate the pit more than a few feet below standing water…the chance of significant accumulation in the pit is minimal" (AECOM 2012). In addition, as described in the Project Reclamation Plan (Appendix B), security measures (e.g., fencing) would be implemented during and after Project operations to preclude unauthorized access to the site and ensure public safety. Based on the described conditions, potential impacts related to flooding from groundwater accumulation within the Project quarry would be less than significant.

Potential Impacts Associated with Water Quality (Guideline Nos. 6 and 7)

Due to the nature of the Proposed Project, associated pollutant generation would consist primarily of sediment, with other potential contaminants including heavy metals, organic compounds, trash and debris, oxygen demanding substances, and oil and grease from operation and processing equipment/activities. Per the discussion in Section 3.2.1, *Regulatory Framework*, the Proposed Project would be subject to applicable water quality requirements of the IBWC, CWA/NPDES Industrial General Permit, SMARA, and the RWQCB Basin Plan. Conformance with these requirements would involve the use of appropriate BMPs during and after Project operations to address potential impacts associated with the described contaminants. Specifically, conformance with the Industrial General Permit would entail preparing and implementing an approved SWPPP to address potential issues including erosion/sedimentation and the discharge of operational contaminants as noted above (with these measures to address other applicable water quality standards as well). While detailed BMPs related to Industrial Permit requirements would be determined as part of the Project NPDES/SWPPP process based on site-specific factors, they would likely include the types of standard industry measures identified below under the discussions of Erosion and Sedimentation and Operational Contaminants, based on direction in the Industrial General Permit and the industry sources referenced previously in Section 3.2.1.

In addition to the erosion and sedimentation BMPs to be implemented as part of the described NPDES SWPPP, the Project Reclamation Plan (Appendix B) includes a number of proposed measures to address both short- and long-term erosion/sediment control in association with proposed operations (with additional discussion provided below under the evaluation of Erosion and Sedimentation).

Project-related activities would not result in any direct effects to groundwater quality through activities such as underground storage of hazardous materials (e.g., underground fuel storage tanks). Accordingly, potential impacts to groundwater quality would be limited to the percolation of surface runoff and associated contaminants generated within the Project impact footprint. The following assessment of potential water quality impacts is therefore applicable to both surface and groundwater resources.

Erosion and Sedimentation

The Project impact footprint includes a number of topsoil and alluvial deposits with moderate to high erosion potential (refer to Table 3.1-1 and Appendices B and C), with this potential to be increased as a result of the proposed operations. Specifically, Project activities would involve: (1) removal of surface stabilizing features (i.e., vegetation); (2) creation of manufactured slopes; (3) excavation of existing compacted materials from cut areas (including existing ephemeral drainages); (4) on-site storage of excavated topsoil for use in reclamation efforts; and (5) redeposition of excavated and imported material as fill in proposed IDEFO and reclamation sites. The potential influx of eroded sediment into downstream receiving waters (including portions of the Tijuana River and/or Tijuana Estuary listed as impaired for sedimentation/siltation and turbidity, respectively) could result in direct effects such as increased turbidity, and also would provide a transport mechanism for other contaminants (e.g., hydrocarbons) that tend to adhere to sediment particles.

While graded/excavated areas and fill materials would ultimately be stabilized through efforts such as compaction and revegetation, erosion potential would be higher in the short-term than for pre-Project conditions. Erosion and sedimentation are also potential long-term concerns for the Project impact footprint, due to the fact that mined/reclaimed areas would encompass a number of manufactured slopes and fill areas that may not be developed for urban (residential and industrial) uses immediately following the completion of mineral extraction operations. Potential impacts related to erosion and sedimentation would be addressed primarily through conformance with applicable requirements of the NPDES Industrial Permit and SMARA, as outlined in Section 3.2.1. Specifically, NPDES conformance would include developing and implementing an approved SWPPP for proposed grading and excavation operations, including BMPs to address potential erosion and sedimentation. While specific BMPs would be determined during SWPPP processing based on site and Project characteristics (e.g., soils, slopes, grading/excavation parameters, etc.), they would include standard industry measures and guidelines contained in the NPDES Industrial General Permit, as well as the additional sources identified in Section 3.2.1. Typical erosion and sediment control measures that would likely be implemented as part of the Project SWPPP are summarized in Table 4.2-2, *Typical SWPPP Measures to Avoid or Minimize Impacts Related to Erosion and Sedimentation*. Erosion and sediment control measures proposed as part of the Project SMARA Reclamation Plan are outlined in Table 4.2-3, *Typical Measures Identified to Avoid or Minimize Erosion and Sedimentation Impacts in the Project SMARA Reclamation Plan*, with

additional information provided in Appendix B. Project-related BMPs associated with erosion and sedimentation would be further defined during SWPPP preparation and Reclamation Plan processing, with the resulting requirements taking priority over the more preliminary and general types of measures listed in Tables 4.2-2 and 4.2-3. It also should be noted that additional erosion and sediment control would be provided through several of the proposed BMPs identified in association with Project operations, including measures to avoid or minimize erosion and sedimentation (e.g., by preserving native habitats), as well as the potential for swales (or other features) to remove contaminants, including sediment, from Project site drainage (refer to the discussion of Operational Contaminants below for additional information).

Based on implementation of appropriate erosion and sediment control BMPs as part of, and in conformance with, the Project NPDES SWPPP and SMARA Reclamation Plan, Project-related erosion and sedimentation impacts would be less than significant.

Operational Contaminants

As described in Subchapter 2.1, proposed extraction and processing operations would involve the use and storage of materials including diesel fuel, gasoline, lubricants (e.g., grease and engine oil), solvents, and coolant. Project operations would also involve the generation of solid waste (e.g., trash, etc.) and the on-site use of portable toilets. These materials and activities could potentially result in the discharge of a number of contaminants as previously described, with associated potential impacts to downstream receiving waters (including the 303[d] listed waters described in Subsection 3.2.2.4, *Bi-annual Clean Water Act Assessments*). These potential impacts would be addressed through implementation of applicable BMPs identified in the NPDES Industrial General Permit SWPPP (which would also provide conformance for other water quality standards such as the IBWC and RWQCB Basin Plan). As previously described, the Project SWPPP would be generated as part of the Industrial General Permit conformance process and would include standard industry measures and guidelines contained in the Industrial Permit and additional sources identified in Section 3.2.1. Typical BMPs for control of operational contaminants that would likely be implemented as part of the Project SWPPP are summarized in Table 4.2-4, *Typical SWPPP Measures to Avoid or Minimize Impacts Related to Operational Contaminants*.

Operation of the Proposed Project would also involve backfilling the pit with inert fill material for the IDEFO. Examples of inert materials include fill dirt, concrete, and cured asphalt, which are materials that are non-biodegradable, non-flammable, and not chemically reactive. Per the Reclamation Plan for the Proposed Project (EnviroMine 2019b), fill material would be inspected upon arrival to verify that contaminated soils or garbage are not present; therefore, water quality issues associated with the use of contaminated fill would not occur.

Based on implementation of appropriate BMPs as part of, and in conformance with, the Project NPDES SWPPP, as well as implementation of required measures in the Project Reclamation Plan and other applicable regulatory requirements, potential water quality impacts from Project operation would be less than significant.

4.2.2.2 *Significance of Impacts Prior to Mitigation*

As described above in Subsection 4.2.3.1, all impacts related to hydrology and water quality concerns would be less than significant with implementation of identified Project design features (including applicable technical report recommendations) and conformance with associated regulatory requirements.

4.2.2.3 *Mitigation Measures*

Because no significant impacts were identified, mitigation measures are not required.

4.2.2.4 *Conclusion*

Based on the discussions provided above, potential development-specific hydrology and water quality impacts associated with implementation of the Proposed Project would be effectively avoided or reduced to less than significant levels through Project design features identified in Section 10.2.2 (including applicable recommendations in the Project Hydrology Report and Reclamation Plan provided in Appendices D1 and B, respectively) and conformance with associated regulatory requirements. Accordingly, no mitigation measures are required or proposed.

4.2.3 Extraction to Natural Grade Alternative

As described in Chapter 2.0, *Description of Proposed Project/Action and Alternatives*, this alternative would include only Phases 1 and 2 of the Proposed Project. Accordingly, while the overall impact footprint would be the same as the Proposed Project, excavation would only extend to natural grade elevations (i.e., to daylight with existing adjacent elevations to the west), and aggregate extraction would be limited to approximately 19 million tons (versus 89.2 million tons under the Proposed Project). The operational characteristics under the Extraction to Natural Grade Alternative would be the same as described for the Proposed Project, although the IDEFO would not be implemented and no associated backfill would occur.

4.2.3.1 *Analysis of Project Effects and Determination as to Significance*

Potential Impacts Associated with Drainage Alteration and Related Erosion/Siltation Hazards (Guideline No. 1)

The nature and extent of on- and off-site drainage alteration and related potential erosion/siltation impacts under the Extraction to Natural Grade Alternative would be similar to those described above for the Proposed Project, although the depth of excavation would be reduced. Specifically, overall existing surface drainage patterns and flow directions would not be altered in the mining or post-mining conditions under this alternative, although several small, ephemeral on-site drainages would be temporarily affected during quarry operations. Based on the small size and ephemeral nature of these drainages, the limited amount of associated runoff, and the net reduction of 100-year storm flows from the impact footprint, potential impacts to drainage patterns/directions and related downstream erosion/siltation from the Extraction to Natural Grade Alternative would be less than significant.

Potential Impacts Associated with Runoff Volumes/Velocities and Related Flooding or Floodplain Hazards (Guideline Nos. 2 and 4)

As described above for the Proposed Project, this alternative would not result in the addition of substantial areas of impervious surfaces such as pavement and structures that would result in increased runoff volumes and velocities. Similarly, drainage structures for the Extraction to Natural Grade Alternative would likely include a series of unlined swales, brow ditches and/or berms to collect and convey runoff into appropriate areas, and may potentially include a detention basin, drainage outlets, and water quality features (similar to the Proposed Project). Anticipated 100-year storm flows from (leaving) the impact footprint under this alternative would be expected to exhibit a minor decrease from existing levels, similar to the Proposed Project. Based on the described conditions and the anticipated reduction of overall post-development 100-year storm runoff from the impact footprint, potential impacts related to runoff volumes/velocities and associated flooding/floodplain hazards from the Extraction to Natural Grade Alternative would be less than significant.

Implementation of the Extraction to Natural Grade Alternative would not be expected to result in adverse effects related to hydromodification. Specifically, as described for the Proposed Project, this alternative is anticipated to result in a net reduction of flows from the impact footprint, and no adverse effects from increased stream flows, associated sediment transport, or morphological changes in channels receiving the runoff are anticipated. Accordingly, no impacts related to hydromodification would be anticipated from the Extraction to Natural Grade Alternative.

As described in Subsection 3.2.2.2 and above for the Proposed Project, the impact footprint and vicinity under this alternative are located outside of mapped 100-year floodplains, with the closest such floodplain located approximately one mile to the west. Accordingly, the Extraction to Natural Grade Alternative would not cause any impacts related to flooding/ floodplain hazards or the related impediment or redirection of flood waters.

Potential Impacts Associated with the Capacity of Existing or Planned Storm Drain Systems (Guideline No. 3)

As previously described, implementation of the Extraction to Natural Grade Alternative would be expected to result in a net reduction of flows from the impact footprint, with individual discharge points anticipated to exhibit either reduced or unchanged (i.e., with regulation via detention) flows as described for the Proposed Project. As a result, no associated adverse effects to existing or planned downstream storm drain systems would result from this alternative. The Extraction to Natural Grade Alternative would also not involve extensive development such as structures or pavement, with associated storm drain facilities likely to consist of a series of swales, brow ditches, and/or berms (and potentially a detention basin) similar to those described for the Proposed Project. All of these facilities would be designed to accommodate 100-year storm flows per applicable regulatory standards. Based on the described conditions, potential impacts related to the capacity of existing or planned storm drain systems from the Extraction to Natural Grade Alternative would be less than significant.

Potential Impacts Associated with Flooding as a Result of Groundwater Accumulation in Quarry-related Excavations (Guideline No. 5)

Excavation levels under this alternative would encompass elevations of between approximately 580 and 800 feet AMSL, while static groundwater levels are anticipated to occur at depths of approximately 300 feet below the existing ground surface (approximately 370 feet AMSL), as described for the Proposed Project. Based on these conditions, no potential impacts related to flooding from groundwater accumulation within the quarry would occur under the Extraction to Natural Grade Alternative.

Potential Impacts Associated with Water Quality (Guideline Nos. 6 and 7)

Downstream receiving waters, Section 303(d) listings, and anticipated potential pollutants under the Extraction to Natural Grade Alternative would be similar to those described above for the Proposed Project (refer also to Subchapter 3.2, *Hydrology/Water Quality*); however, since the IDEFO (inert landfill) would not be included, those materials would not be brought to the site, further reducing any potential for possible impacts. Anticipated pollutant generation would consist primarily of sediment, with other potential contaminants including heavy metals, organic compounds, trash and debris, oxygen demanding substances, and oil and grease from operation and processing equipment/activities. Accordingly, this alternative would be subject to similar water quality requirements as described for the Proposed Project, including applicable elements of the IBWC, NPDES Industrial General Permit, SMARA, and the RWQCB Basin Plan. Conformance with these requirements would involve the use of appropriate BMPs, similar to those described for the Proposed Project in Tables 4.2-2 through 4.2-4. Based on implementation of appropriate BMPs as part of, and in conformance with, requirements under the NPDES/SWPPP, SMARA Reclamation Plan, and other applicable standards, potential water quality impacts from the Extraction to Natural Grade Alternative would be less than significant.

4.2.3.2 *Significance of Impacts Prior to Mitigation*

As described above in Subsection 4.2.4.1, all impacts related to hydrology and water quality concerns would be less than significant with identified design features (including implementation of applicable technical report recommendations) and conformance with associated regulatory requirements.

4.2.3.3 *Mitigation Measures*

Because no significant impacts were identified, mitigation measures are not required.

4.2.3.4 *Conclusion*

Based on the discussions provided above, potential development-specific hydrology and water quality impacts associated with implementation of the Extraction to Natural Grade Alternative would be effectively avoided or reduced to less than significant levels through Project design features identified in Chapter 10 (including implementation of applicable recommendations from the Hydrology Report and Reclamation Plan provided in Appendices D1 and B, respectively) and conformance with associated regulatory requirements. Accordingly, no mitigation measures are required or proposed.

4.2.4 Extraction to Varying Depth Alternative

As described in Chapter 2.0, the Extraction to Varying Depth Alternative would include aggregate extraction to a depth between 50 feet and 200 feet below natural grade. The overall impact footprint would be the same as the Proposed Project, with aggregate extraction to include approximately 35 to 60 million tons (versus 89.2 million tons under the Proposed Project). The operational characteristics of this alternative would be the same as described for Proposed Project, including implementation of the IDEFO with up to approximately 150 to 300 feet of backfill.

4.2.4.1 *Analysis of Project Effects and Determination as to Significance*

Potential Impacts Associated with Drainage Alteration and Related Erosion/Siltation Hazards (Guideline No. 1)

The nature and extent of on- and off-site drainage alteration and related potential erosion/siltation impacts under the Extraction to Varying Depth Alternative would be similar to those described above for the Proposed Project, although the depth of excavation would be reduced. Specifically, overall existing surface drainage patterns and flow directions would not be altered in the mining or post-mining conditions under this alternative, although several small, ephemeral on-site drainages would be temporarily affected during quarry operations. Based on the small size and ephemeral nature of these drainages, the limited amount of associated runoff, and the net reduction of 100-year storm flows from the impact footprint, however, potential impacts to drainage patterns/directions and related downstream erosion/siltation from the Extraction to Varying Depth Alternative would be less than significant.

Potential Impacts Associated with Runoff Volumes/Velocities and Related Flooding or Floodplain Hazards (Guideline Nos. 2 and 4)

As described above for the Proposed Project, this alternative would not result in the addition of substantial areas of impervious surfaces such as pavement and structures that would result in increased runoff volumes and velocities. Similarly, drainage structures for the Extraction to Varying Depth Alternative would likely include a series of unlined swales, brow ditches and/or berms to collect and convey runoff into appropriate areas, and may potentially include a detention basin, drainage outlets, and water quality features (similar to the Proposed Project). Anticipated 100-year storm flows from (leaving) the impact footprint under this alternative would be expected to exhibit a minor decrease from existing levels, similar to the Proposed Project. Based on the described conditions and the anticipated reduction of overall post-development 100-year storm runoff from the impact footprint, potential impacts related to runoff volumes/velocities and associated flooding/floodplain hazards from the Extraction to Varying Depth Alternative would be less than significant.

Implementation of the Extraction to Varying Depth Alternative would not be expected to result in adverse effects related to hydromodification. Specifically, as described for the Proposed Project, this alternative is anticipated to result in a net reduction of flows from the impact footprint, and no anticipated adverse effects from increased stream flows, associated sediment transport, or morphological changes in channels receiving the runoff are anticipated. Accordingly, no impacts

related to hydromodification would be anticipated from the Extraction to Varying Depth Alternative.

As described in Section 3.2.2.2 and above for the Proposed Project, the impact footprint and vicinity under this alternative are located outside of mapped 100-year floodplains, with the closest such floodplain located approximately one mile to the west. Accordingly, the Extraction to Varying Depth Alternative would not be subject to any impacts related to flooding/floodplain hazards or the related impediment or redirection of flood waters.

Potential Impacts Associated with the Capacity of Existing or Planned Storm Drain Systems (Guideline No. 3)

As previously described, implementation of the Extraction to Varying Depth Alternative would be expected to result in a net reduction of flows from the impact footprint, with individual discharge points anticipated to exhibit either reduced or unchanged (i.e., with regulation via detention) flows as described for the Proposed Project. As a result, no associated adverse effects to existing or planned downstream storm drain systems would result from this alternative. The Extraction to Varying Depth Alternative would also not involve extensive development such as structures or pavement, with associated storm drain facilities likely to consist of a series of swales, brow ditches, and/or berms (and potentially a detention basin) similar to those described for the Proposed Project. All of these facilities would be designed to accommodate 100-year storm flows per applicable regulatory standards. Based on the described conditions, potential impacts related to the capacity of existing or planned storm drain systems from the Extraction to Varying Depth Alternative would be less than significant.

Potential Impacts Associated with Flooding as a Result of Groundwater Accumulation in Quarry-related Excavations (Guideline No. 5)

Excavation levels under this alternative would encompass elevations of between approximately 380 and 800 feet AMSL, while static groundwater levels are anticipated to occur at depths of approximately 300 feet below the existing ground surface (approximately 370 feet AMSL), as described for the Proposed Project. Accordingly, proposed excavation under this alternative could potentially encounter groundwater. Depending on the occurrence of local groundwater as described, and the amount of associated inflow to the pit, significant impacts could potentially result in association with groundwater accumulation (flooding) and related hazards to people or structures. These potential impacts would be avoided, however, through similar design measures as identified for the Proposed Project in Section 10.2.2. Specifically, because excavation would not extend more than a short distance (i.e. several feet) below standing water, if substantial groundwater inflow occurs such that more than minor accumulation results, excavation would be terminated at (or slightly below) that level. In addition, as described in the Project Reclamation Plan (Appendix B), security measures (e.g., fencing) would be implemented during and after Project operations to preclude unauthorized access to the site and ensure public safety. Based on these considerations, potential impacts related to flooding from groundwater accumulation under the Extraction to Varying Depth Alternative would be less than significant.

Potential Impacts Associated with Water Quality (Guideline Nos. 6 and 7)

Downstream receiving waters, Section 303(d) listings, and anticipated potential pollutants under the Extraction to Varying Depth Alternative would be the same as those described above for the Proposed Project (refer also to Subchapter 3.2). Specifically, anticipated pollutant generation would consist primarily of sediment, with other potential contaminants including heavy metals, organic compounds, trash and debris, oxygen demanding substances, and oil and grease from operation and processing equipment/activities. Accordingly, this alternative would be subject to similar water quality requirements as described for the Proposed Project, including applicable elements of the IBWC, NPDES Industrial General Permit, SMARA, and the RWQCB Basin Plan. Conformance with these requirements would involve the use of appropriate BMPs, similar to those described for the Proposed Project in Tables 4.2-2 through 4.2-4. Based on implementation of appropriate BMPs as part of, and in conformance with, requirements under the NPDES/SWPPP, SMARA Reclamation Plan, and other applicable standards, potential water quality impacts from the Extraction to Varying Depth Alternative would be less than significant.

4.2.4.2 *Significance of Impacts Prior to Mitigation*

As described above in Subsection 4.2.5.1, all impacts related to hydrology and water quality concerns would be less than significant with Project design features identified in Chapter 10 (including implementation of applicable technical report recommendations) and conformance with associated regulatory requirements.

4.2.4.3 *Mitigation Measures*

Because no significant impacts were identified, mitigation measures are not required.

4.2.4.4 *Conclusion*

Based on the discussions provided above, potential development-specific hydrology and water quality impacts associated with implementation of the Extraction to Varying Depth Alternative would be effectively avoided or reduced to less than significant levels through identified design features (including implementation of applicable recommendations from the Hydrology Report and Reclamation Plan provided in Appendices D1 and B, respectively) and conformance with associated regulatory requirements. Accordingly, no mitigation measures are required or proposed.

4.2.5 No Project/Existing Plan Alternative

4.2.5.1 *Analysis of Project Effects and Determination as to Significance*

Under this alternative, the Project MUP would not be proposed and there would be no construction aggregate extraction facility or inert debris landfill developed on site. Of the 410-acre Project site, 316 acres are located within the EOMSP area and would be developed as envisioned in the EOMSP, with associated land use designations for the Project site including Mixed Industrial and Rural Residential uses. Associated development would be subject to applicable regulatory requirements, potentially including the following: (1) NPDES General Construction Activity Storm Water Permit (Construction General Permit, NPDES No. CAS000002, Order No. 2009-0009-DWQ, as amended); (2) NPDES General Groundwater Extraction Waste Discharge Permit

For Discharge To Surface Waters in the San Diego Region Except For San Diego Bay (Groundwater Permit, NPDES No. CAG919002, Order No. R9-2008-0002); (3) NPDES Municipal Permit; and (4) County standards including the Watershed Protection, Stormwater Management, and Discharge Control Ordinance (Stormwater Ordinance, No. 10096), the associated Stormwater Standards Manual (Manual) and Low Impact Development (LID) Handbook, and the County Standard Urban Storm Water Mitigation Plan (SUSMP). While specific development parameters under the No Project/Existing Plan Alternative are unknown, conformance with the noted storm water regulations (and other applicable regulatory standards as described above for the Proposed Project in Section 4.2.2) is mandatory. Accordingly, it is assumed that all associated potential impacts related to drainage alteration/erosion, runoff volumes/velocities and associated flooding/floodplains, the capacity of existing/planned storm water drainage systems, groundwater, and water quality would less than significant.

4.2.5.2 *Significance of Impacts Prior to Mitigation*

As described above in Subsection 4.2.5.1, all impacts related to hydrology and water quality concerns would be less than significant with applicable regulatory compliance.

4.2.5.3 *Mitigation Measures*

Because no significant impacts were identified, mitigation measures are not required.

4.2.5.4 *Conclusion*

Based on the discussions provided above, potential development-specific hydrology and water quality impacts associated with implementation of the No Project/Existing Plan Alternative would be effectively avoided or reduced to less than significant levels through conformance with associated regulatory requirements. Accordingly, no mitigation measures are required or proposed.

4.2.6 No Project Alternative

4.2.6.1 *Analysis of Project Effects and Determination as to Significance*

Under the No Project Alternative, no development or other disturbance of the site would occur, and no associated potential impacts related to drainage alteration/erosion, runoff volumes/velocities and associated flooding/floodplains, the capacity of existing/planned storm water drainage systems, groundwater, or water quality would occur. Additionally, there would be no establishment of a preserve with management and monitoring directed at species and habitat; however, the existence or absence of a biological open space preserve would not affect the hydrology or water quality of the Project site. Under this alternative, the Project site would be expected to remain in its current condition.

4.2.6.2 *Significance of Impacts Prior to Mitigation*

As described in Subsection 4.2.2.1, no direct impacts related to hydrology and water quality concerns would occur under the No Project Alternative.

4.2.6.3 *Mitigation Measures*

Because no significant impacts were identified, mitigation measures are not required.

4.2.6.4 *Conclusion*

Implementation of the No Project Alternative would not entail any proposed development or disturbance, with the project site remaining in its current (largely undeveloped) condition. Accordingly, no project-specific impacts related to hydrology/water quality would occur, and no mitigation measures are required or proposed.

Table 4.2-1
SUMMARY OF EXISTING AND POST-MINING CONDITION 100-YEAR FLOWS

Discharge Location[1]	Existing Condition			Post-Mining Condition[2]		
	Tributary Area (acres)	100-year Flow (cfs)	100-year Velocity (fps)	Tributary Area (acres)	100-year Flow (cfs)	100-year Velocity (fps)
A	368.65	559	14.2	375.08	574	12.3
B	13.79	28	2.4	--	--	--
C	46.98	94	3.4	50.46	87	4.8
D	25.60	58	2.2	29.07	57	4.3
E	38.27	80	3.5	38.68	65	9.4
--	493.29	819	--	493.29	783	--

[1] refer to Project Hydrology Report (Appendix D1)
[2] Note that the Hydrology Report analyzed a slightly larger impact footprint (110 acres) for the Project; therefore, these values are considered a conservative estimate.
cfs = cubic feet per second; fps = feet per second

Table 4.2-2
TYPICAL SWPPP MEASURES TO AVOID OR MINIMIZE IMPACTS RELATED TO EROSION AND SEDIMENTATION

Typical drainage, erosion and sediment control measures that would likely be implemented as part of the Project NPDES Industrial General Permit SWPPP, including measures associated with the pending Industrial General Permit update (refer to Section 3.2.1), include the following:

- Employ Qualified SWPPP Developers (QSDs) and Qualified SWPPP Practitioners (QSPs) for SWPPP preparation/implementation.
- Use phased grading schedules to limit the area subject to erosion at any given time.
- Ensure that active grading/excavation areas and activities have adequate erosion and sediment controls in place prior the onset of applicable precipitation events.
- Properly manage storm water and non-storm water flows to minimize runoff.
- Use positive grading techniques and appropriate drainage facilities (e.g., swales or brow ditches) to direct surface flows away from unstable areas such as manufactured slopes and material stockpiles, and into drainage facilities and/or outlets.
- Use erosion control/stabilizing measures such as geotextiles, mulching, mats, plastic sheets/tarps, fiber rolls, soil binders, compost blankets, soil roughening, or temporary hydroseeding (or other plantings) in appropriate locations, such as graded areas and slopes.
- Use sediment controls in applicable areas to ensure perimeter control and prevent off-site sediment/particulate transport. Specific measures may include temporary inlet filters, silt fence, fiber rolls, silt dikes, biofilter bags, gravel bags, compost bags/berms, street sweeping/vacuuming, energy dissipators, stabilized construction access points/sediment stockpiles, properly fitted covers for sediment transport vehicles, and (if applicable) advanced treatment systems.
- Store BMP materials in applicable on-site areas to provide "standby" capacity adequate to provide complete protection of exposed areas and prevent off-site sediment transport.
- Provide full erosion control for disturbed areas with no scheduled activity for 14 or more consecutive calendar days.
- Provide appropriate training for personnel responsible for BMP installation and maintenance.
- Implement Numeric Effluent Limitations (NELs) as appropriate.

Table 4.2-2 (cont.)
TYPICAL SWPPP MEASURES TO AVOID OR MINIMIZE IMPACTS RELATED TO EROSION AND SEDIMENTATION

- Use solid waste management efforts such as proper containment/disposal of construction debris.
- Comply with local dust control requirements, potentially including measures such as regular watering, use of chemical palliatives, and limiting construction during periods of high wind.
- Install permanent landscaping, with emphasis on native and/or drought-tolerant varieties, as soon as feasible during or after construction.
- Prepare and implement a program to ensure appropriate BMP monitoring/reporting, testing, effectiveness, and conformance with applicable discharge requirements, including during storm events.
- Implement additional BMPs as necessary to ensure adequate erosion and sediment control pursuant to regulatory requirements.

Table 4.2-3
TYPICAL MEASURES TO AVOID OR MINIMIZE EROSION AND SEDIMENTATION IMPACTS IDENTIFIED IN THE PROJECT SMARA RECLAMATION PLAN

- Overall pre-development drainage patterns would be retained, and drainage controls such as swales, brow ditches and/or berms would be used to collect and convey runoff into appropriate areas including the proposed detention basin and existing drainage outlets.
- Native topsoil removed during mining operations would be managed to either reapply salvaged topsoil directly onto areas being concurrently reclaimed in other portions of the impact footprint, or stockpile soils for use in subsequent on-site reclamation areas.
- Stockpiled soils (and/or other stockpiled materials subject to erosion) would be protected through measures such as covering with mats or plastic sheeting, use of chemical binders, and/or installing silt fence/fiber rolls (or other appropriate devices) around stockpile perimeters.
- Mined/graded areas would be recontoured to provide a central, essentially level, pad area flanked by slopes. All proposed manufactured slopes would be designed and constructed in accordance with applicable geotechnical and other regulatory guidelines, with additional information on slope stability and design provided in Subchapter 4.1, *Geological Resources*, and Appendix C.
- All appropriate reclaimed surfaces would be revegetated through application of "erosion-control" seed mixes tailored for specific areas (i.e., level pads versus slopes). Specifically, such application would be conducted by hydroseeding with a slurry mixture of water, the appropriate seed mix, cellulose fiber, a binding agent, and (if applicable) fertilizer (with hydroseeded areas to be scarified as necessary prior to slurry application). Additional information on proposed slurry mixtures and specific seed mixes is provided in Appendix B. Hydroseeding would be conducted prior to or during the early part of the rainy season and would generally occur between October 15 and November 15 (with seeding for specific species completed during appropriate times as noted in Appendix B).
- All revegetated areas would be monitored periodically (at least annually) for five years after installation to ensure conformance with applicable performance standards, and test plots would be established on-site to assist in developing the most effective revegetation methods. Specific proposed criteria for revegetation standards and test plots are provided in Appendix B.

Table 4.2-3 (cont.)
TYPICAL MEASURES TO AVOID OR MINIMIZE EROSION AND SEDIMENTATION IMPACTS IDENTIFIED IN THE PROJECT SMARA RECLAMATION PLAN

- Installation of interim seeding would be provided in areas where final slopes are established, but final revegetation cannot be immediately implemented. Proposed interim seed mixes are provided in Appendix B. If determined to be necessary during site monitoring (as outlined below), interim erosion and sediment control measures would also be implemented, with such measures similar to the NPDES erosion control efforts described above in Table 4.2-1.
- Revegetated areas would be monitored and managed for weed control and erosion damage, with specific targeted weed species including Peruvian pepper (*Schinus molle*), Russian thistle (*Salsola iberica*), castor bean (*Ricinus communis*), horehound (*Marrubium vulgare*) and tree tobacco (*Nicotiana glauca*). Areas exhibiting erosion damage (e.g., rilling) would be repaired, with the associated source of runoff rerouted into appropriate drainage system facilities.
- All described reclamation, monitoring and maintenance activities will be documented by a qualified biologist or restoration specialist. Specific documentation will include a map depicting the locations and installation dates of all revegetation sites, and the submittal of annual reports to the lead agency.

Table 4.2-4
TYPICAL SWPPP MEASURES TO AVOID OR MINIMIZE IMPACTS RELATED TO OPERATIONAL CONTAMINANTS

- Material Handling/Storage and Spill Response - Proper material handling and storage would include measures such as: (1) using raised (e.g., on pallets), covered, enclosed, and/or locked facilities to store hazardous materials (fuels, lubricants, etc.) or other substances which could generate pollutants if exposed to storm water or authorized non-storm water discharges; (2) using mobile fueling/maintenance units for construction equipment whenever feasible to avoid/reduce on-site fuel/lubricant storage; (3) maintaining accurate and up-to-date written inventories and labels for all stored hazardous materials; (4) placing warning signs in areas of hazardous material use or storage and along drainages and storm drains (or other appropriate locations) to avoid inadvertent hazardous material disposal; (5) properly locating and maintaining wastewater facilities; (6) providing secondary containment (e.g., with berms) for applicable sites such as vehicle/equipment fueling, maintenance and wastewater areas; and (7) developing a spill prevention plan to address issues such as keeping adequate supplies of spill containment materials in appropriate locations to allow a timely response in the event of a spill, and keeping emergency and agency contact information on-site and providing direction to staff on proper spill response procedures.
- Employee Training - Training would be provided at appropriate regular intervals to employees responsible for activities related to SWPPP implementation, site inspection/maintenance, sampling/testing, storm water management and spill response/notification to ensure that staff are capable of addressing pertinent issues and conditions.

Table 4.2-4 (cont.)
TYPICAL SWPPP MEASURES TO AVOID OR MINIMIZE IMPACTS RELATED TO OPERATIONAL CONTAMINANTS

- Sampling/Testing - If required as part of the Project SWPPP, this would include regular sampling and testing of site run-on and runoff to identify potential issues and remedial efforts related to Project-generated contaminant discharge.
- Recordkeeping - Detailed records would be kept on-site for efforts including inspections, maintenance activities, corrective actions, material deliveries and inventories, testing/sampling results, and spills and responses.
- Pollutant Avoidance and Treatment BMPs - This would include measures to prevent pollutant discharge wherever feasible, and to provide appropriate treatment where pollutant discharge cannot be avoided (as applicable and required for regulatory conformance). In addition to the measures listed above, pollutant avoidance and treatment BMPs may potentially include the following types of efforts:
    - Maximize the retention of open space areas, particularly in problematic areas such as drainages, slopes, and erosion-prone soils.
    - Minimize the construction of impervious surfaces.
    - Minimize the potential for erosion from slopes through efforts such as: (1) reducing cut and fill areas to reduce slope lengths; (2) using retaining walls to reduce slope grades or lengths; (3) using benches, terraces and/or rounding/shaping techniques to reduce flow concentrations; and (4) collecting concentrated flows in stabilized drains and channels.
    - Restrict access by heavy construction equipment in planned green/open space areas.
    - Salvage native topsoils from graded/excavated areas for use in reclamation/restoration efforts.
    - Install “no dumping” stencils/tiles and/or signs at applicable locations (e.g., drainage inlets and channels).
    - Provide paved, enclosed and covered areas for trash storage, with regular trash pick-up and proper off-site disposal.
    - Direct flows from impermeable (or other applicable) areas into swales or detention basins.
    - Install unlined/vegetated swales in applicable portions of the Project impact footprint to treat associated runoff in conformance with associated regulatory requirements prior to discharge, if applicable.
    - Design the proposed detention basin near the northwestern outlet to provide water quality treatment as well as flow regulation, if applicable.
    - Implement appropriate monitoring, testing and maintenance efforts to ensure regulatory conformance and proper function/efficiency of all applicable BMPs.